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# ABB Customer World

GEORGE R. BROWN CONVENTION CENTER
HOUSTON, TEXAS | MARCH 4-7, 2019

## Curriculum by program and track

GEORGE R. BROWN CONVENTION CENTER | HOUSTON, TEXAS | MARCH 4-7, 2019

# Applications and Best Practices: Manufacturing

## Application-Based Solutions

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 250450 | Workplace arc flash hazards, and what ABB can do for you |
| | 2:30 PM | 3:30 PM | 245906 | Machine safety evaluation and risk assessment |
| | 4:00 PM | 5:00 PM | 249284 | Liquid or dry: Which is the right transformer for you? |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 246270 | AC drive motor control methods |
| | 1:30 PM | 2:30 PM | 244239 | An introduction to industrial robotics, now and in the future |
| | 3:00 PM | 4:00 PM | 245466 | Impact of reverse power flow on substation transformers |
| | 4:30 | 5:30 PM | 245713 | Selection criteria for MCBs |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 249398 | Establishing the life of motor insulation systems: Are all systems equal? |
| | 1:30 PM | 2:30 PM | 240534 | Service robotics: Delivering real world, game changing value |
| | 3:00 PM | 4:00 PM | 245346 | Identifying the best motor starting solution for your application |
| | 4:30 PM | 5:30 PM | 249682 | Robust transformer designs for oil and gas, chemicals, mining, and other harsh environments |
| Thursday March 7 | 10:00 AM | 11:00 AM | 249133 | Basic theory of DC drives |
| | 1:45 PM | 2:45 PM | 249129 | Drives and motor sizing made easy |
| | 11:30 AM | 12:30 PM | 244232 | Collaborative robotics |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 250450 | Workplace arc flash hazards, and what ABB can do for you | Kyle Veugeler, Controls Project Engineer for the ABB Robotics facility in Auburn, Michigan, will present a case study on arc flash risk mitigation at his facility and key elements of our global electrical safety initiative. Four of our Global Core Team of Electrical Safety Champions will join Kyle in a Q&A session with the audience. |
| 245906 | Machine safety evaluation and risk assessment | ANSI B11.0 calls for machine safety hazards to be identified and lowered to an acceptable risk. This session will explain the responsibilities of machine builders and end users, as well as provide examples of task based risk assessment/risk reduction and the necessary documentation required. We will also demonstrate how you and your company can achieve compliance with a Machine Safety Evaluation. |
| 249284 | Liquid or dry: Which is the right transformer for you? | There are a lot of choices that need to be made when specifying a transformer, but none are as important as whether to specify liquid or oil-free insulation. This presentation will step you through all the important considerations when evaluating your safety needs. |
| 246270 | AC drive motor control methods | AC drives achieve motor speed and torque control utilizing different methods that can significantly affect overall motor and system performance. These differences can be the source of both successes and failures when applying AC drives. This presentation will explain the common underling method of creating a variable frequency, variable voltage output from a fixed voltage and frequency input to the drive. Building upon the basic output concept, this presentation will explain the most common motor control methods and the resulting performance differences of those methods. |
| 244239 | An introduction to industrial robotics, now and in the future | Join us for an introduction to the uses and applications of industrial robots. This discussion will include a brief history of robotics in industry, types of industrial robots, their applications and the top ten reasons for using them. We will also include safety considerations and trends of where robots are being used today and where we may see them used in the future. |
| 245466 | Impact of reverse power flow on substation transformers | As distributed energy resources (DERs) are added to the transmission and distribution grids, it is important to analyze the impacts on the power system, starting with the substation transformer (ST). We will review the impacts of reverse power on the ST for various operating conditions and compare the finite element (FE) analysis results for various transformer designs under reverse power flow. We will also discuss how switching and fault conditions influence the voltage at the ST terminals, leading to transient and steady state over voltages, and show how the effect may worsen with DERs. |
| 245713 | Selection criteria for MCBs | The market offers a wide variety of miniature circuit breakers (MCBs) for all kinds of applications. In this session, you will learn about the different UL standards and classifications for MCBs, as well as the differences between the various MCB types. |
| 249398 | Establishing the life of motor insulation systems: Are all systems equal? | Selecting motors for long insulation life presents challenges to the customer. What information exists for making a decision? What are the limitations of thermal life standards such as IEEE 117, IEC 60034-18-21 and UL 1446? What other tests and experience should be considered? How is the life of insulating materials affected by the manufacturing process? Each of these questions will be addressed, and by the end of the session participants will have a better idea on how thermal, electrical, ambient and mechanical conditions affect the life of their insulation system. |
| 240534 | Service robotics: Delivering real world, game changing value | Service robotics is one of the most fast paced and dynamic topics in the industry. However, it can be difficult to separate the hype and science fiction from the real technologies being used to deliver customer value and change the face of industries. This presentation will highlight how ABB is combining its deep industry insights with cutting edge new technologies to provide data driven, digital innovations in the service and mobile robotics spaces. We will present ABB's current service robotics portfolio, along with new technologies and opportunities to come. |
| 245346 | Identifying the best motor starting solution for your application | Join us for an overview of the motor starting landscape. From which variety of UL branch protection and starting to new technologies to improve your panel, this workshop will cover it all. We will show you which common components are best suited for which motor requirements. Participants will also get an overview of new motor starting technologies and explore their benefits. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
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| 249682 | Robust transformer designs for oil and gas, chemicals, mining, and other harsh environments | It's important to understand where and how a product will be used before it's designed. ABB takes pride in its long history of producing distribution transformers and the capability to customize transformer designs, including robust versions that provide solutions for different industries. During this session, we will discuss the value of customization for you and your business. |
| 249133 | Basic theory of DC drives | Being prepared prior to a project can make all the difference in its outcome. This session provides a discussion about DC drive fundamental principles that can help onsite. We'll explore how implementing methods of organization can position you for success, eliminate frustration and allow for a more focused thought process while moving forward with continuous momentum. Applying these concepts to DC drive theory can have added benefit during new installations, upgrades, retrofits or even during a troubleshooting situation. We'll show you how. |
| 249129 | Drives and motor sizing made easy | In this session, we will review the information required to make the best and most cost-effective motor and drive selection for your application. Learn what rules to follow to ensure the drive and motor are not under-sized, which would possibly make them unable to do the job required. Attendees will also learn about will happen if the motor and drive are under-sized for the application. |
| 244232 | Collaborative robotics | Within the Industry 4.0 ecosystem, robotic automation takes on an important role to enable the factory of the future. One of the latest and most exciting developments is the emergence of collaborative robots and related technologies, which have made robotic automation more accessible for a broad range of discrete manufacturers.<br><br>This session will cover the essentials of collaborative robotics, while focusing on how they are applied and how they will help shape the factory of the future." |

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# Applications and Best Practices: Manufacturing

## Enhanced Productivity and Efficiency

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 246283 | Motor grounding with respect to VFDs |
| | 2:30 PM | 3:30 PM | 245301 | Power quality improvement in industrial facilities |
| | 4:00 PM | 5:00 PM | 246251 | Best practices to optimize elastomeric coupling performance |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 246307 | Harmonics 101: What are they, why do I care and how do I solve them? |
| | 1:30 PM | 2:30 PM | 245909 | Using smart safety to enhance production |
| | 3:00 PM | 4:00 PM | 249157 | Integrating a human factors approach into quality |
| | 4:30 | 5:30 PM | 246310 | Best practices for installing AC drives |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 245314 | Maximize uptime and reduce costs with your power management strategy |
| | 1:30 PM | 2:30 PM | 246308 | Harmonics 102: Solutions for reducing harmonics in your facility |
| | 3:00 PM | 4:00 PM | 246274 | Improving crane hoisting and travelling performance with VFDs |
| | 4:30 PM | 5:30 PM | 246263 | The complete ABB automation solution enables connectivity, and safe and reliable machines |
| Thursday March 7 | 10:00 AM | 11:00 AM | 249288 | Specification considerations for distribution transformers |
| | 11:30 AM | 12:30 PM | 245912 | Maximizing uptime with ABB Ability™ Directional Protection |
| | 1:45 PM | 2:45 PM | 246277 | Using variable frequency drives to reduce the costs of harmonic mitigation |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 246283 | Motor grounding with respect to VFDs | AC motors have been used with variable frequency drives (VFDs) for many years with great success. Using a VFD in lieu of a traditional starter or soft starter reduces in-rush currents, prevents mechanical stresses on the driven equipment and infrastructure, and may result in great energy savings. Grounding products and requirements, as well as good installation practices, are important when the motors are powered by VFDs. |
| 245301 | Power quality improvement in industrial facilities | Join us for a discussion on how to get the most out of your power system. Whether it's power factor correction or harmonic mitigation, there are noticeable benefits to using one or both of these concepts. Following a short introduction to the theory behind each of these, we will then dive into the applications. Many application-based cases studies will be covered, including a mining application, water treatment plant, phosphorus plant, large HVAC system and the Montréal Olympic Stadium funicular. |
| 246251 | Best practices to optimize elastomeric coupling performance | Due to their lower costs, low maintenance and easy to install designs, elastomeric couplings have become a critical part of many power transmission systems. Best practices for maximizing coupling life are often neglected, leading to costly and unnecessary coupling failures. A review of typical failure modes for the most popular types of elastomeric couplings shows five root causes of elastomeric coupling failure. Implementing best practices for selection, troubleshooting and preventive maintenance will maximize elastomeric coupling life and minimize costs from unexpected failures. |
| 246307 | Harmonics 101: What are they, why do I care and how do I solve them? | Current harmonics, produced by electrical equipment (e.g., adjustable speed AC and DC drives), can distort power in an entire facility. Effects can include nuisance tripping, lighting issues, UPS failures, generator faults and other electrical-related issues. Find out how harmonics change with the load, how they are measured and the impact they have on other equipment within a plant. Learn about the methods used to reduce current and voltage distortions, including line reactors, line chokes, phase shifting, and passive and active harmonic filters. |
| 245909 | Using smart safety to enhance production | The chase to design safety systems to the highest level of safety using conventional components is resulting in undesired results and costly outcomes. With the globalization and evolution of machine safety, less can be more. More components and devices in our solution may not only reduce the level of safety but also introduce more points of failure. With fewer and smarter devices, we can raise the level of safety as well as the overall efficiency and productivity of the machine. Join us to discuss Production Integrated Safety while improving your safety performance and reducing your costs. |
| 249157 | Integrating a human factors approach into quality | To be successful long-term, companies must have a strong and engaged culture that continually drives safety, quality and productivity improvements. Human factors training can be applied across multiple business-critical processes to achieve that. Scot Forge discovered that the core principles that helped create their award-winning safety performance could be leveraged to create substantial gains in quality performance. Through this alignment, the organization achieved enhanced implementation efficiency and improvement in several different areas, including quality and production. |
| 246310 | Best practices for installing AC drives | AC drive performance and productivity begins with proper installation. Learn the important considerations for installation, including selection, performance, environmental, mechanical and electrical factors. W will also discuss why issues as basic as proper cooling and as complex as minimizing high frequency electrical noise affect the installation. |
| 245314 | Maximize uptime and reduce costs with your power management strategy | Operation managers are under tremendous pressure to keep their facilities up and running. At the same time, they are looking for ways to reduce costs through energy optimization. These two scenarios do not have to be mutually exclusive. Understanding the electrical distribution in your facility is a key component to keeping things up and running, efficiently. Join us to learn how Emax 2 circuit breakers can help with your power management strategy. |
| 246308 | Harmonics 102: Solutions for reducing harmonics in your facility | This session compares multi-pulse, ultra low harmonic (ULH) active front end (AFE) and active harmonic filter technologies based on line current harmonic reduction for AC drives. Find out how these technologies work, their advantages and disadvantages, and what needs to be addressed when a drive is powered by a back-up generator. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 246274 | Improving crane hoisting and travelling performance with VFDs | The demand for increased production and better reliability from older cranes is increasing. This means finding solutions for retrofitting the hoist and travel movements that also manage issues with motors, braking resistors, mechanical brake controllers and motor controllers (relays and obsolete drives). This session will cover the use of variable frequency drives (VFDs) to improve that performance. |
| 246263 | The complete ABB automation solution enables connectivity, and safe and reliable machines | One of the best producers in the world of thin stainless steel needed to mill the steel down to parts of a millimeter. They expected high precision on the overall control system as well as safety, condition monitoring and SCADA. ABB is supplying a range of products from low voltage, frequency converters and safety, PLC AC500/AC500-S, and ABB Zenon. Our automation solution affects more than 50 machines in the lineup, such as cutters, scissors, rolling mills and coilers. Join us to learn more about this customer's application and the scalable solution we created with them. |
| 249288 | Specification considerations for distribution transformers | Balancing cost and reliability is a constant challenge when creating specifications for distribution transformers. In this session, we will discuss key design concepts on issues such as environmental protection, network transients, maintenance and others that will help you optimize your specification to meet your exact needs. |
| 245912 | Maximizing uptime with ABB Ability™ Directional Protection | Modern generator set (genset) applications are more crucial than ever to today's critical power needs. For example, data center downtime starts at $9,000 per minute. Backup genset performance is a key attribute in maximizing uptime in our current industrial/ facility applications. Directional protection features with the use of Ekip G Hi-Touch and Ekip Link can prevent under-voltage, over-voltage and change of frequency, providing your backup generators greater fault protection for maximum uptime. |
| 246277 | Using variable frequency drives to reduce the costs of harmonic mitigation | Adding non-linear loads, such as variable frequency drives (VFDs) or data centers, to electrical networks can create harmonics. IEEE 519-2014 provides updated harmonic limit requirements, and where and how they should be measured. This session covers the various methods that can be used to mitigate harmonics and includes various examples, with calculations and measurements showing how each method effects capex, opex and the risk of downtime. |

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# Applications and Best Practices: Manufacturing

## Innovations in Technology and Processes

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 246318 | Functional safety and AC drives |
| | 2:30 PM | 3:30 PM | 249843 | What is my ABB Ability™ Smart Sensor for mounted bearings telling me? |
| | 4:00 PM | 5:00 PM | 249679 | OEM asset performance management using ABB Ability™ |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 261085 | How AI can help manufacturing |
| | 1:30 PM | 2:30 PM | 249203 | Ultra-high efficiency caged rotor permanent magnet motors |
| | 3:00 PM | 4:00 PM | 245910 | Let Safety PLC lead the way to safety, flexibility and user friendliness |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 249848 | ABB Ability™ Smart Sensor for mounted bearings technical overview |
| | 1:30 PM | 2:30 PM | 249685 | Enabling the factory of the future: ABB and Foxconn |
| | 3:00 PM | 4:00 PM | 234472 | Low voltage motors made smarter through IoT for effective maintenance |
| | 4:30 PM | 5:30 PM | 261087 | Advancements in machine safety |
| Thursday March 7 | 10:00 AM | 11:00 AM | 246317 | Ethernet connectivity in drives: Tired of your current drive offering for your existing architecture? |
| | 11:30 AM | 12:30 PM | 244227 | Operational equipment effectiveness for brownfield machine installations |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 246318 | Functional safety and AC drives | This session introduces the Machinery Directive along with the standards, steps and processes that must be taken into account when designing a machine to ensure operational safety. Learn about functional and standardized safety functions related to drives and how ABB's AC drives improve and support overall machine safety. |
| 249843 | What is my ABB Ability™ Smart Sensor for mounted bearings telling me? | The ABB Ability™ Smart Sensor for mounted bearings is an entry level solution into the market of condition monitoring and the industrial internet of things (IIoT). This solution can provide information and trending analyses to help reduce unscheduled downtime and unplanned maintenance while keeping employees out of harm's way. Join us to learn about how overall vibration, temperature and statistical KPIs, together with the capAbility™ of fault detection, can benefit you and your processes. |
| 249679 | OEM asset performance management using ABB Ability™ | OEMs often have limited insight into how their machines are operated on a day-to-day basis, as they have yet to provide enough value via a connected solution to overcome their customers' privacy and security concerns. This is especially true for smaller OEMs that do not have the resources to create their own connected solutions. By providing a ready-to-use fleet monitoring solution based on ABB Ability™, OEMs are able to address their customers' concerns, proactively monitor their fleets and gain ongoing insight into a machine located anywhere, from anywhere. |
| 261085 | How AI can help manufacturing | Automating the last bastion of manual work could unlock huge value in increased process efficiencies. This value lies not just in production, but also in sourcing, quality assurance, logistics and even interacting with your customers via social media. This is where artificial intelligence (AI) comes in; the continual process of technological learning from experience offers a range of new options for automation. But how is AI being used today in manufacturing? Join us as we discuss several ways manufacturing is using AI today and the ways it will be used in the very near future. |
| 249203 | Ultra-high efficiency caged rotor permanent magnet motors | Efficiency improvements with permanent magnet motors have been well documented. Some of these motors have been equipped with an induction cage in the rotor to allow direct on line starting. Designs of this type are now referred to as caged rotor permanent magnet (CRPM) motors. When operated direct on line, CRPMs can achieve efficiency levels 4 or more bands above NEMA Premium®. When operated on an adjustable speed drive, the efficiency levels can be 9+ bands above NEMA Premium. This presentation details the design of CRPM motors as well as the energy savings possible in terms of real dollars. |
| 245910 | Let Safety PLC lead the way to safety, flexibility and user friendliness | This session will focus on the benefits of using the Pluto Safety PLC and what its unique features and characteristics are that make it best in class in the industry. Topics will include popular accessories to the Safety PLC, how they are integrated with the Pluto, and how that further enhances our OEM's and major manufacturing customers' machine safety applications. |
| 249848 | ABB Ability™ Smart Sensor for mounted bearings technical overview | This session looks into the technical parameters of the new ABB Ability™ Smart Sensor for mounted bearings, as well as the technical background that shaped this product through “Voice of the Customer” studies and the desire for industrial use in harsh and hazardous applications. Join us as we walk through the development of this product and the process of design specification, certifications and material selections. |
| 249685 | Enabling the factory of the future: ABB and Foxconn | In this session, our speaker will collaborate with executives from Foxconn to highlight how ABB’s solutions can automate the entire value chain, while integrating traceability into all stages of production, processing, and distribution. The factory of the future is smart, connected and already here. Are you ready? |
| 234472 | Low voltage motors made smarter through IoT for effective maintenance | Low voltage motors are expected to operate reliably for years, provided they are maintained properly. Reactive type maintenance is typically followed for such motors, as traditional preventive maintenance or diagnostic monitoring can be very expensive. With the advent of the internet of things (IoT), low voltage motors can be made smarter, which will let the maintenance personnel know when a service is required. This advance notice lets you avoid unscheduled failure and improve productivity. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 261087 | Advancements in machine safety | Machine safety can have many positive impacts on manufacturing environments. The cost of downtime, harsh environments and the importance of meeting safety standards are all important considerations in managing any manufacturing process. Let our machine safety experts explain how innovations in machine safety can deliver real value, such as improving productivity by reducing downtime. We will also discuss safety standards and the importance of meeting those standards. |
| 246317 | Ethernet connectivity in drives: Tired of your current drive offering for your existing architecture? | Your current system is likely based on a choice made long ago. That doesn't mean you're stuck with the antiquated or underperforming drives you originally chose. We've made it exceedingly easy for you to integrate ABB drives into your solution without having to replace the whole system. In this session, we will discuss Ethernet/IP and various add-on instruction solutions for seamless integration into the Rockwell environment for new systems, or for replacing your existing Rockwell drives in RSLogix 5000 or Studio 5000. |
| 244227 | Operational equipment effectiveness for brownfield machine installations | Acquiring deep insight into machines is essential to enhance productivity and efficiency. Developing such functionality in brownfield machines is a strenuous task. Orange Box, the result of our decades of experience in machine and factory automation, is a perfect solution to get operational equipment effectiveness (OEE), identify the most common stoppages, generate machine operation reports and beyond. Join us to learn more about this innovative solution. |

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# Applications and Best Practices: Process Industries

## Applying Innovation and Technology

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 246242 | Leveraging AI in process industries |
| | 2:30 PM | 3:30 PM | 245282 | Power quality 101: What you need to know to protect your facility |
| | 4:00 PM | 5:00 PM | 249178 | Results from deployment of a condition monitoring system integrated to a control system (AssetVista) |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 249979 | Modular UPS technology in industrial applications |
| | 1:30 PM | 2:30 PM | 243591 | System 800xA Select I/O and xStream Engineering: A case study in project efficiency |
| | 3:00 PM | 4:00 PM | 243599 | The Open Process Automation™ Forum: How the present will impact the future |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 250018 | Expert session on simplifying the design process for tomorrow's control rooms |
| | 1:30 PM | 2:30 PM | 246321 | Distribution transformer configurations and their impact on LV drives |
| | 3:00 PM | 4:00 PM | 246320 | LV and MV drives 101 |
| | 4:30 PM | 5:30 PM | 250416 | Load - Evaluate - Go: System 800xA online configuration |
| Thursday March 7 | 10:00 AM | 11:00 AM | 249380 | The digitalization of the service engineer |
| | 11:30 AM | 12:30 PM | 245325 | Discovering unexpected solutions for large scale algae production by teaming with ABB |
| | 1:45 PM | 2:45 PM | 245347 | Electrical system simplification and monitoring to improve costs and save time in processing |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 246242 | Leveraging AI in process industries | Artificial intelligence (AI) is one of the cornerstone of digitalization, and ABB is investing heavily in this key technology. A collaboration between the digital team, corporate research and industrial automation business units has led to the development a new machine-learning-based advanced process control and analytics (APCA) solution. In this presentation, various case studies will be presented to demonstrate how this technological innovation is being leveraged to improve plant operations in the process industries. |
| 245282 | Power quality 101: What you need to know to protect your facility | As the digital world expands, protecting the equipment that enables it is paramount. Power quality is more relevant now than ever. What do you know about power quality? This presentation will provide an overview of issues that affect the performance of electrical systems, the equipment it serves and some basic steps to prevent poor power quality. Topics include an overview of AC power systems, types of power disturbances and what they affect, what is power factor and why it is important, what are harmonics, and an overview of power quality solutions. |
| 249178 | Results from deployment of a condition monitoring system integrated to a control system (AssetVista) | This study presents the results of integrating a condition monitoring system to a process control system, with more than 6700 assets installed in an iron processing plant. The implementation focused on early diagnosis and optimization of maintenance planning activities. Some advantages of integrating operational and maintenance data into a single management system include: break silos of information across maintenance and operation teams; detect problems that cannot be identified using current predictive techniques; and present holistic figures of plant assets, which can be drilled down into. |
| 249979 | Modular UPS technology in industrial applications | "For many industries, the consequences of electrical power loss can be disastrous. Production lines may go through a complex and costly restart. Expensive product may be ruined. Valuable production time can be lost. Process equipment can be damaged. Safety issues may arise.<br><br>Because a reliable supply of clean power usually cannot be guaranteed by the grid, ABB offers uninterruptible power supplies (UPS) based on our decentralized parallel architecture (DPA). The PowerLine DPA UPS makes sure that the operation of industrial applications keeps running continuously as it should." |
| 243591 | System 800xA Select I/O and xStream Engineering: A case study in project efficiency | Take the drama out of your next automation project. System 800xA's Select I/O is an Ethernet network based, single channel granular, late binding I/O system whose flexibility helps companies re-think the way their automation projects are executed. By providing a flexible I/O solution, your project can be more resilient to late changes, tasks can be done in parallel and project schedules can be optimized. |
| 243599 | The Open Process Automation™ Forum: How the present will impact the future | Innovation is not limited to a handful of Silicon Valley companies. The game has changed to innovate or die; transformation is an urgent call. This shift is partially because digital technologies enable new and unexpected competitors, but also because of the changing dynamics of consumers and suppliers. This discussion will cover the Open Process Automation Forum, how it will help with this transformation, the status of the initiative and the products available today. Join us to discover the new technological and business ecosystem emerging from the Forum and to discuss the expected changes. |
| 250018 | Expert session on simplifying the design process for tomorrow's control rooms | By focusing on control room design well in advance of construction, a flexible and future-proof design can be developed according to current human factors standards, optimizing footprint and operator efficiency and comfort. By utilizing digital technologies in an integrated 24/7 collaboration environment, you can not only attract a new generation of operators but also ensure your team has the best possible collaboration tools for optimum trouble shooting, decision making and operations. Attend this session to learn how to take your control room to the next level. |
| 246321 | Distribution transformer configurations and their impact on LV drives | Drives are powered by several types of transformer and grounding configurations. This session will review multiple configurations, and we will discuss the subtle ways that they can affect the reliability of the drive. We will also discuss typical solutions that ensure drives are appropriately protected, while minimizing the possibility of misoperation. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 246320 | LV and MV drives 101 | In this session, you will learn how low voltage and medium voltage drives are similar, and how they differ. We will explore the different topologies used in both types of drives, along with the waveforms and harmonics produced by the inverter section as well as the rectifier section. We will share power ranges along with methods employed to make the drive motor and power grid friendly. |
| 250416 | Load - Evaluate - Go: System 800xA online configuration | Online DCS code changes can be done safely and reliably while the plant is in full production. System 800xA gives the capability to "evaluate" the changes and go back if they do not perform as expected. |
| 249380 | The digitalization of the service engineer | As a vital component of digital twin technology, virtual (VR) and augmented reality (AR) are being explored more and more as a tool for maintenance and remote expert support services. In this session, we will highlight ABB's experience with these technologies and pull back the curtain on research projects aimed at providing a platform for our R&D groups to build and pilot AR tools. Specific projects will be highlighted that are enabling greater cooperation between the on-site technician, customer or vendor subject matter experts, and service provider. |
| 245325 | Discovering unexpected solutions for large scale algae production by teaming with ABB | Building large scale algae production plants in remote locations throughout the world poses a variety of challenges. By teaming with ABB, our tremendous breadth of solutions could remove nearly all the technical and support challenges. For Renewable Algal Energies (RAE), these solutions aligned with their goals and patented technology to produce algal products at commodity based prices. This session will highlight a competitive strategy for a unique industry and the unexpected, creative solutions that RAE discovered was possible when partnering with ABB. |
| 245347 | Electrical system simplification and monitoring to improve costs and save time in processing | In constructing UL508 panels for industrial processing, there are numerous new technologies and developments that can help save time and costs. What might have taken five electrical components in the past can now be done simply with two. This technology provides the ability to closely monitor a motor so costly downtime can be prevented. In addition, the ability to easily connect into any monitoring system allows easier plant integration of starters and control panels. In this workshop, we will break down the new technology into best practices for easy consumption. |

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# Applications and Best Practices: Process Industries

## Enhancing Performance and Efficiency

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 250017 | MOD 300 product update and evolution strategies |
| | 2:30 PM | 3:30 PM | 246011 | Chemical, oil and gas industry standards: A comparison of API 547 first and second editions |
| | 4:00 PM | 5:00 PM | 250369 | Addressing the aging workforce problem with a few simple operator effectiveness principles |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 250371 | The benefits of structured alarm rationalization versus addressing bad actors in KPI reports |
| | 1:30 PM | 2:30 PM | 250159 | Top 10 things to consider when upgrading your HMI |
| | 3:00 PM | 4:00 PM | 250316 | Keys to effectively deploying a reliability centered maintenance strategy that maximizes asset life |
| | 4:30 PM | 5:30 PM | 243849 | How to protect, optimize and stabilize an industrial network against power disturbances |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 245309 | Virtualized control system architectures deliver improved business performance |
| | 1:30 PM | 2:30 PM | 249430 | Get more from your Symphony Plus/Harmony automation platform |
| | 3:00 PM | 4:00 PM | 249452 | Get more from System 800xA |
| | 4:30 PM | 5:30 PM | 249183 | Implementation of distribution protection and automation solution: A real world experience |
| Thursday March 7 | 10:00 AM | 11:00 AM | 250016 | Achieve process and operational improvements by evolving third party DCSs to System 800xA |
| | 11:30 AM | 12:30 PM | 250319 | Reduce meantime to service resolution through focused application of augmented reality technologies |
| | 1:45 PM | 2:45 PM | 234468 | Life cycle management of high voltage motors and generators |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 250017 | MOD 300 product update and evolution strategies | In this session, we will review ABB's long term roadmap for MOD 300 and Advant MOD 300 as well as successful evolution strategies. We will also cover a number of customer case studies. |
| 246011 | Chemical, oil and gas industry standards: A comparison of API 547 first and second editions | API 547 first edition was issued in January 2005. The second edition became effective in November 2017. In this session, we will highlight the changes that have been made to the standard in this update. We will discuss what motor range and applications this standard applies to. We will also discuss where this standard fits within the family of API and IEEE motor standards that are routinely used by the chemical, oil and gas industries. |
| 250369 | Addressing the aging workforce problem with a few simple operator effectiveness principles | Knowledge capture requires skill, but making that information available for others to effectively utilize and learn from is an art. Explore which key techniques associated with various operator effectiveness solutions (e.g., simulation, alarm management, and high performance HMI) can have the biggest payback in helping new operators become successful. If you are faced with a retiring workforce, this session will help you prioritize the next steps into an actionable road map forward. |
| 250371 | The benefits of structured alarm rationalization versus addressing bad actors in KPI reports | Tools have made it easy to slowly reduce alarm counts by addressing the worst actors on a weekly basis. But a structured alarm rationalization solution provides more than just a reduced alarm count. This session uses a customer example to describe the many benefits of this interactive solution. Discussions will include a consultative methodology, use of a master alarm database, integrated operator response, consistent bulk implementation using templates, state based suppression and more. Come to this session to see which alarm management solution is best for you. |
| 250159 | Top 10 things to consider when upgrading your HMI | When upgrading your human-machine interface (HMI), do not settle for a migrated version of what you currently have and overlook key items that can dramatically improve operations and competitiveness. This session describes standard ABB solutions being embraced on HMI upgrades. It uses real customer examples and feedback to explore the difference a consultative HMI upgrade can make in improving overall operator effectiveness and preparing the system (e.g., through knowledge capture, presentation techniques, etc.) for the next generation of operators. |
| 250316 | Keys to effectively deploying a reliability centered maintenance strategy that maximizes asset life | This session explores the elements to effectively deploy a reliability centered maintenance (RCM) strategy that supports operational excellence and financial performance. Run-to-failure (RTF), preventive maintenance (PM), predictive maintenance (PdM) and condition-based maintenance (CBM) are common. A blend of RTF and PM is the typical approach for many industrial plants. The challenge is to develop a balanced strategy that ensures asset performance, process availability and low life cycle cost. An RCM strategy provides this balance. |
| 243849 | How to protect, optimize and stabilize an industrial network against power disturbances | A blackout can not only be extremely costly to companies, due to lost production, but also disruptive, due to equipment reset and/or replacement due to damage, clean-up and other issues. Join us to learn how the compact Power Management Solution (cPMS) will ensure the availability of electrical power to all essential and, most importantly, critical loads in the plant/network. |
| 245309 | Virtualized control system architectures deliver improved business performance | Virtualization technology has many benefits beyond the reduction of server machines. This panel discussion will look at decision making processes and implementation practices for using virtualization for a process automation infrastructure and the resulting effect on plant availability and reliability. Come to this session to see if virtualization is right for you and your business. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 249430 | Get more from your Symphony Plus/Harmony automation platform | With more than 35 years of history, the Symphony family represents one of the most widely used automation systems, and previous generations continue to run with high reliability. However, the cumulative effects of revisions, additions and adjustments can adversely affect performance. Communication loop issues may degrade system performance, conflicting system settings may restrict maximum performance, and communication poll rate settings may lead to issues. In this session, we'll share common issues that we see, methods to correct them and how to avoid them altogether. |
| 249452 | Get more from System 800xA | In this session, we will cover assessing the performance of your System 800xA in order to determine the best configuration settings. Some items we'll discuss include determining proper configuration of network settings, monitoring computer and controller performance, determining if the aspect database is in good health and checking domain core functionalities. Correcting and monitoring some of the items covered in this session can help resolve intermittent connectivity issues, accelerate graphic call up times and catch system degradation. |
| 249183 | Implementation of distribution protection and automation solution: A real world experience | Safety, efficiency and productivity improvements remain a top priority for both utility and process industries. The aging infrastructure provides very little room for such improvements. Applying modern technologies like IEC 61850 help hasten these modernization efforts to build intelligent P&C designs with minimum investment, to achieve these goals. This webinar presents real world experience from project implemented in some of the large industrial facilities in the US. The intelligent schemes include a novel busbar protection scheme, arc flash protection, fault detection-isolation-service restoration (FDIR) scheme and fast load shedding scheme based on real time power monitoring. In addition, the powerful substation computer facilitated easy integration of power systems to upper level plant operations via MODBUS protocol. Lessons learned from these projects will be presented. |
| 250016 | Achieve process and operational improvements by evolving third party DCSs to System 800xA | Realize process and operational improvements with step-by-step evolution strategies for the replacement of all or parts of competitive control systems within your organization. This session will include a demonstration of the advanced conversion and connectivity tools that ABB utilizes for these projects. A number of customer case studies will also be covered in this session. |
| 250319 | Reduce meantime to service resolution through focused application of augmented reality technologies | In many process and manufacturing industries, producers “fly blind” if critical automation technologies do not operate at maximum availability. Meeting production requirements with high quality assurance is at risk if automation experiences downtime or issues that impede production visibility. Commercially available augmented reality wireless “wearable” computer headsets are imparted with ABB maintenance strategies, documentation, guidance, access to expertise and other best practices to improve effectiveness of field service technicians, thus improving asset and production availability. |
| 234468 | Life cycle management of high voltage motors and generators | The cost of an unexpected plant shutdown due to failure of critical equipment, such as a large motor, could have a significant impact on earnings. Considering the generally longer time between planned outages, life cycle management solutions should work towards lower maintenance costs through planned maintenance and early fault detection, availability of actionable information to maximize uptime through accurate and automated diagnostics, and optimal asset reliability and machine life extension by meticulous planning of how and when machines should be maintained. |

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# Applications and Best Practices: Process Industries

## Safe and Secure Operations

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 250019 | Preparing for disaster: Best practices for plants in severe weather zones |
| | 4:00 PM | 5:00 PM | 243603 | The rocky relationship between safety and security |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 243611 | Developing a combined life cycle management approach for both functional safety and security for SIS |
| | 1:30 PM | 2:30 PM | 250517 | WannaCry and NotPetya: Five steps to a good cyber security strategy in demanding times |
| | 3:00 PM | 4:00 PM | 249205 | A digital application to monitor the industrial electrical system |
| | 4:30 PM | 5:30 PM | 243617 | A digital approach to answering the three key process safety questions |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 246009 | Safety concerns when working in or visiting the Permian and Delaware Basins |
| | 1:30 PM | 2:30 PM | 243615 | Functional safety and security fingerprint for SIS |
| | 3:00 PM | 4:00 PM | 243602 | Human factors and their impact on plant safety |
| | 4:30 PM | 5:30 PM | 233882 | IEEE 1584 arc flash calculations 2 |
| Thursday March 7 | 10:00 AM | 11:00 AM | 246312 | Basic sound level knowledge for electric motor application |
| | 11:30 AM | 12:30 PM | 245784 | The case for digital switchgear |
| | 1:45 PM | 2:45 PM | 245823 | Lockout/tagout options for safe mill maintenance |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 250019 | Preparing for disaster: Best practices for plants in severe weather zones | Review best practices that plants in hurricane and severe weather zones can implement to be better prepared and return to operation in the shortest time possible after a disaster. These are the result of many years of experience helping plants with disaster preparedness and recovery. We'll discuss assessing the needs of a plant in any area where severe storms are a real possibility; what to do first and how to avoid last minute panics; procedures to safely shut down your plant and back up your system; assembling disaster recovery teams; and servicing affected equipment and staging spare parts. |
| 243603 | The rocky relationship between safety and security | Although many users assume their safety systems to be isolated, many have connected safety systems to a basic process control system (BPCS) since mid-1980s. These efforts were based on proprietary protocols until the adoption of open network protocols, and Windows increased connectivity to business systems but exposed safety systems to cyber threats. This session will address safety and security considerations around design and implementation of safety systems and the methods used to ensure that the integration between the safety system and the BPCS do not compromise functional independence. |
| 243611 | Developing a combined life cycle management approach for both functional safety and security for SIS | IEC 61511/ISA-84 Ed 2 2016 now calls for a mandatory security risk assessment as part of the requirements specification of a safety instrumented system (SIS). Therefore, a security life cycle management approach is required to transpose such requirements into the design of a SIS. This session will present one approach to developing a 'combined lifecycle management requirement' in bringing together the similar processes and competencies to achieve a combined IEC 61511/ISA-84 and IEC 62443 set of procedures, processes and competencies to achieve compliance for both safety and security. |
| 250517 | WannaCry and NotPetya: Five steps to a good cyber security strategy in demanding times | The need for a cyber security strategy has been known for nearly 50 years, and yet attacks first documented in the 1970s are still with us. Why? Because basic measures to protect control systems from attacks are not systematically employed. But events from 2017 should set off alarms in board rooms. WannaCry and NotPetya wreaked havoc on companies running Windows XP, but failed an entry-level cyber security test: keep systems patched and updated. You can do many things, but if you do nothing, it is just a matter of time before you're a victim. Here are five things you can do now to be prepared. |
| 249205 | A digital application to monitor the industrial electrical system | System 800xA MIDAS Library was originally conceived as a solution for a more intuitive system with quick information access to improve the plant supervision at the control room. Now, ABB Ability™ System 800xA Power Control Library, part of the ABB Ability™ digital solutions portfolio, connects digital substations from distant places into System 800xA. It enhances not only the visibility of the substations, but also improves safety for personnel by reducing the time spent in the field exposed to electrical danger. |
| 243617 | A digital approach to answering the three key process safety questions | Companies operating oil, gas and chemical facilities need to be able to answer three key questions: what can go wrong, what protective layers are in place to prevent it, and do I have information to know those protective layers are effective? This presentation builds upon the lessons learned from the implementation of an online protective layer monitoring solution and experiences in process safety studies and associated tools. It will show participants how digitalization can enable companies to effectively answer these three questions. |
| 246009 | Safety concerns when working in or visiting the Permian and Delaware Basins | The Permian and Delaware Basins are thriving workplaces in the onshore, upstream and midstream segments of the oil and gas industry. They are a unique work environment and carry many hazards that may be unfamiliar to many people. We will discuss the hazards that exist in these locations and offer suggestions for working safely. |
| 243615 | Functional safety and security fingerprint for SIS | Do your company standards ask for specific requirements to manage the maintenance, testing, reporting, inspection and analysis of your safety instrumented systems (SIS)? Do you know if you can demonstrate compliance to IEC 61511/ISA 84/IEC 62443 and regulatory expectations? If either answer was yes, attend this session to learn more about ABB's operations and maintenance (O&M) compliance methodology and Safety Fingerprint tool. This fingerprint methodology helps identify where gaps in compliance to the safety and security standards and industry good practice recommendations are significant. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 243602 | Human factors and their impact on plant safety | Today, as operators are tasked with numerous activities, is it reasonable to expect they'll be able to respond appropriately to all conditions? This session discusses some of the capabilities available in a modern automation system. We'll explore how to apply innovative control room planning and technology to support decision making and help humans handle abnormal situations in a safe and effective manner. We will also present results from research centered on operator health and discuss how the impact of an intelligent and ergonomic workspace can both mitigate risk and increase productivity. |
| 233882 | IEEE 1584 arc flash calculations 2 | IEEE 1584 is the basis for arc flash calculations in North America. The IEEE guide is changing significantly, with calculations becoming more complex and incident energy levels increasing by as much as 2.5X from previous levels. OSHA and safety practices mandate that this cannot be ignored. This presentation will introduce concepts of risk management in NFPA 70E (electrical safety standard) and how that relates to IEEE 1584. It will also provide an overview of changes in IEEE 1584 and what the standard may mean to those responsible for electrical safety and those performing arc flash studies. |
| 246312 | Basic sound level knowledge for electric motor application | The sound emitted from industrial electric motors can adversely affect the comfort and safety of those who work in their vicinity. As such, many customers and governing agencies impose strict sound limitations on motors placed in audibly sensitive applications. This session will explore the nature of sound data, and how it is measured and interpreted. We will discuss causes and mitigation methods of sound within electric motors. Finally, we will compare applicable industry specifications to give a sample of standards that provide guidance to users in this area. |
| 245784 | The case for digital switchgear | Switchgear performance failures are rare, but results can be catastrophic. Digital switchgear is based on technologies such as current and voltage sensors with low energy analog inputs, finger-safe digital test switches and IEC 61850 incorporated into modern numerical intelligent electronic devices (IEDs). Due to increased simplicity and reliability, and reduced interaction between service technicians and equipment, operational safety is greatly increased. We will contrast digital and conventional switchgear with a focus on safety, and share practical experiences from projects in the field. |
| 245823 | Lockout/tagout options for safe mill maintenance | Ring geared mill drives (RMD) are used at various stages in the comminution process to achieve the correct material size before extraction. Regular maintenance of the RMDs is required to ensure efficient and reliable operation. RMD mills require isolation for safe mechanical work on the mill. This presentation will describe and compare the options for mill isolation from electrical power and highlights how customers can ensure their safety is guaranteed during such a procedure. |

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# Applications and Best Practices: Unique Industries

## Buildings and Infrastructure

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 250450 | Workplace arc flash hazards, and what ABB can do for you |
| | 2:30 PM | 3:30 PM | 246279 | The ABCs of VFDs |
| | 4:00 PM | 5:00 PM | 239720 | Solar PV 101: Basic PV fundamentals |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 249979 | Modular UPS technology in industrial applications |
| | 1:30 PM | 2:30 PM | 244236 | Service Robotics and Logistics: The New Frontier |
| | 3:00 PM | 4:00 PM | 243954 | Is DC the future of electrification? Evolutions in generation, storage, distribution and consumption |
| | 4:30 PM | 5:30 PM | 249156 | State of the industry: What electrical professionals are saying about their needs and preferences |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 249333 | Embracing digital for a safe, reliable and optimized operation |
| | 1:30 PM | 2:30 PM | 245294 | Optimizing building performance by leveraging cloud based energy management |
| | 3:00 PM | 4:00 PM | 249146 | How will your ATS respond in a selectively coordinated system? |
| | 4:30 PM | 5:30 PM | 245298 | "UP-date" existing facilities with the latest digital protection and monitoring innovations |
| Thursday March 7 | 11:30 AM | 12:30 PM | 244236 | Service Robotics and Logistics: The New Frontier |
| | 1:45 PM | 2:45 PM | 249788 | Application considerations for NFPA 99 and NEC healthcare selective coordination requirements |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 250450 | Workplace arc flash hazards, and what ABB can do for you | Kyle Veugeler, Controls Project Engineer for the ABB Robotics facility in Auburn, Michigan, will present a case study on arc flash risk mitigation at his facility and key elements of our global electrical safety initiative. Four of our Global Core Team of Electrical Safety Champions will join Kyle in a Q&A session with the audience. |
| 246279 | The ABCs of VFDs | Variable frequency drives (VFDs) hold an incredible amount of data that customers are often unaware exists. Whether it is a building owner looking at an HVAC system's building automation system (BAS), or a technician monitoring a water treatment plant's operating conditions, the user typically interfaces with the VFD in the same way. Their graphic-based operator work station has the potential to be filled with an incredible amount of information that can assist in anything from troubleshooting to energy consumption monitoring. |
| 239720 | Solar PV 101: Basic PV fundamentals | This session will present the basic principles of how solar photovoltaic (PV) works, including how inverters work. We will present a checklist to see if solar PV would be a good value proposition for your home. Participants will be able to determine if they should consider solar for their home or business. |
| 249979 | Modular UPS technology in industrial applications | "For many industries, the consequences of electrical power loss can be disastrous. Production lines may go through a complex and costly restart. Expensive product may be ruined. Valuable production time can be lost. Process equipment can be damaged. Safety issues may arise.<br><br>Because a reliable supply of clean power usually cannot be guaranteed by the grid, ABB offers uninterruptible power supplies (UPS) based on our decentralized parallel architecture (DPA). The PowerLine DPA UPS makes sure that the operation of industrial applications keeps running continuously as it should." |
| 244236 | Service Robotics and Logistics: The New Frontier | The development of service robotics is fast paced and dynamic. It is often difficult, however, to separate the hype and science fiction from the real technologies that will deliver customer value and change the face of industry. This moderated panel will cover current and future material handling/manipulation applications and discuss challenges to adoption in retail, healthcare, e-commerce, warehousing and distribution segments. ABB's current service robotics portfolio will be also be presented, along with new technologies and opportunities to come. |
| 243954 | Is DC the future of electrification? Evolutions in generation, storage, distribution and consumption | From electric power generation to power consumption, AC and DC share infrastructure, with conversion stages driven by legacy solutions and government regulations. Technology has driven growth in DC generation, storage and consumption; the fastest growing demand is in DC, while most generation is still AC. The connectivity from past to future, as well as from source to use, is in the greatest state of flux. Let's look at the drivers and possibilities for the future. |
| 249156 | State of the industry: What electrical professionals are saying about their needs and preferences | EC&M Magazine editor Mike Eby provides a 2019 industry outlook with insights on economic indicators, growth segments and opportunities for the U.S. construction market. Additionally, ABB EPIS commercial construction leader Natalie Block will share findings from an industry survey of 750 electrical professionals expressing their needs and preferences in terms of education, technology and business operations. Capture valuable insights about trends shaping the industry today and how your experiences compare to those of your peers. Attendees will receive a digital summary of the findings. |
| 249333 | Embracing digital for a safe, reliable and optimized operation | The traditional methods of automation system maintenance don't work today. Plant staffing is changing across system life cycles: shrinking staffs compel industries to look for increased support from vendors, unmanned and reduced manned solutions are more common, and decades of experience and knowledge are leaving with workforce retirements. Today, advancements in digital services mean that someone doesn't have to go and physically touch every asset. With the right tools, the data stream flowing from plant assets can be used it to prevent failures or reduce downtime and product instability. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 245294 | Optimizing building performance by leveraging cloud based energy management | Implementing internet of things (IoT) technology in the building and infrastructure sector provides innovative ways to gather and analyze electrical system data. This provides real time best practice to optimize energy savings. A cloud based monitoring system can be a tool to provide this capability in an efficient, easy to implement method for a single facility, or fleet of facilities. Join us for an informational session on how ABB Ability™ Electrical Distribution Control System (EDCS) can achieve these strategies today. |
| 249146 | How will your ATS respond in a selectively coordinated system? | For decades, the automatic transfer switch (ATS) industry in North America has relied on withstand and close on ratings (WCR) to specify equipment sizes needed on projects. In the past few years, short time ratings (STR) have become more prevalent in the ATS market, but many people remain uncertain on what the difference between WCR and STR really is. In this session, we will explain the differences between WCR and STR, and when each rating should be applied. |
| 245298 | "UP-date" existing facilities with the latest digital protection and monitoring innovations | Countless electrical installations lack the control and monitoring features found in more modern facilities. However, you don't have to replace all of the electrical equipment to gain this important functionality. ABB offers a way to UP-date, UP-grade and UP-load your existing facility, maximizing UP-time with the Ekip UP multifunctional relay. |
| 244236 | Service Robotics and Logistics: The New Frontier | The development of service robotics is fast paced and dynamic. It is often difficult, however, to separate the hype and science fiction from the real technologies that will deliver customer value and change the face of industry. This moderated panel will cover current and future material handling/manipulation applications and discuss challenges to adoption in retail, healthcare, e-commerce, warehousing and distribution segments. ABB's current service robotics portfolio will be also be presented, along with new technologies and opportunities to come. |
| 249788 | Application considerations for NFPA 99 and NEC healthcare selective coordination requirements | The National Fire Protection Association (NFPA) requires emergency sources of power to serve certain portions of electrical distribution systems in hospitals. We will review application considerations as well as normal and essential system design considerations for NFPA 99 and National Electrical Code® (NEC) compliance regarding selective coordination. We will also discuss NEC design requirements for normal system power distribution and essential systems for single and multi-generator power distribution designs. Low voltage versus medium voltage selection will also be addressed. |

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# Applications and Best Practices: Unique Industries

## Chemicals

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 249492 | Enabling more informed business decisions through digitally integrated operations in chemicals |
| | 2:30 PM | 3:30 PM | 246011 | Chemical, oil and gas industry standards: A comparison of API 547 first and second editions |
| | 4:00 PM | 5:00 PM | 243603 | The rocky relationship between safety and security |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 243611 | Developing a combined life cycle management approach for both functional safety and security for SIS |
| | 1:30 PM | 2:30 PM | 243591 | System 800xA Select I/O and xStream Engineering: A case study in project efficiency |
| | 3:00 PM | 4:00 PM | 243599 | The Open Process Automation™ Forum: How the present will impact the future |
| | 4:30 PM | 5:30 PM | 249477 | The journey towards autonomy in industrial operations |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 249495 | Insights into the chemicals industry: Investments, trends and predictions |
| | 1:30 PM | 2:30 PM | 249494 | Modular enabled automation solutions for the process industry |
| | 3:00 PM | 4:00 PM | 249496 | Energy optimization for refineries: Case studies and technology review |
| | 4:30 PM | 5:30 PM | 249493 | Case study: Effective rotating machine maintenance through failure detection and damage predictions |
| Thursday March 7 | 10:00 AM | 11:00 AM | 249490 | Detect and correct anomalies early in your batch processes |
| | 11:30 AM | 12:30 PM | 250319 | Reduce meantime to service resolution through focused application of augmented reality technologies |
| | 1:45 PM | 2:45 PM | 249144 | Level measurement solutions for the chemicals industry |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 249492 | Enabling more informed business decisions through digitally integrated operations in chemicals | A typical chemical plant generates large amounts of data throughout its whole life cycle. Big data holds significant potential for optimizing and improving processes. Big data technologies enable new possibilities to analyze historical data generated by process plants. Big data is normally characterized by four Vs: volume, variety, veracity and velocity. Not only do we want to find and interpret patterns in the data and use them for predictive purposes, but we also need to extract meaningful relationships that can be used to improve and optimize a process. Join this session to learn more. |
| 246011 | Chemical, oil and gas industry standards: A comparison of API 547 first and second editions | API 547 first edition was issued in January 2005. The second edition became effective in November 2017. In this session, we will highlight the changes that have been made to the standard in this update. We will discuss what motor range and applications this standard applies to. We will also discuss where this standard fits within the family of API and IEEE motor standards that are routinely used by the chemical, oil and gas industries. |
| 243603 | The rocky relationship between safety and security | Although many users assume their safety systems to be isolated, many have connected safety systems to a basic process control system (BPCS) since mid-1980s. These efforts were based on proprietary protocols until the adoption of open network protocols, and Windows increased connectivity to business systems but exposed safety systems to cyber threats. This session will address safety and security considerations around design and implementation of safety systems and the methods used to ensure that the integration between the safety system and the BPCS do not compromise functional independence. |
| 243611 | Developing a combined life cycle management approach for both functional safety and security for SIS | IEC 61511/ISA-84 Ed 2 2016 now calls for a mandatory security risk assessment as part of the requirements specification of a safety instrumented system (SIS). Therefore, a security life cycle management approach is required to transpose such requirements into the design of a SIS. This session will present one approach to developing a 'combined lifecycle management requirement' in bringing together the similar processes and competencies to achieve a combined IEC 61511/ISA-84 and IEC 62443 set of procedures, processes and competencies to achieve compliance for both safety and security. |
| 243591 | System 800xA Select I/O and xStream Engineering: A case study in project efficiency | Take the drama out of your next automation project. System 800xA's Select I/O is an Ethernet network based, single channel granular, late binding I/O system whose flexibility helps companies re-think the way their automation projects are executed. By providing a flexible I/O solution, your project can be more resilient to late changes, tasks can be done in parallel and project schedules can be optimized. |
| 243599 | The Open Process Automation™ Forum: How the present will impact the future | Innovation is not limited to a handful of Silicon Valley companies. The game has changed to innovate or die; transformation is an urgent call. This shift is partially because digital technologies enable new and unexpected competitors, but also because of the changing dynamics of consumers and suppliers. This discussion will cover the Open Process Automation Forum, how it will help with this transformation, the status of the initiative and the products available today. Join us to discover the new technological and business ecosystem emerging from the Forum and to discuss the expected changes. |
| 249477 | The journey towards autonomy in industrial operations | Businesses in the industrial space have undergone a paradigm shift to move from isolated operations to collaborative and ultimately more autonomous operations. By 2025 we will witness humans working with systems in a collaborative way, leveraging artificial intelligence (AI) seamlessly. Disruptive technologies like AI, machine learning and augmented reality (AR) have all changed the way we do everyday tasks and in some cases made them autonomous. In this session, we will demonstrate how hands-free collaboration can help repair remote issues or predict plant incidents before they ever happen. |
| 249495 | Insights into the chemicals industry: Investments, trends and predictions | For many years, the global chemicals industry has been fighting declining margins, commoditization, rapidly expanding competition in developing countries and customers demanding more at lower prices. Chemical companies are beginning to rethink their growth strategies and moving away from cost-cutting initiatives towards more nimble, coherent and aggressive business models. Join this session to examine this shift in the chemicals landscape with industry experts. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 249494 | Modular enabled automation solutions for the process industry | Modular automation is the cornerstone of future process plants and crucial in the chemical and pharmaceutical industries, enabling reduced time to market, increased automation efficiency and higher flexibility. Modular automation is the future for flexible process plant production and a key element for the industrial internet of things (IIoT) and Industry 4.0. This technology helps process industries that face requirements such as more customized products, shorter delivery times and smaller batch series. Join this session to learn more. |
| 249496 | Energy optimization for refineries: Case studies and technology review | A reliable, efficient and dependable energy supply is vital for the smooth functioning of any refinery for it to overcome ever increasing challenges to reduce energy costs and CO2 emissions. Managing and controlling this supply is thus as important as managing and controlling any other significant process parameter. Join this session to learn hear energy optimization case studies for refineries, review technologies that enable lower installation and operational costs, and see how enhanced asset management capabilities improve overall plant performance. |
| 249493 | Case study: Effective rotating machine maintenance through failure detection and damage predictions | Over the last few years, ABB and BASF have worked together on a co-creative research project with a focus on effective execution of inspection and maintenance of rotating assets in industrial plants. This collaboration has resulted in algorithms for detection of failure modes, models to predict damage that leads to potential faults, and analytics based on sensor signals and data from the maintenance management system to manage fleets of standard rotating equipment. This session will give an overview of the project and the results, as well as how it can be applied to provide value. |
| 249490 | Detect and correct anomalies early in your batch processes | Repeatable quality is essential to lower costs and maximize profitability for process operations. Petrochemical, chemical and pharmaceutical batch management systems are needed to ensure that consistent quality is maintained throughout batch processes. Join this session to learn how the digitization of batch processing can help detect and resolve plant abnormalities before they ever occur. |
| 250319 | Reduce meantime to service resolution through focused application of augmented reality technologies | In many process and manufacturing industries, producers “fly blind” if critical automation technologies do not operate at maximum availability. Meeting production requirements with high quality assurance is at risk if automation experiences downtime or issues that impede production visibility. Commercially available augmented reality wireless “wearable” computer headsets are imparted with ABB maintenance strategies, documentation, guidance, access to expertise and other best practices to improve effectiveness of field service technicians, thus improving asset and production availability. |
| 249144 | Level measurement solutions for the chemicals industry | This session focuses on the selection of the right product for applications in the chemicals industry. The wide ABB level measurement portfolio includes magnetic level gauges for safe and reliable level measurement of toxic and corrosive chemicals, guided-wave radars for harsh conditions and laser level measurement for non-contact applications. Recent product introductions now provide ABB with an innovative and state of the art portfolio of industrial level measurement products. |

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# Applications and Best Practices: Unique Industries

## Data Centers

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 249314 | Data center design considerations |
| | 2:30 PM | 3:30 PM | 243621 | Data center operations: Running safer and more smoothly |
| | 4:00 PM | 5:00 PM | 249320 | Demystifying the edge: Enabling computing for the new digital economy |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 249880 | Value of a strategic service partnership drives uptime in critical federal government infrastructure |
| | 1:30 PM | 2:30 PM | 250164 | The changing landscape of service in the data center: The promise and challenges of IoT for service |
| | 3:00 PM | 4:00 PM | 249292 | Unleash the power of a digital platform: Leverage integrated products, services for maximum results |
| | 4:30 PM | 5:30 PM | 249909 | New power protection solutions for today's hyperscale datacenters |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 249304 | Transforming data center projects with holistic design |
| | 1:30 PM | 2:30 PM | 245355 | Crimps and the cloud |
| | 3:00 PM | 4:00 PM | 249323 | Data center business case for digitalization |
| | 4:30 PM | 5:30 PM | 249877 | Energy efficient and reliable transformers for data centers |
| Thursday March 7 | 10:00 AM | 11:00 AM | 249983 | Arc flash mitigation in data center designs |
| | 11:30 AM | 12:30 PM | 249437 | Lower your carbon footprint with a greener data center energy strategy |
| | 1:45 PM | 2:45 PM | 249984 | Improving asset utilization in data center critical power systems |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 249314 | Data center design considerations | Data center design has been disrupted by new techniques in cooling and power. Learn about new design parameters to make your data center more efficient as well as future proof with aspects of Leadership in Energy and Environmental Design (LEED), ASHRAE TC9.9 and techniques for medium voltage use. We'll also talk about the pros and cons of implementing these techniques. |
| 243621 | Data center operations: Running safer and more smoothly | Are you running a state-of-the-art data center with paper and pencils? If you still use paper logbooks, informal change notifications and manual tracking of rounds information, then you're leaving yourself open to accidents and outages caused by lack of communication and knowledge sharing. Other industries are doing these things more effectively than you are, and your operations team deserves better. Come learn about the tools that ABB offers data center operators to help them streamline their operational activities. |
| 249320 | Demystifying the edge: Enabling computing for the new digital economy | Disruptive technologies are changing the way companies, individuals and devices process data. Business models are shifting to the edge to improve latency, security and scalability. Computing at the edge is a key enabler for this shift. Join this session to discuss how Rittal, HPE and ABB are working together to demystify the edge. |
| 249880 | Value of a strategic service partnership drives uptime in critical federal government infrastructure | In this session, ABB and Pergravis discuss how they help maintain data center reliability standards of the U.S. federal government. Preventative maintenance and asset management are critical to the goal of 100% uptime; this requires strategic maintenance schedules and proactive coordination. Additionally, a holistic approach of maintaining your entire data center power value chain in one program allows optimized service schedules and overall safety of your assets and employees. Finally, a partnership like this ensures seamless support if something does go wrong, quickly and without hassle. |
| 250164 | The changing landscape of service in the data center: The promise and challenges of IoT for service | This session focuses on the shift in today's service environment as the industry adopts new trends. Data center operators are focusing on managing global fleets of data centers, which demand new platforms around asset health and monitoring. The internet of things (IoT) and its promise of data driven predictive service sounds appealing; however, when can it start to deliver? Let's dive into the security concerns and operational risks, and understand our digital strategy to address these needs and concerns. |
| 249877 | Energy efficient and reliable transformers for data centers | Data centers rely on energy, with an overall consumption currently exceeding two percent of the world's electricity usage. Transformers play an important role in supplying this energy, with ABB covering distribution, dry and power transformer applications to secure a reliable, energy efficient power supply. This session will present two case examples focused on the benefits and advantages of transformers for data center companies: one on transient voltage resistant dry transformers (Google), and one on power transformers, focused on on-time delivery, quality execution and service (Facebook). |
| 249909 | New power protection solutions for today's hyperscale datacenters | The last decade has presented significant changes to the data center market, from a corporate/enterprise model towards cloud and colocation based solutions. This change has resulted in increased focus on lowering the cost of building and operating data centers, which are now the revenue generators in a highly competitive market. UPS manufactures have responded to the challenges with new UPS designs and configurations, as well as new energy storage solutions. Each solution comes with its own benefits and challenges, so it is important to consider the best solution for your unique application. |
| 249304 | Transforming data center projects with holistic design | Data centers are huge – literally! Data centers are being built that are hundreds of square feet in size with power requirements in the hundreds of megawatts. It's time to rethink the data center design process to be more efficient, scalable and reproducible. In this session, we will cover holistic data center designs that take into account the total cost of ownership for the entire system, not just it's sub-systems. In large facilities, this approach has allowed data center owners to eliminate costly equipment, prepare themselves for future growth and reduce their overall engineering time. |
| 249355 | Crimps and the cloud | Your electrical circuit is only as good as your connection. The ABB Smart Tool+ measures and records the crimping pressure created during the crimping process at a given distance that the indenter has traveled. This data are then transferred from the tool to your mobile device. You can then upload the data from your mobile device to the cloud. Once the data is in the cloud, the contractor can create crimp reports to share internally and externally. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 249323 | Data center business case for digitalization | Digitization of information in electrical systems can lead to increased visibility, safety and optimization of resources. Using the technology of ABB Ability™ for the electrical system and with a similar approach to both the heating, ventilation and air conditioning (HVAC) and IT portions of the data center, we can optimize performance. Let's take a look at why the data center makes an ideal test case for exploring preventive maintenance, machine learning, artificial intelligence (AI) on complex systems and ultimately business transformation. |
| 249292 | Unleash the power of a digital platform: Leverage integrated products, services for maximum results | Operators of data centers have a primary mission of uptime and 24/7 data availability; they depend on a reliable power backbone. Best in class data centers need to be able to quantify their risk exposure and be able to anticipate potential equipment challenges in near real time. To support this evolving direction in our power industry, ABB is manufacturing digital native transformers as a standard offering. Coupled with our asset management software and wrapped with a service contract, customers are well prepared for the uptime commitment they are offering to their clients. |
| 249983 | Arc flash mitigation in data center designs | Most commercial project designs are based on the building being a high occupancy, low power density facility. Data centers, on the other hand, are low occupancy, high power density facilities and therefore view the role of the power distribution system differently. Not all arc flash mitigation techniques are widely accepted in data center designs. This discussion will highlight the arc flash hazards encountered in data center designs, and review methods to reduce the hazards. |
| 249437 | Lower your carbon footprint with a greener data center energy strategy | Today, many data center owners are taking strides to improve their carbon footprint. For example, some are using power purchase agreements to negate their emissions, but that strategy has some unintended consequences. How can we take sustainability to the next level? Can renewables and microgrids play a meaningful role in the data center? Join this session to discuss the challenges and what the data center energy landscape may look like in 5-20 years. |
| 249984 | Improving asset utilization in data center critical power systems | Data center designs were historically based on system plus system designs. These designs limited the asset utilization in the critical power infrastructure to less than 50%. Current data center designs are focused on reducing cost by increasing the asset utilization without compromising on reliability. Several designs will be examined including Isolated Parallel Ring Bus (IPBR) for static UPS modules. |

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# Applications and Best Practices: Unique Industries

## Food and Beverage

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 245920 | ABB Ability™ Electrical Distribution Control System: The Ability to send power to the bottom line |
| | 2:30 PM | 3:30 PM | 249843 | What is my ABB Ability™ Smart Sensor for mounted bearings telling me? |
| | 4:00 PM | 5:00 PM | 233883 | RobotStudio virtual reality |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 249793 | Reliable and sustainable power for food and beverage facilities |
| | 1:30 PM | 2:30 PM | 249761 | Starting your roadmap towards digitalization |
| | 3:00 PM | 4:00 PM | 249805 | Advanced digitalization in the food and beverage industry |
| | 4:30 PM | 5:30 PM | 249796 | Sustainability in food and beverage: The key to meeting profitability and environmental objectives |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 249825 | Improving productivity and reducing costs with a comprehensive plant assessment |
| | 1:30 PM | 2:30 PM | 249794 | How disruptive technologies will impact food and beverage production in the future |
| | 3:00 PM | 4:00 PM | 249770 | Automation and adaptive solutions to meet the demands of the changing consumer |
| | 4:30 PM | 5:30 PM | 249776 | The elements of hygienic design and its importance for a food safety program |
| Thursday March 7 | 10:00 AM | 11:00 AM | 246317 | Ethernet connectivity in drives: Tired of your current drive offering for your existing architecture? |
| | 11:30 AM | 12:30 PM | 244227 | Operational equipment effectiveness for brownfield machine installations |
| | 1:45 PM | 2:45 PM | 246277 | Using variable frequency drives to reduce the costs of harmonic mitigation |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 245920 | ABB Ability™ Electrical Distribution Control System: The Ability to send power to the bottom line | Monitor, manage and optimize facility energy consumption, anytime from anywhere, with ABB Ability™ Electrical Distribution Control System (EDCS). It is the innovative cloud-based platform which works via smartphone, tablet or computer in real time to optimize energy use and costs. Flexible, scalable and easy to implement, the ABB Ability™ EDCS simplifies building management, offers predictive capabilities that reduce downtime and maintenance, and enables users to dramatically reduce operational costs. Join us to learn how ABB Ability™ EDCS can add significantly to your bottom line. |
| 249843 | What is my ABB Ability™ Smart Sensor for mounted bearings telling me? | The ABB Ability™ Smart Sensor for mounted bearings is an entry level solution into the market of condition monitoring and the industrial internet of things (IIoT). This solution can provide information and trending analyses to help reduce unscheduled downtime and unplanned maintenance while keeping employees out of harm's way. Join us to learn about how overall vibration, temperature and statistical KPIs, together with the capAbility™ of fault detection, can benefit you and your processes. |
| 233883 | RobotStudio virtual reality | RobotStudio® is not only our best offline programming, simulation and communication tool for ABB robots, but one of the most capable robotics tools in the industry. This software is consistently evolving and being developed, and today we have virtual reality (VR) capabilities that are above and beyond most customers' expectations. It provides capabilities for remote support and remote collaboration between engineers sitting at different locations. |
| 249793 | Reliable and sustainable power for food and beverage facilities | The way we process and package our food has undergone a revolution with high levels of automation, monitoring and information systems. This has been driven by not only productivity improvement needs, but also by a host of food safety requirements. Due to the high degree of automation, the quality of electrical power becomes business critical. Join us as we discuss the critical power technologies and solutions available today to ensure uptime, reduce power quality events and ensure energy savings while optimizing costs. |
| 249761 | Starting your roadmap towards digitalization | The food and beverage industry faces unique challenges with digitalizing operations due to individualized processes, high fluctuation in commodity prices and competitive product introductions. Looking ahead, digital technology offers tremendous opportunity that will soon cease to be optional — knowing how, when, and where to introduce digital tech into your food and beverage plant can put you ahead of the game. Attend this workshop to create your road map and start your journey towards digitalization to unveil new ways of improving profitability. |
| 249805 | Advanced digitalization in the food and beverage industry | Today’s most pressing concerns for the food and beverage industry include the need to optimize energy consumption, reduce material use and inventory costs, and increase asset utilization and throughput. Other priorities include the need to improve quality and reduce variations, errors and waste while maximizing traceability and fulfilling regulatory compliance. Learn more about the benefits and challenges associated with the new age of industrial digitalization. We will examine multiple technologies that can be applied to control your processes and advance your digitalization journey. |
| 249796 | Sustainability in food and beverage: The key to meeting profitability and environmental objectives | Sustainability is a key driver for the health of the environment and for profitable growth. In this session, we will discuss the technology and best practices that can be implemented at all levels of a food and beverage facility to meet demand and sustainability objectives. From water reuse to energy efficient components, we will evaluate multiple sustainability options and which investments can have the most immediate impact on profitability and the environment. |
| 249825 | Improving productivity and reducing costs with a comprehensive plant assessment | Improving productivity, optimizing quality and making the most of resources is tightly linked to a company’s profitability. From digitalization and process improvement to energy efficiency and automation, you need solutions that keep your production sustainable and reduce your maintenance costs while assuring high plant integrity. Attend this session to learn more about optimizing your plant’s efficiency and staying more competitive with a comprehensive plant assessment. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 249794 | How disruptive technologies will impact food and beverage production in the future | Augmented reality, artificial intelligence, blockchain, 3D food printing, even Fitbits for cows – what disruptive technologies do you anticipate we will see in the food and beverage industry? Join our distinguished panel of experts as we think outside of the box and discuss how cutting edge technology will be applied in food and beverage production and the potential impact and benefits to the industry and the consumer. |
| 249770 | Automation and adaptive solutions to meet the demands of the changing consumer | Attend this session to learn how processing and packaging robotic automation solutions and the new generation of adaptive machinery can reduce total cost of ownership, improve and maintain quality and consistency, and provide the flexibility needed for the changing trends in the industry. Discover how to meet the changing consumer demands of high volume/low mix to low volume/high mix variants, leading to increased output, higher yield, reduced waste and a cost-effective answer to mass customization and ultimately, batch size one. |
| 249776 | The elements of hygienic design and its importance for a food safety program | In recent years, there have been several serious foodborne illness outbreaks. While inadequate cleaning and sanitizing programs are often to blame, poor equipment design can also be a factor in these outbreaks. In this course, we will review food equipment hygienic design standards and the technology available today that can improve cleanability and decrease the risk of biological contamination to improve your food safety program. |
| 246317 | Ethernet connectivity in drives: Tired of your current drive offering for your existing architecture? | Your current system is likely based on a choice made long ago. That doesn't mean you're stuck with the antiquated or underperforming drives you originally chose. We've made it exceedingly easy for you to integrate ABB drives into your solution without having to replace the whole system. In this session, we will discuss Ethernet/IP and various add-on instruction solutions for seamless integration into the Rockwell environment for new systems, or for replacing your existing Rockwell drives in RSLogix 5000 or Studio 5000. |
| 244227 | Operational equipment effectiveness for brownfield machine installations | Acquiring deep insight into machines is essential to enhance productivity and efficiency. Developing such functionality in brownfield machines is a strenuous task. Orange Box, the result of our decades of experience in machine and factory automation, is a perfect solution to get operational equipment effectiveness (OEE), identify the most common stoppages, generate machine operation reports and beyond. Join us to learn more about this innovative solution. |
| 246277 | Using variable frequency drives to reduce the costs of harmonic mitigation | Adding non-linear loads, such as variable frequency drives (VFDs) or data centers, to electrical networks can create harmonics. IEEE 519-2014 provides updated harmonic limit requirements, and where and how they should be measured. This session covers the various methods that can be used to mitigate harmonics and includes various examples, with calculations and measurements showing how each method effects capex, opex and the risk of downtime. |

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# Applications and Best Practices: Unique Industries

## Mining, Mineral Processing and Cement

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 246243 | Increasing conveyor system reliability using a systematic failure modes monitoring approach |
| | 2:30 PM | 3:30 PM | 245861 | ABB Ability™ Predictive Maintenance for grinding: A cloud based platform for the grinding power train |
| | 4:00 PM | 5:00 PM | 249178 | Results from deployment of a condition monitoring system integrated to a control system (AssetVista) |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 242824 | Optimized model based control of main mine ventilation air flows at the Boliden Garpenberg mine |
| | 1:30 PM | 2:30 PM | 245825 | Improving operation and maintenance of grinding mills through a digital workstation |
| | 3:00 PM | 4:00 PM | 249205 | A digital application to monitor the industrial electrical system |
| | 4:30 PM | 5:30 PM | 234335 | Closing the loop between APC and condition monitoring for maximized profitability and availability |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 239076 | Operator effectiveness with VisualControl graphics |
| | 1:30 PM | 2:30 PM | 249729 | Operator effectiveness and the control room in the age of digitalization |
| | 3:00 PM | 4:00 PM | 245799 | Mission critical communications fuel the benefits of the digital mine |
| | 4:30 PM | 5:30 PM | 245821 | Fixed versus variable speed grinding mill: Total cost of ownership |
| Thursday March 7 | 10:00 AM | 11:00 AM | 250016 | Achieve process and operational improvements by evolving third party DCSs to System 800xA |
| | 11:30 AM | 12:30 PM | 250319 | Reduce meantime to service resolution through focused application of augmented reality technologies |
| | 1:45 PM | 2:45 PM | 246236 | Closing the loop between mine short term planning and real-time mine operation takes ability |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 246243 | Increasing conveyor system reliability using a systematic failure modes monitoring approach | Presently, the healthiness of the conveyor belt is largely determined through physical inspections at regular intervals and time based maintenance. However, conveyor belt damage happens between these activities, causing huge production and time losses to plants. This session will explain how some traditional maintenance gaps in the conveyor condition based monitoring can be filled through the application of systematic failure modes monitoring. This monitoring takes advantage of existing digital data, delivering valuable information on potential failures of the conveyor systems. |
| 245861 | ABB Ability™ Predictive Maintenance for grinding: A cloud based platform for the grinding power train | During the past few decades, the maintenance paradigm has shifted from corrective/ preventive to predictive maintenance in order to improve availability of assets. Predictive maintenance, in contrast to the former paradigms, continuously monitors assets and offers condition-based maintenance. In order to develop reliable condition based maintenance, data has to be collected, stored and analyzed using specially advanced signal processing and machine learning techniques. We will show a holistic fleet condition monitoring cloud platform in mining that benefits from Microsoft Azure and ABB Ability™. |
| 249178 | Results from deployment of a condition monitoring system integrated to a control system (AssetVista) | This study presents the results of integrating a condition monitoring system to a process control system, with more than 6700 assets installed in an iron processing plant. The implementation focused on early diagnosis and optimization of maintenance planning activities. Some advantages of integrating operational and maintenance data into a single management system include: break silos of information across maintenance and operation teams; detect problems that cannot be identified using current predictive techniques; and present holistic figures of plant assets, which can be drilled down into. |
| 242824 | Optimized model based control of main mine ventilation air flows at the Boliden Garpenberg mine | The Boliden Garpenberg mine has implemented optimized control on top of already existing ventilation on demand functionality. The control aims to minimize energy use of main and booster fans, while fulfilling all airflow setpoints without violating any constraints. Using air flow measurements and a model of the ventilation system, the control adjusts the involved fan's speeds. The numerical model is data driven and easily derived using historical operational data and experiments involving step changes. The results prove a 40% decrease in energy use and greater controllability of air flows. |
| 245825 | Improving operation and maintenance of grinding mills through a digital workstation | With the newly developed GrindingCockpit digital platform, ABB is lifting its grinding offerings to the next level by providing a location independent visualization, control and troubleshooting tool. The GrindingCockpit allows an enhanced and simplified workstation for customers to operate their grinding equipment under optimal conditions and allows easy and remote troubleshooting. This presentation will highlight the newly developed tool, which is improving the whole range of interactions by boosting the effectiveness of commissioning, maintenance, operation and remote support. |
| 249205 | A digital application to monitor the industrial electrical system | System 800xA MIDAS Library was originally conceived as a solution for a more intuitive system with quick information access to improve the plant supervision at the control room. Now, ABB Ability™ System 800xA Power Control Library, part of the ABB Ability™ digital solutions portfolio, connects digital substations from distant places into System 800xA. It enhances not only the visibility of the substations, but also improves safety for personnel by reducing the time spent in the field exposed to electrical danger. |
| 234335 | Closing the loop between APC and condition monitoring for maximized profitability and availability | Advanced process control (APC) is an established part of the digital mining landscape. It allows for significant benefits with minimal investment. Condition monitoring plays an important role in being able to predict equipment wear and failure. Combining APC with condition monitoring closes the loop between predicting equipment wear and failure and the required corrective actions, such as continuous online shoulder and toe angle optimization. The marriage of these two digital technologies allows for an even greater increase in productivity with minimized equipment wear and unexpected downtime. |
| 239076 | Operator effectiveness with VisualControl graphics | The ABB Ability™ System 800xA Minerals Process Control Library is a tailor-made automation solution for the mining and cement industries. It's an extensive set of software modules designed to achieve the highest plant productivity, availability and safety, and the best operator efficiency. VisualControl is the next generation of the Minerals Process Control Library graphics, developed to deliver improvements including improved information handling, proactive instead of reactive abnormal situation management (ASM) and a high level of workplace customization. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 249729 | Operator effectiveness and the control room in the age of digitalization | Digitalization is transforming nearly every aspect of our lives by improving efficiency, collaboration and by closing the loop between data and action. When implemented properly, utilities can become self-sustaining, predictive, adaptive and able to evolve by learning from the past. The DCS is crucial to this success. With old, obsolete control rooms, operators are significantly distracted, impairing the generator from capitalizing on or even generating actionable data. Changing the control room to an operations-centric model is necessary to achieve the efficiency benefits of digitalization. |
| 245799 | Mission critical communications fuel the benefits of the digital mine | This session addresses the communications issues associated with the digital mine and how to ensure that your critical communications infrastructure is ready for the demands of digitalization. The rapid growth in data and devices resulting from the digital mine requires a highly reliable and secure communications infrastructure to handle the device connectivity and volume of data. We will focus on realizing the full benefits of the digital mine by ensuring that your communications infrastructure is ready for the digitalization challenge. |
| 245821 | Fixed versus variable speed grinding mill: Total cost of ownership | In today's market, it is critical to extract the most out of a plant's assets. For an efficient grinding process, the operator must manage to achieve high throughput, without producing return, while adjusting the mill feed according to the mill load. While doing this, he or she must keep in mind that pushing the mill too much will result in increased wear. This challenging task cannot be easily accomplished without all the necessary tools available. This presentation will provide a comparison between fixed and variable speed grinding mills and concludes with a return of investment analysis. |
| 250016 | Achieve process and operational improvements by evolving third party DCSs to System 800xA | Realize process and operational improvements with step-by-step evolution strategies for the replacement of all or parts of competitive control systems within your organization. This session will include a demonstration of the advanced conversion and connectivity tools that ABB utilizes for these projects. A number of customer case studies will also be covered in this session. |
| 250319 | Reduce meantime to service resolution through focused application of augmented reality technologies | In many process and manufacturing industries, producers "fly blind" if critical automation technologies do not operate at maximum availability. Meeting production requirements with high quality assurance is at risk if automation experiences downtime or issues that impede production visibility. Commercially available augmented reality wireless "wearable" computer headsets are imparted with ABB maintenance strategies, documentation, guidance, access to expertise and other best practices to improve effectiveness of field service technicians, thus improving asset and production availability. |
| 246236 | Closing the loop between mine short term planning and real-time mine operation takes ability | In an open-pit or underground mine operation, the weekly production schedule is divided into days, shifts and hours for detailed planning and scheduling of resources. This might seem simple, but manual scheduling is a time-consuming and complex process with hundreds of simultaneous activities and affecting factors. We will demonstrate, in practice, how two features of the ABB Ability™ Operations Management System, automated scheduling and short interval control, allow for re-planning in seconds instead of hours, with transparent production and quicker response to unexpected events. |

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# Applications and Best Practices: Unique Industries

## Oil and Gas

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 246242 | Leveraging AI in process industries |
| | 2:30 PM | 3:30 PM | 249469 | Designing a scalable road map for your digital strategy in oil and gas |
| | 4:00 PM | 5:00 PM | 242746 | Optimizing energy consumption and storage for drilling operations |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 249471 | Innovation: What's driving the energy future for oil and gas? |
| | 1:30 PM | 2:30 PM | 245701 | HVDC power from shore: Effective, reliable and flexible solutions to power oil and gas platforms |
| | 3:00 PM | 4:00 PM | 250160 | Data centric engineering: Transform automation and electrical systems to save on cost and time |
| | 4:30 PM | 5:30 PM | 249478 | The digital oil field: How can technology improve onshore operations? |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 250018 | Expert session on simplifying the design process for tomorrow's control rooms |
| | 1:30 PM | 2:30 PM | 249474 | Innovation in project execution strategies |
| | 3:00 PM | 4:00 PM | 243602 | Human factors and their impact on plant safety |
| | 4:30 PM | 5:30 PM | 249493 | Case study: Effective rotating machine maintenance through failure detection and damage predictions |
| Thursday March 7 | 10:00 AM | 11:00 AM | 249489 | Approaching the finish line: Subsea electrification no longer just a dream |
| | 11:30 AM | 12:30 PM | 249473 | Cyber security: How to ensure you are protecting your oil and gas assets and keeping them safe |
| | 1:45 PM | 2:45 PM | 249325 | Incident response: We've been hacked! Now what? |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 246242 | Leveraging AI in process industries | Artificial intelligence (AI) is one of the cornerstone of digitalization, and ABB is investing heavily in this key technology. A collaboration between the digital team, corporate research and industrial automation business units has led to the development a new machine-learning-based advanced process control and analytics (APCA) solution. In this presentation, various case studies will be presented to demonstrate how this technological innovation is being leveraged to improve plant operations in the process industries. |
| 249469 | Designing a scalable road map for your digital strategy in oil and gas | Digitalization allows industrial companies to get a highly granular view of their assets that, when viewed in conjunction with data from more traditional business systems, can generate faster and better insights to drive competitive advantage. Using a scalable road map for oil and gas operators, this session will discuss how analytics and big data technologies provide insights into production, maintenance efficiency and safe operations, and enable efficient business processes. |
| 242746 | Optimizing energy consumption and storage for drilling operations | With capex more than 65% of production costs related to wellhead drilling, significant savings can be achieved for overall operations. Advancements in technology provide several different options for reducing fuel-related costs in upstream applications. Join our panelists as they discuss these technologies and explore how to improve drilling operations as well as reduce emissions. |
| 249471 | Innovation: What's driving the energy future for oil and gas? | The energy ecosystem is evolving. Technological advancements, collaboration across companies, and shifts in business models are creating new opportunities for oil and gas players. We've gathered a panel of industry experts from across academia, government and industry to discuss these trends and how they are helping shape the energy industry of tomorrow. |
| 245701 | HVDC power from shore: Effective, reliable and flexible solutions to power oil and gas platforms | By replacing costly and bulky onboard electrical generating systems, a power-from-shore solution can eliminate platform CO2 emissions entirely. It also increases available space, reduces weight on the platform and improves the working environment. In addition, cable systems are easier to maintain than rotating generators. Join this session to see how ABB's HVDC Light power from shore system is a proven technology that provides significant benefits to customers who need reliable power in remote places. |
| 250160 | Data centric engineering: Transform automation and electrical systems to save on cost and time | Digitalization is a theme most industrial companies today are discussing. Taking these discussions and applying them to real practice is where the true challenge lies. One basic example is the ability to install a completely new automation or electrical system with only a few clicks. If smart systems are integrated, when one change is made, the as-built documentation for the entire system could be automatically updated, eliminating errors and saving significant time and money. Join this session to hear perspectives from industry experts on how these technologies are evolving. |
| 249478 | The digital oil field: How can technology improve onshore operations? | The internet of things (IoT) and related technologies are making inroads in just about every sector of the economy, and the oil and gas sector is no different. But how do you actually apply IoT to your onshore operations? What steps can you take to uncover value quickly and integrate systems across a diverse fleet? Join this session to discover how leveraging technology and the right data can help you not only work more efficiently and more effectively but also more safely by limiting the time you need to spend in the field. |
| 250018 | Expert session on simplifying the design process for tomorrow's control rooms | By focusing on control room design well in advance of construction, a flexible and future-proof design can be developed according to current human factors standards, optimizing footprint and operator efficiency and comfort. By utilizing digital technologies in an integrated 24/7 collaboration environment, you can not only attract a new generation of operators but also ensure your team has the best possible collaboration tools for optimum trouble shooting, decision making and operations. Attend this session to learn how to take your control room to the next level. |
| 249474 | Innovation in project execution strategies | Some of the biggest problems in the chemical, oil and gas industries today are capital project delays and budget overruns. Aligning technology, processes and standardization in the project execution phase not only reduces risk but also significantly lowers cost. Join us as we examine case studies on how leveraging technology keeps projects on track and on budget. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 243602 | Human factors and their impact on plant safety | Today, as operators are tasked with numerous activities, is it reasonable to expect they'll be able to respond appropriately to all conditions? This session discusses some of the capabilities available in a modern automation system. We'll explore how to apply innovative control room planning and technology to support decision making and help humans handle abnormal situations in a safe and effective manner. We will also present results from research centered on operator health and discuss how the impact of an intelligent and ergonomic workspace can both mitigate risk and increase productivity. |
| 249493 | Case study: Effective rotating machine maintenance through failure detection and damage predictions | Over the last few years, ABB and BASF have worked together on a co-creative research project with a focus on effective execution of inspection and maintenance of rotating assets in industrial plants. This collaboration has resulted in algorithms for detection of failure modes, models to predict damage that leads to potential faults, and analytics based on sensor signals and data from the maintenance management system to manage fleets of standard rotating equipment. This session will give an overview of the project and the results, as well as how it can be applied to provide value. |
| 249489 | Approaching the finish line: Subsea electrification no longer just a dream | The "grand challenge" of placing power infrastructure on the seabed offers significant economic and technical advantages but also places extreme demands on the reliability, uptime and safety of the technology. ABB is about to complete a joint industry project (JIP) together with Equinor, Total and Chevron, in which we develop and qualify a collection of products (including full scale prototypes) enabling a highly reliable, fully qualified and market-ready subsea electrification and distribution system. This development will allow the industry to reach more extreme locations than ever before. |
| 249473 | Cyber security: How to ensure you are protecting your oil and gas assets and keeping them safe | Today's industrial plants are vulnerable to cyber attacks that would not only halt production but could also have a devastating impact on health and safety. Oil and gas companies of all sizes must take steps to secure their data and systems in the ever growing threat landscape. Join this session to hear more about the steps you can take to manage your cyber assets, stay current with the latest cyber technologies and keep your plant as safe as possible. |
| 249325 | Incident response: We've been hacked! Now what? | Join this session to review incident response best practices and lessons learned from ABB's Global Cyber Security Incident Response Team (CSIRT). We will review hacker techniques, incident response planning basics and the fundamental process of responding to an incident. We will also review lessons learned from previous cyber security incidents. |

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# Applications and Best Practices: Unique Industries

## Pharmaceutical

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 245315 | Apply advanced process analytical technology (PAT) to achieve quality by design |
| | 2:30 PM | 3:30 PM | 245914 | Delivering value with digital solutions |
| | 4:00 PM | 5:00 PM | 245319 | Set your baseline: Application change management, versioning and engineering GMP with System 800xA |
| Tuesday March 5 | 1:30 PM | 2:30 PM | 245316 | Batch management: Key for meeting your quality and productivity goals |
| | 3:00 PM | 4:00 PM | 250316 | Keys to effectively deploying a reliability centered maintenance strategy that maximizes asset life |
| | 4:30 PM | 5:30 PM | 245323 | Digitalize your factory: Shop floor integration for pharmaceutical equipment |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 245309 | Virtualized control system architectures deliver improved business performance |
| | 1:30 PM | 2:30 PM | 249494 | Modular enabled automation solutions for the process industry |
| | 3:00 PM | 4:00 PM | 249452 | Get more from System 800xA |
| | 4:30 PM | 5:30 PM | 249200 | Laser level measurement in life sciences |
| Thursday March 7 | 10:00 AM | 11:00 AM | 250016 | Achieve process and operational improvements by evolving third party DCSs to System 800xA |
| | 11:30 AM | 12:30 PM | 245313 | Streamline operations with secure MES integration between 800xA and Werum IT's PAS-X (GE case study) |
| | 1:45 PM | 2:45 PM | 249462 | Digitalization is the way to the future – and it's here today! |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 245315 | Apply advanced process analytical technology (PAT) to achieve quality by design | The emergence of pharmaceutical quality by design (QbD) promises reduced manufacturing costs, improved product quality and reduced time to market. QbD requires thorough and real-time knowledge about your production process. Learn how ABB Ability™ System 800xA provides tools to implement process analytical technology (PAT) management concepts and enable “release by exception” production. |
| 245914 | Delivering value with digital solutions | How can you better plan, build, operate and maintain your plant? By focusing on improving availAbility™, productivity, quality, safety and security. Customer cases will show how ABB Ability™ Services have helped customers in various industries to know more, do more, do better, together. |
| 245319 | Set your baseline: Application change management, versioning and engineering GMP with System 800xA | Version management is one of the most important topics in regulated industries. Not only when, where and who, but also proper versioning, difference reports and search functionality. System 800xA Application Change Management (ACM) provides this enhanced functionality. Understand the functions and features of System 800xA to establish engineering good manufacturing practice (GMP). |
| 245316 | Batch management: Key for meeting your quality and productivity goals | With ABB Ability™ System 800xA Batch Management, experience the power of one of the most advanced, intuitive, fully integrated batch management engines and its latest features. |
| 250316 | Keys to effectively deploying a reliability centered maintenance strategy that maximizes asset life | This session explores the elements to effectively deploy a reliability centered maintenance (RCM) strategy that supports operational excellence and financial performance. Run-to-failure (RTF), preventive maintenance (PM), predictive maintenance (PdM) and condition-based maintenance (CBM) are common. A blend of RTF and PM is the typical approach for many industrial plants. The challenge is to develop a balanced strategy that ensures asset performance, process availability and low life cycle cost. An RCM strategy provides this balance. |
| 245323 | Digitalize your factory: Shop floor integration for pharmaceutical equipment | Many pharmaceutical production lines are well established, yet not very transparent with typical local machine-centric control. Learn how you can create a digital twin of your installed equipment to bring your equipment into the digital world. Whether you have a manufacturing execution system (MES) or an 800xA DCS, digitalization is possible. |
| 245309 | Virtualized control system architectures deliver improved business performance | Virtualization technology has many benefits beyond the reduction of server machines. This panel discussion will look at decision making processes and implementation practices for using virtualization for a process automation infrastructure and the resulting effect on plant availability and reliability. Come to this session to see if virtualization is right for you and your business. |
| 249494 | Modular enabled automation solutions for the process industry | Modular automation is the cornerstone of future process plants and crucial in the chemical and pharmaceutical industries, enabling reduced time to market, increased automation efficiency and higher flexibility. Modular automation is the future for flexible process plant production and a key element for the industrial internet of things (IIoT) and Industry 4.0. This technology helps process industries that face requirements such as more customized products, shorter delivery times and smaller batch series. Join this session to learn more. |
| 249452 | Get more from System 800xA | In this session, we will cover assessing the performance of your System 800xA in order to determine the best configuration settings. Some items we'll discuss include determining proper configuration of network settings, monitoring computer and controller performance, determining if the aspect database is in good health and checking domain core functionalities. Correcting and monitoring some of the items covered in this session can help resolve intermittent connectivity issues, accelerate graphic call up times and catch system degradation. |
| 249200 | Laser level measurement in life sciences | Laser level measurement is an innovative way to perform non-contact industrial level measurement. It brings all the advantages of non-contact measurement without the problems of the typical echo mapping or baseline correction required by other technologies. It provides easy and low cost installation, in addition to enabling many new applications due to the use of its narrow laser beam. This session will provide an overview of the product and its successful applications in the life science world. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 250016 | Achieve process and operational improvements by evolving third party DCSs to System 800xA | Realize process and operational improvements with step-by-step evolution strategies for the replacement of all or parts of competitive control systems within your organization. This session will include a demonstration of the advanced conversion and connectivity tools that ABB utilizes for these projects. A number of customer case studies will also be covered in this session. |
| 245313 | Streamline operations with secure MES integration between 800xA and Werum IT's PAS-X (GE case study) | Digitalization of your plant requires transparent vertical integration from enterprise resource planning (ERP) to the shop floor. Since 2015, ABB and Werum IT Solutions have developed and delivered a lightweight, cyber secure message based integration of their two market leading products, System 800xA and PAS-X. Learn how you can simplify how you manage and make decisions in the ISA-95/S88 layer by providing cost effective, standardized and totally integrated solutions throughout the complete life cycle of your operations. We will also include a GE case study as part of the discussion. |
| 249462 | Digitalization is the way to the future – and it's here today! | In this panel discussion, service and maintenance leaders will discuss how digitalization is unlocking the potential of the future. Learn how digital sensors, advanced analytics, virtual reality (VR) and augmented reality (AR) will help you improve availability, productivity, quality, safety and security. |

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# Applications and Best Practices: Unique Industries

## Pulp and Paper

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 245714 | The realities and successes of Industry 4.0 in pulp and paper operations |
| | 2:30 PM | 3:30 PM | 250163 | Advanced Process Control methods for achieving control and optimization objectives |
| | 4:00 PM | 5:00 PM | 250513 | Diagnosis and optimization of paper machine grade change transitions |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 243584 | System 800xA overview and update |
| | 1:30 PM | 2:30 PM | 249342 | Cloud applications: Digital trust and leveraging analytics |
| | 3:00 PM | 4:00 PM | 245372 | How to perform sensor correlation “the right way” |
| | 4:30 PM | 5:30 PM | 249477 | The journey towards autonomy in industrial operations |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 249963 | Digital twins; Accelerating the pace of innovation in machine design |
| | 1:30 PM | 2:30 PM | 246210 | ABB Ability™ Collaborative Operations: Patented winder controls, data analytics improves performance |
| | 3:00 PM | 4:00 PM | 243602 | Human factors and their impact on plant safety |
| | 4:30 PM | 5:30 PM | 249328 | Securing IIoT gateways and devices |
| Thursday March 7 | 10:00 AM | 11:00 AM | 249971 | Industrial demand-side energy management in the paper industry |
| | 11:30 AM | 12:30 PM | 249965 | Improving process visibility and reducing costs using the ABB Ability™ Optimization Solutions for pulp mills |
| | 1:45 PM | 2:45 PM | 249462 | Digitalization is the way to the future – and it's here today! |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 245714 | The realities and successes of Industry 4.0 in pulp and paper operations | ABB Ability™ is having a transformative impact on the pulp and paper industry. This workshop will review the incremental business benefits to the various ABB Ability™ engagements and opportunities. We will examine the likely areas of benefit and review the likely starting points. We will also discuss ABB Ability™ implementation examples and the results achieved. |
| 250163 | Advanced Process Control methods for achieving control and optimization objectives | Multivariable Model Predictive Control (MPC) and Advanced Regulatory Control (ARC) are two very effective Advanced Process Control (APC) methods to achieve control and optimization objectives, such as more stable operation, improved efficiency and increased throughput. MPC, ARC or a combination of the two can be utilized. Some examples of applications using MPC and ARC will be provided to show how the controls can be designed in different ways to achieve these goals. We will also examine the advantages of each, along with limitations, as well as choosing an approach for a specific application. |
| 250513 | Diagnosis and optimization of paper machine grade change transitions | The continued drive for more frequent grade changes on paper machine operations is a constant challenge and drives reduction in lost production during the grade change transition period. Everything from standard operating procedures to control loop responsiveness must be considered for consistent grade change performance. The ability to quantify and track performance is one of the keys to the success of any grade change improvement project. This session will present recommended methods for quantifying, prioritizing and improving grade change transition performance. |
| 243584 | System 800xA overview and update | Come to this session to learn what System 800xA is all about, along with highlights of the recently released version of System 800xA, version 6.1, including new flexible I/O offerings, safety controllers and engineering tools, just to name a few. In addition, we'll look into the near future and the valuable features that will soon follow. |
| 249342 | Cloud applications: Digital trust and leveraging analytics | ABB Ability™ is a pioneering solution that provides the industry with comprehensive control and analytics features for performance optimization and to identify anomalous activities for increased security. With the increasing risk of information leakage during digitalization, we showcase the security mechanisms currently used by ABB Ability™ that protect our customers' data. As we research more privacy-preserving data solutions as well as analytics to improve security, ABB is in a strategic position to engage more customers by protecting extremely sensitive data and business interests. |
| 245372 | How to perform sensor correlation "the right way" | Sensor correlation is needed at every paper mill to ensure the online sensor measurements match their laboratory results. The deviation between sensor and lab mainly comes from three areas: sensor accuracy, process variations and lab test accuracy. We will introduce the ABB Sensor Correlation Service to audit processes and methods in order to improve the accuracy of quality measurement and comply with the Technical Association of Pulp and Paper Industry (TAPPI) standards. We will provide examples to illustrate customer issues and recommendations with proper standard operating procedures. |
| 249477 | The journey towards autonomy in industrial operations | Businesses in the industrial space have undergone a paradigm shift to move from isolated operations to collaborative and ultimately more autonomous operations. By 2025 we will witness humans working with systems in a collaborative way, leveraging artificial intelligence (AI) seamlessly. Disruptive technologies like AI, machine learning and augmented reality (AR) have all changed the way we do everyday tasks and in some cases made them autonomous. In this session, we will demonstrate how hands-free collaboration can help repair remote issues or predict plant incidents before they ever happen. |
| 249963 | Digital twins; Accelerating the pace of innovation in machine design | New market trends and consumer demand are forcing modern factories to adopt new approaches to manufacturing. These require machines to be more configurable and highly adaptive, while managing a higher throughput and larger product configurations. Machines cycles have become more complex, requiring a higher degree of synchronization. Simulation can be used to develop digital twins, which allow for rapid prototyping and the development of complex sequencing algorithms, in a virtual environment, without the need to build expensive prototypes. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 246210 | ABB Ability™ Collaborative Operations: Patented winder controls, data analytics improves performance | Winder performance service powered by ABB Ability™ Collaborative Operations for pulp and paper helps to address winder productivity challenges and bottlenecks. This case study will highlight our patented winder optimization solution to improve winder performance by utilizing all available capacity in drive systems to deliver its full capacity. This solution helps winders with their acceleration and deceleration to improve productivity, roll quality and the availbility of winder. ABB Ability™ Collaborative Operations implementation examples and results achieved will be presented. |
| 243602 | Human factors and their impact on plant safety | Today, as operators are tasked with numerous activities, is it reasonable to expect they'll be able to respond appropriately to all conditions? This session discusses some of the capabilities available in a modern automation system. We'll explore how to apply innovative control room planning and technology to support decision making and help humans handle abnormal situations in a safe and effective manner. We will also present results from research centered on operator health and discuss how the impact of an intelligent and ergonomic workspace can both mitigate risk and increase productivity. |
| 249328 | Securing IIoT gateways and devices | Hardware-based trust serves as the foundation to securing industrial internet of things (IIoT) gateways and devices that collect, process and forward sensitive business data to connected cloud platforms. Learn more about how ABB Ability™ is following the Endpoint Security Best Practices (ESBP) from the Industrial Internet Consortium (IIC) to achieve a high level of trust in a connected world. Understand what's required to transfer data from a trustworthy device to a secure cloud. |
| 249971 | Industrial demand-side energy management in the paper industry | In this session, we will present an energy management solution for using electricity during low-price periods in the electricity spot market for a refined mechanical pulp (RMP) plant. The solution takes advantage of real-time process and energy price information, while factoring in relevant process restrictions in the plant. It not only enables rescheduling electricity usage to low-price periods whenever possible, it also provides an accurate electricity consumption forecast, which may be utilized in more cost-efficient planning of overall energy use, production and purchase. |
| 249965 | Improving process visibility and reducing costs using the ABB Ability™ Optimization Solutions for pulp mills | The Pulp Tracking module in the ABB Ability™ Optimization Solutions for pulp mills provides complete visibility of fiber line operations from wood yard to final high density storage towers and then to pulp sheet dispatches, allowing end-to-end traceability of products. Tracked variables are historized and used in advanced control to manage smooth grade changes while minimizing off-spec pulp. This optimizes production rate changes and reduces quality variations, thereby improving margins. A recent installation of the pulp quality fingerprint module in a European mill showed significant benefits to pulp mill operations. |
| 249462 | Digitalization is the way to the future – and it's here today! | In this panel discussion, service and maintenance leaders will discuss how digitalization is unlocking the potential of the future. Learn how digital sensors, advanced analytics, virtual reality (VR) and augmented reality (AR) will help you improve availability, productivity, quality, safety and security. |

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# Applications and Best Practices: Unique Industries

## Transportation and the Grid

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 245469 | EV 101: Electric vehicles and charging, a primer |
| | 2:30 PM | 3:30 PM | 250010 | Grid modernization and the integration of renewable generation |
| | 4:00 PM | 5:00 PM | 249298 | Cyber security: The backbone of digitalization |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 249677 | Electrifying transit: Clean, smart and cost effective solutions for public transportation |
| | 3:00 PM | 4:00 PM | 245376 | Energy storage in railways: How this technology benefits both transit operator and power utility |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 245475 | EVs on the horizon: The “big battery” push for next gen charging infrastructure |
| | 1:30 PM | 2:30 PM | 250170 | The role of DERs in renewable integration and resolving California’s solar glut |
| | 3:00 PM | 4:00 PM | 246298 | One on one conversation: Common questions from customers on BESS |
| | 4:30 PM | 5:30 PM | 245479 | From duck to dragon: How EV charging connectivity and intelligence turns a box into a grid savior |
| Thursday March 7 | 10:00 AM | 11:00 AM | 245472 | If you build it, will they come? EV infrastructure business and operational models that work |
| | 11:30 AM | 12:30 PM | 245292 | The future of electric and hybrid power systems in marine |
| | 1:45 PM | 2:45 PM | 239721 | How ABB digitalization and propulsion solutions are shaping the shipping industry |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 245469 | EV 101: Electric vehicles and charging, a primer | Electric vehicles (EVs) have come a long way in just a short few years. With more than a million plug-in vehicles already on U.S. roads, and billions of dollars being invested by traditional and new vehicle makers, the EV market has changed dramatically from curiosity to disruptive force impacting the entire transportation sector. Still, there are still many myths and misconceptions about EVs and charging infrastructure. This session will cover the basics on EVs, why the market is growing, and the charging infrastructure technologies will meet their needs today and in the future. |
| 250010 | Grid modernization and the integration of renewable generation | This session will discuss grid modernization, how renewable generation impacts the grid and how utilities can use grid edge technologies to better leverage renewable assets. Key concepts to be presented include renewable characteristics, renewable saturation, balancing at the grid edge and transmission versus distribution investments. |
| 249298 | Cyber security: The backbone of digitalization | Although there is plenty of excitement around the positive impacts of digitalization – such as gains from process optimization, reduced maintenance costs, and increased revenues from higher availability factors – within the power generation industry there is still hesitancy to adopt more networked digital solutions. Simply put, for many generators, cyber security concerns and their potential to impact safety and availability outweigh the benefits of digitalization. |
| 249677 | Electrifying transit: Clean, smart and cost effective solutions for public transportation | Technology advancements, environmental policy and the payback economics of electric transportation are all pushing transit and fleet markets farther every year. These trends have created high demand for newer, smarter yet practical and grid-ready charging infrastructure solutions. This panel session will host experts from across the eBus industry to discuss best practices and the partnerships needed to implement flexible, reliable and interoperable electric transit and fleet operations. |
| 245376 | Energy storage in railways: How this technology benefits both transit operator and power utility | Energy storage has been called the "Holy Grail" solution for its ability to quickly buffer demand and generation economically, making it attractive to power utilities and distributors. With advancements and cost take out in battery technology, the use of electrical energy storage systems (ESS) applications is expanding to the railway industry. From onboard solutions to stationary equipment, ESS offers huge benefits to the infrastructure owners, operators or power utilities. This panel session will explore solutions and benefits of using ESS as part of an existing or a new rail network. |
| 245475 | EVs on the horizon: The “big battery” push for next gen charging infrastructure | Electric vehicles (EVs) are now much more than commuter passenger vehicles, as battery developments have opened up a wide range of vehicle types to serve many transportation applications. Learn from our panelists on the latest trends in medium and heavy duty vehicle fleets, and what kind of infrastructure will be needed to support these emerging transportation models. |
| 250170 | The role of DERs in renewable integration and resolving California’s solar glut | On March 6, 2018, the California Independent System Operator (CAISO) saw around 50 percent of its generation served by solar resources. Considering the limited amount of solar generation in California 10 years ago, this shows a massive change that is still continuing rapidly. Such a large presence of solar generation is causing market issues such as curtailment of solar generation and extended periods of negative market prices. This session will discuss how DERs, along with grid digitalization technologies, can be used to resolve solar glut issues in California. |
| 246298 | One on one conversation: Common questions from customers on BESS | ABB enabled customers to leverage battery energy storage systems (BESS) to support island, remote and grid tied utility applications and customers. We will discuss the current status of the market and how ABB has the longest operating history of any BESS in the world. Our panel will share additional insights into different chemistries and how BESS will be shaping the future of the energy industry, as well as leveraging this technology to integrate with gas peaker plants. Pat Hayes and Chris Melley will discuss the most often asked questions from customers on this technology. |
| 245479 | From duck to dragon: How EV charging connectivity and intelligence turns a box into a grid savior | Most electric vehicle (EV) charging load is categorized “destination” AC charging, usually occurring at residences overnight and workplaces during the day. While fast charging tech gets a lot of attention for its range extending convenience, AC charging offers its own significant load optimization benefits to drivers, sites and utilities. This panel session will cover smart AC charging solutions, and the healthy future they can offer to all EV stakeholders when well planned. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 245472 | If you build it, will they come? EV infrastructure business and operational models that work | Deploying public charging infrastructure is much more than throwing hardware in the ground and hoping drivers find it. Electric vehicle (EV) infrastructure programs require careful planning for how they will serve drivers in years to come, as well as deliver value to owners, operators and site hosts. Business models vary by technology and location, but there are already clear rights and wrongs to EV infrastructure deployment. This session will cover best practices for building out a healthy charging infrastructure that manages the needs of those owning, managing and using EV charging systems. |
| 245292 | The future of electric and hybrid power systems in marine | This joint presentation by ABB and DNV GL will highlight changes coming in marine propulsion and power systems onboard various vessel types, as well as considerations for power management and safety along with performance. Several case histories will be presented as validation of the technology. Diesel electric technology coupled with various energy storage methods highlight the significant improvement in performance and energy efficiency onboard. These technologies, coupled with digitalization of the systems. is driving increased efficiency onboard. and superior performance overall. |
| 239721 | How ABB digitalization and propulsion solutions are shaping the shipping industry | With decreasing ice coverage, Arctic regions are of increasing political and economical interest for shorter shipping routes, natural resources, scientific research and other activities affecting welfare and security. ABB offers advanced solutions that make Arctic shipping technically feasible and economically attractive. ABB Ability™ addresses digitalization, which is an emerging megatrend changing the way the maritime industry operates. Azipod propulsion technology supports sustainable and efficient shipping. We will also review trends and developments in the Arctic maritime industry. |

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# Applications and Best Practices: Unique Industries

## Water and Wastewater

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 249379 | Service and the digital future: How will augmented reality impact your business |
| | 2:30 PM | 3:30 PM | 250129 | ABB Ability™ Symphony Plus SCADA for wastewater treatment |
| | 4:00 PM | 5:00 PM | 250369 | Addressing the aging workforce problem with a few simple operator effectiveness principles |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 249186 | Asset and process surge protective systems |
| | 1:30 PM | 2:30 PM | 245792 | Plant fingerprint: How to increase equipment performance and production efficiency |
| | 3:00 PM | 4:00 PM | 249775 | Benefits of replacing your HMI and consolidating within 800xA Operations |
| | 4:30 PM | 5:30 PM | 246322 | Soft starters vs. VFDs |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 245833 | ABB Ability™ Symphony Plus SCADA for smart water networks |
| | 1:30 PM | 2:30 PM | 245877 | Level measurement portfolio for water and wastewater |
| | 3:00 PM | 4:00 PM | 246258 | Water and wastewater challenges and innovations |
| | 4:30 PM | 5:30 PM | 249715 | The future of work in the digital power plant |
| Thursday March 7 | 10:00 AM | 11:00 AM | 249212 | Magnetic flow meter installation and best practices |
| | 11:30 AM | 12:30 PM | 250325 | Reduce control room footprint/costs and improve operational efficiency through digital collaboration |
| | 1:45 PM | 2:45 PM | 246277 | Using variable frequency drives to reduce the costs of harmonic mitigation |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 249379 | Service and the digital future: How will augmented reality impact your business | This panel discussion will focus on the emerging use of augmented reality (AR) to support service activities. Participants will learn how this technology is being developed and what impact it will have on the way utilities and industry perform service, train and support employees, and dramatically reduce response diagnosis during troubleshooting. In addition to ABB experts discussing the future of AR, a U.S. utility customer will participate on the panel to share their vision and development activities with AR. |
| 250129 | ABB Ability™ Symphony Plus SCADA for wastewater treatment | This case study concentrates on a multi-phase approach to life cycle management that is designed to maintain ongoing operations, minimize annual budget impacts and take advantage of the latest generation of control system. It involves a multi-phase effort with the end user and ABB engineering teams working together in various aspects of the project to upgrade the human-machine interfaces (HMIs) at two treatment plants. |
| 250369 | Addressing the aging workforce problem with a few simple operator effectiveness principles | Knowledge capture requires skill, but making that information available for others to effectively utilize and learn from is an art. Explore which key techniques associated with various operator effectiveness solutions (e.g., simulation, alarm management, and high performance HMI) can have the biggest payback in helping new operators become successful. If you are faced with a retiring workforce, this session will help you prioritize the next steps into an actionable road map forward. |
| 249186 | Asset and process surge protective systems | Surge protection systems are no longer optional, especially with the digitization of water utility systems. Water production and wastewater treatment are essential systems for society. Protection of these assets and processes helps provide society a consistent, predictable flow of clean drinking water and wastewater processing. Often overlooked in these critical utilities is the use of a systemic surge protection approach, especially in lightning prone areas. This session will highlight what to look for in protecting a well water production site and a wastewater treatment plant. |
| 245792 | Plant fingerprint: How to increase equipment performance and production efficiency | In any industry, a plant fingerprint is the optimal solution to increase equipment performance and production efficiency. As your strategic partner to maximize your return on investment (ROI), ABB will assess the overall life cycle of your equipment and establish a multi-year plan to ensure equipment components do not become obsolete and the equipment performance is optimized throughout its life. |
| 249775 | Benefits of replacing your HMI and consolidating within 800xA Operations | Metro Wastewater Reclamation District (MWRD) serves 1.7 million people within 45 water and sanitation districts. Treating 140 million gallons per day, it is the largest wastewater treatment plant between the Mississippi River and the West Coast. MWRD has a blend of 800xA, Rockwell and MOD300 controls at the Robert W. Hite facility, but consolidated their controls under the 800xA human-machine interface (HMI). MWRD will explain the benefits of replacing their Rockwell HMI with 800xA, the added capabilities of doing so, the benefits to operations and the reduced engineering that are the result. |
| 246322 | Soft starters vs. VFDs | This session explores how to determine which applications are best suited for soft starters and which are best suited for variable frequency drives (VFDs). Find out about the different start and stop types available within soft starters and VFDs, as well as where and when to use each. The session also will teach you how to select the correct type and size soft starter for an application. |
| 245833 | ABB Ability™ Symphony Plus SCADA for smart water networks | This session will present a smart water case study to demonstrate how precious water supply and transport energy can be managed effectively. One of a city's most important pieces of critical infrastructure is its water system. With populations in cities growing, it is inevitable that water consumption will grow as well. In this case study, the ABB Ability™ Symphony Plus SCADA solution monitors, controls and integrates digital solutions for the entire water distribution system to proactively detect, analyze and manage network events and incidents such as leaks, bursts and faulty assets. |
| 245877 | Level measurement portfolio for water and wastewater | Learn about ABB's level measurement portfolio and its applications in the water and wastewater world. The wide ranging portfolio offers many solutions for efficient process automation. We will discuss ultrasonic sensors, common in the industry. Laser level products are used for more demanding, non-contact applications and provide a good complement to the offering. The LMG100 level gauge is also used in water treatment plants for chemical feed tanks. The presentation will provide a good understanding of ABB's level products' role in the industry. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 246258 | Water and wastewater challenges and innovations | Laboratories provide a critical function in monitoring our potable water, ensuring it is safe to drink and wastewater discharge will not pollute. Laboratories providing water and wastewater services face significant challenges keeping up with regulatory compliance and water production sampling and testing. At the same time, budget constraints dictate doing more with less. This best practices session will discuss the challenges water laboratory services face and how technology learned from the mining industry can be employed to overcome these challenges. |
| 249715 | The future of work in the digital power plant | The near-certainty of technology change, coupled with uncertain implications, creates opportunities for us to impact the future state. Beyond specific work tasks, these uncertain implications will impact how we hire, train, retain and build the workforce of the future. In this discussion we will highlight relevant emerging technologies, discuss probable implications on the future of work in the digital power plant, and describe the role we will all have in creating this exciting future. |
| 249212 | Magnetic flow meter installation and best practices | Magnetic flow meters are one of the most widely used flow meters in the water and wastewater Industry. As long as the process fluid is conductive, a magnetic flowmeter is the right solution for your application. There is more to it than just matching the pipe size to the meter size and installing the meter in the closest available section in the pipe. Despite the large volume of meters out in the field, water consultants and end-users continue to face the challenge of poor installations, incorrectly sized meters and other issues. |
| 250325 | Reduce control room footprint/costs and improve operational efficiency through digital collaboration | A collaborative operations approach that applies performance management, remote monitoring and preventive analysis technologies is ensuring security, improving efficiency and increasing productivity in many industries globally. Geographically strategic collaborative operations centers are connecting producer operators and supplier experts across enterprise-wide production facilities and headquarters to domain and technology experts, shortening time-to-resolution for operational issues. This session will highlight collaborative operations in oil and gas, power generation, and pulp and paper. |
| 246277 | Using variable frequency drives to reduce the costs of harmonic mitigation | Adding non-linear loads, such as variable frequency drives (VFDs) or data centers, to electrical networks can create harmonics. IEEE 519-2014 provides updated harmonic limit requirements, and where and how they should be measured. This session covers the various methods that can be used to mitigate harmonics and includes various examples, with calculations and measurements showing how each method effects capex, opex and the risk of downtime. |

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# Applications and Best Practices: Utilities

## Aging Infrastructure and Asset Management

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 245284 | GCB service solutions for time and cost savings |
| | 2:30 PM | 3:30 PM | 249988 | Switchgear retrofitting |
| | 4:00 PM | 5:00 PM | 250397 | Transformer asset management: Do more with less |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 233845 | Finding a solution to address low oil IFT in transformers |
| | 1:30 PM | 2:30 PM | 245708 | Assess it so you won't regret it |
| | 3:00 PM | 4:00 PM | 245395 | Augmented reality for HV service support |
| | 4:30 PM | 5:30 PM | 249991 | Life cycle support and extension: Bringing new life to old equipment |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 249990 | Arc flash mitigation: Protecting people and equipment |
| | 1:30 PM | 2:30 PM | 245796 | Grid overhaul: How DTE is increasing capacity to prepare for the future |
| | 3:00 PM | 4:00 PM | 245290 | GCB replacement success story: Grand River Energy Center |
| | 4:30 PM | 5:30 PM | 249435 | Step by step asset management for digital power transformers |
| Thursday March 7 | 10:00 AM | 11:00 AM | 249283 | Dry-type transformer visual inspections and maintenance procedures |
| | 11:30 AM | 12:30 PM | 249922 | From analog to digital controls: An in-depth exploration of upgrading legacy systems |
| | 1:45 PM | 2:45 PM | 246012 | Effective asset evaluation and renewal to build a strategic investment plan |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 245284 | GCB service solutions for time and cost savings | To address continually decreasing operation and maintenance (O&M) budgets, ABB has developed innovative services for generator circuit-breakers (GCB) to save cost and time on-site. Attend this session to learn about the three main programs ABB offers to maintain your GCBs on your schedule – service contracts, Interrupter swaps and mechanism refurbishments – as well as other service options. |
| 249988 | Switchgear retrofitting | This presentation will detail the benefits of retrofitting low voltage and medium voltage switchgear. Retrofitting allows all the capability and technology of new switchgear without the disadvantages of replacing the gear. |
| 250397 | Transformer asset management: Do more with less | Market pressures lead companies to reduce budgets for transformer maintenance and replacements – and ask more from existing assets. The ABB Ability™ Transformer Intelligence portfolio helps reduce transformer maintenance costs by optimizing transformer asset management and supporting units in service. |
| 233845 | Finding a solution to address low oil IFT in transformers | The state of transformer oil is a the key parameter influencing equipment life expectancy and reliability. Recently, testing returned a low oil interfacial tension (IFT) value in some newer transformers, which was not understood. After extensive tests, ABB discovered that low oil IFT does not affect the dielectric properties of oil-paper insulation. There is need to correlate IFT as an indicator only, and not the sole decisive rule for action. It has to be strongly correlated with critical operational properties of the oil, such as breakdown voltage (BDV), power factor (PF) and acidity. |
| 245708 | Assess it so you won't regret it | Age, environmental impact and operational patterns contribute greatly to the gradual deterioration of substation equipment. Factors influencing substation performance include the design/layout, quality of maintenance actions taken and spare parts availability. When the substation life cycle reaches its design limits, it is time to make a decision about its future. Multiple technical solutions can be considered to reduce risk and extend the substation life, but the first step to identifying the optimal solution is to assess the current substation condition. |
| 245395 | Augmented reality for HV service support | During this hands-on demonstration, participants will experience the use of ABB's augmented reality (AR) service support solution. Using an AR visual device, participants will learn how to use the basic functions of the device and perform a simple repair on a training breaker while guided by remote support through the AR device. In addition to using the device, learn about basic considerations for using service, and receive an overview of service support contracts and an overview of training support with augmented reality. |
| 249991 | Life cycle support and extension: Bringing new life to old equipment | This presentation will detail our capabilities in supporting customer equipment through the entire life cycle. |
| 249990 | Arc flash mitigation: Protecting people and equipment | This presentation will review the necessity of arc flash mitigation and the service products to support mitigation. |
| 245796 | Grid overhaul: How DTE is increasing capacity to prepare for the future | Age, environmental impact and operational patterns contribute greatly to the gradual deterioration of substation equipment. DTE Energy has been experiencing this challenge firsthand. Their current network has had many problems arise due to its age and limitations. Aside from reliability issues, this has caused DTE's operations and maintenance costs to become burdensome. DTE realized that their aging grid needs an overhaul to mitigate these problems. The grid overhaul also functions as a proactive measure to combat the growing load requirements in the Metro Detroit area. |
| 245290 | GCB replacement success story: Grand River Energy Center | Come walk through a generator circuit-breaker (GCB) replacement case study, from the electrical and mechanical GCB sizing, to the installation, to the final testing and commissioning. You'll leave with a clear idea of how ABB approaches GCB replacements. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 249435 | Step by step asset management for digital power transformers | Regardless if you have a digital power transformer now, digital transformation promises great savings in asset life cycle management. But amid a flurry of resulting activity, it can hard to decide where to start, pragmatically. Join us as we lay out the key elements of digital transformer monitoring and asset management, and review the available options to structure a pragmatic implementation timeline to drive early financial results while at the same time moving towards a sustainable and scalable digital approach. |
| 249283 | Dry-type transformer visual inspections and maintenance procedures | Not all dry-type transformers require maintenance, but they all recommend routine inspections. This presentation will walk through what a visual inspection involves, when and if to do maintenance, and some future digital developments that will greatly reduce these efforts. |
| 249922 | From analog to digital controls: An in-depth exploration of upgrading legacy systems | We'll explore what many utilities face at some point in their excitation system's product life cycle. Choosing between upgrading an existing unit or replacing it can be a difficult decision. Some plants believe that there's no need to upgrade their aging equipment because it works, and it's not broken. We will examine the time- and cost-effective solution that enhances the reliability, functionality and stability of operations. Some other considerations in making this decision include the choice to go with the original OEM or a third-party, and the evaluation of the service support thereafter. |
| 246012 | Effective asset evaluation and renewal to build a strategic investment plan | There are limited resources to fund and upgrade infrastructures. Prioritizing these scarce resources to maximize the effectiveness of asset renewal is an important decision process. An optimal investment plan needs to consider the complexity of utility operations with a long term impact view to minimize patchwork investment activities. Additional considerations must be given to construction seasonality, resource constraints, service level requirements and other factors. An optimization based approach is proposed to support such decision processes to develop an investment plan. |

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# Applications and Best Practices: Utilities

## Distributed Energy Resources and Renewables

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 245506 | Microgrids in the Caribbean: Case studies |
| | 2:30 PM | 3:30 PM | 243592 | Design of energy storage systems |
| | 4:00 PM | 5:00 PM | 249846 | Retail to wholesale power: How do we get there with solar+storage? |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 245461 | Leveraging distributed energy resources: Case studies |
| | 1:30 PM | 2:30 PM | 240512 | Advanced microgrids in the last frontier |
| | 3:00 PM | 4:00 PM | 245710 | Autonomous resilient grids: Vision for a nested transactive grid |
| | 4:30 PM | 5:30 PM | 245231 | Renewable substation designs |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 245888 | Impact of renewables on substation transformers |
| | 1:30 PM | 2:30 PM | 250170 | The role of DERs in renewable integration and resolving California's solar glut |
| | 3:00 PM | 4:00 PM | 233884 | Distributed generation challenges and solutions for electric distribution operations |
| | 4:30 PM | 5:30 PM | 250006 | What is distributed energy resource management? Understanding VVO and VVP functions |
| Thursday March 7 | 10:00 AM | 11:00 AM | 249720 | Advanced solid state switching solutions for DERs and microgrids |
| | 11:30 AM | 12:30 PM | 246245 | Taking advantage of the growing renewables market |
| | 1:45 PM | 2:45 PM | 249255 | Innovative volt/VAr optimization with DER forecasting and predictive feedback at Ameren Energy |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 245506 | Microgrids in the Caribbean: Case studies | Caribbean islands are working to address a number of new challenges in their power delivery. While they constantly aim to improve system resiliency, they are also working to integrate renewables, and reduce operating costs and carbon emissions. This session will cover how some island countries are working to address these issues. We will cover the Grand Bahamas Microgrid, Aruba Controls and Jamaica's 24.5 MW microgrid. |
| 243592 | Design of energy storage systems | Explore the process of developing the preliminary design of an energy storage system. Topics to be covered include an overview of energy storage technology, selection of the power conversion system (PCS), storage medium selection and sizing of components. This session will focus on the importance of having an energy storage system appropriately designed to match the intended application. |
| 249846 | Retail to wholesale power: How do we get there with solar+storage? | Rooftop solar plays a critical role in grid transformation. However, as solar penetration levels approach the point where the system can no longer benefit from new daytime generation, storage is needed. To drive solar+storage growth, the industry started seeking new rate designs and incentives to benefit generation/distribution systems and retailers. The session covers how retail and wholesale are blending into a new business model with alternative revenue streams and what opportunities solar+storage can bring to this integrated world. |
| 245461 | Leveraging distributed energy resources: Case studies | Distributed energy resources (DERs) present an exciting opportunity to improve how electricity is produced and delivered to consumers. DER technologies are rapidly approaching widespread market viability and are establishing electrical distribution systems as fertile ground for innovation. ABB will share two case studies based on work performed by the U.S. Power Consulting team. The presentations will cover selecting the optimal DER portfolio and leveraging energy storage as a cost efficient alternative to traditional grid solutions. |
| 240512 | Advanced microgrids in the last frontier | Of the over 150 communities in rural Alaska, about 70 include grid-scale renewables in microgrid applications. Backed by over two decades of renewable integration experience in the harsh conditions of the 49th state, Alaska microgrids continue to expand the boundaries of traditional power system operation – some pushing penetration levels of variable renewables on a regular basis of up to 100%. This overview will examine the motivating factors for pioneering these advanced microgrids and review the success of each by comparing the theoretical objectives with the real-world outcomes. |
| 245710 | Autonomous resilient grids: Vision for a nested transactive grid | We will provide an overview of grid transformation, followed by a vision for an autonomous power grid as a manifestation of the internet of things (IoT). The vision aspires to a transactive energy grid with intelligence distributed among all components to achieve improved reliability, resiliency and efficiency. It presents the concept of a nested transactive grid to model the distribution as a nested set of virtual microgrids that can each act as a market. The architecture facilitates transactive exchanges and enables the use of DERs for higher resiliency in normal and emergency conditions. |
| 245231 | Renewable substation designs | Wind and solar continue to be the primary growth in generation, and this trend is expected to only continue to increase. Designing and building cost effective substations to support these generation sites and interconnect to the grid are key to financial success. In this session, you will learn new ways of designing the substation to minimize material cost as well as onsite construction time and money. By designing these features in from the start, a developer can reduce their risk in the project, improve onsite safety and reduce labor costs on site while improving system reliability. |
| 245888 | Impact of renewables on substation transformers | As DERs are added to the transmission and distribution grids, there is a need to analyze the impacts on the power system, starting with the substation transformer (ST). This session will analyze impacts of the reverse power on the ST for various operating conditions and compares the finite element (FE) analysis results for various transformer designs under reverse power flow. We will also discuss how switching and fault conditions influence the voltage at the ST terminals leading to transient and steady state over voltages and show how the effect may worsen with DERs. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 250170 | The role of DERs in renewable integration and resolving California's solar glut | On March 6, 2018, the California Independent System Operator (CAISO) saw around 50 percent of its generation served by solar resources. Considering the limited amount of solar generation in California 10 years ago, this shows a massive change that is still continuing rapidly. Such a large presence of solar generation is causing market issues such as curtailment of solar generation and extended periods of negative market prices. This session will discuss how DERs, along with grid digitalization technologies, can be used to resolve solar glut issues in California. |
| 233884 | Distributed generation challenges and solutions for electric distribution operations | Today's regulatory renewable energy goals, more economical solar photovoltaics (PV), distributed energy resources (DER) and rising utility rates have resulted in rapid growth of solar PV distributed generation deployments. The higher penetration of PV is creating new electric utility distribution operations challenges. We will review the challenges and solutions to address these issues. We'll also look at a future vision for advanced distribution management systems (ADMS)/DER management systems (DERMS) and potential new utility business models regarding distribution transactive energy markets. |
| 250006 | What is distributed energy resource management? Understanding VVO and VVP functions | Distributed energy resources, such as solar PV, energy storage, demand response, EV charging and microgrids are changing the utility distribution landscape. Distributed energy resource management systems (DERMS) are being implemented to manage and optimize feeder voltages and to aggregate and dispatch DERs. |
| 249720 | Advanced solid state switching solutions for DERs and microgrids | Cyberex Grid Tie Switch (GTS) and ABB's PCS100 platforms provide high power density and faster switching, and promote higher reliability and efficiency for the utility and microgrid markets. These systems are challenging existing equipment and infrastructure in applications requiring fast switching and robust power quality solutions. |
| 246245 | Taking advantage of the growing renewables market | Renewable energy is nothing new, but today's technologies for capturing that power and converting it to useable electricity have evolved dramatically. But this is not without challenges. Join this session to learn how ABB's products, solutions and services can be positioned to mitigate these challenges. Some of the topics we will cover include low voltage components, designing safety into your system, transformers for every renewable application, smart inverter technology and identifying service opportunities. |
| 249255 | Innovative volt/VAr optimization with DER forecasting and predictive feedback at Ameren Energy | Typical volt/VAr optimization (VVO) applications optimize power delivery using control of available substation and feeder resources. Ameren will present implementation experience and preliminary results of an enhanced VVO application providing control for conservation voltage reduction, power factor, voltage and reactive power. The deployed VVO algorithm is based on a network model predictive feedback control. The algorithm is driven by voltage measurements, load forecasts and DER forecasts, along with voltage sensitives calculated on-line using the as switched unbalanced network model. |

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# Applications and Best Practices: Utilities

## Grid Digitalization and Modernization

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 245460 | Long-term planning for a grid modernization program |
| | 2:30 PM | 3:30 PM | 250010 | Grid modernization and the integration of renewable generation |
| | 4:00 PM | 5:00 PM | 250009 | AI applications in asset performance management, storm response, forecasting and utility operations |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 245800 | Mission critical communications fuel the benefits of grid digitalization |
| | 1:30 PM | 2:30 PM | 245898 | The path to the digital substation: One utility's approach |
| | 3:00 PM | 4:00 PM | 245238 | Discovering more ways to use optical sensing technology |
| | 4:30 PM | 5:30 PM | 245854 | Modernizing your underground distribution network for improved safety, reliability and resiliency |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 249257 | OMS to ADMS transition: CPS Energy San Antonio's experience |
| | 1:30 PM | 2:30 PM | 250400 | Digitally integrated transformers |
| | 3:00 PM | 4:00 PM | 246298 | One on one conversation: Common questions from customers on BESS |
| | 4:30 PM | 5:30 PM | 250460 | PG&E's program to upgrade controls of FACTS systems |
| Thursday March 7 | 10:00 AM | 11:00 AM | 245734 | Artificial intelligence for substation automation systems |
| | 11:30 AM | 12:30 PM | 246291 | Improving outage restoration: New technology offers safe, speedy recovery |
| | 1:45 PM | 2:45 PM | 249713 | Energy optimization for industrial sites, smart cities and virtual power plants |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 245460 | Long-term planning for a grid modernization program | Grid modernization will play a crucial role in maintaining the electric supply necessary for a modern economy. ABB partnered with a Midwest utility to create a program for improving one of the nation's oldest grid infrastructures to support the Motor City's continued revitalization and transformation. Challenges tackled by the project team cover spatial load forecasting, asset condition assessment, system design and optimal investment planning. This presentation will introduce the approach taken to plan for modernizing Detroit's grid infrastructure, as well as several key results. |
| 250010 | Grid modernization and the integration of renewable generation | This session will discuss grid modernization, how renewable generation impacts the grid and how utilities can use grid edge technologies to better leverage renewable assets. Key concepts to be presented include renewable characteristics, renewable saturation, balancing at the grid edge and transmission versus distribution investments. |
| 250009 | AI applications in asset performance management, storm response, forecasting and utility operations | The digitalization of utilities is moving forward at an accelerating rate. The implementation of software, connectivity and devices creates and provides more data that can shared across the utility enterprise to improve operations. Investments in analytics, including artificial intelligence (AI), can drive situational awareness and better decision making. This presentation will review asset performance management, storm response and forecasting, and how AI is improving utility operations. |
| 245800 | Mission critical communications fuel the benefits of grid digitalization | This session addresses the communications issues associated with grid digitalization and how to ensure that your critical communications infrastructure is ready for the demands of digitalization. The rapid growth in data and devices resulting from the digital grid requires a highly reliable and secure communications infrastructure to handle the device connectivity and volume of data. This session will focus on realizing the full benefits of grid digitalization by ensuring that your communications infrastructure is ready for the digitalization challenge. |
| 245898 | The path to the digital substation: One utility's approach | IEC 61850 is the true enabler of digital substations. National Grid (NG), a utility operating in New York and New England, has recognized this fact over the last two years. This session will talk about the path taken by NG to choose their partner for digital solutions and how they intend to deploy their next digital substation. It will give a utility's perspective on ways to implement digital substations by working within the operational constraints of a utility. |
| 245238 | Discovering more ways to use optical sensing technology | Non-conventional instrument transformers (NCIT) have reached maturity as fully digital current measurement devices in high voltage substations and medium voltage switchgear applications. The fiber optic current sensor (FOCS) is an innovative NCIT solution that delivers significant operational performance, driven by environmental and safety priorities. Explore smart grid substation benefits of FOCS such as traditional approaches for current sensing and monitoring, new applications like geomagnetic induced current (GIC) detection, and slipover applications for metering on cable terminators. |
| 245854 | Modernizing your underground distribution network for improved safety, reliability and resiliency | The need for reliability, safety and resiliency in our power networks is driving grid modernization and forms the basis of every utility's key performance indicators. Outdated, aging equipment increases the risk of failure, while the lack of modern control and automation puts field personnel at risk and exposes customers to wider outages during equipment failure and severe storms. Fortunately, the rapid evolution of power equipment, monitoring and automation technologies is improving the capabilities of equipment and automation in critical areas, such as underground utility vaults. |
| 249257 | OMS to ADMS transition: CPS Energy San Antonio's experience | CPS Energy in San Antonio deployed an outage management system (OMS) and SCADA to improve customer service, reliability and outage restoration more than a decade ago. Even though OMS and SCADA are components of the advanced distribution management system (ADMS), the OMS to ADMS transition requires extensive planning and infrastructure investment in communication and field devices, which often prevents utilities from realizing the full benefits of the ADMS. CPS is defying this notion by deploying the ADMS incrementally. This presentation will discuss CPS' gradual expansion from OMS to ADMS. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 250400 | Digitally integrated transformers | This session will discuss profile changes in power generation and consumption, and how digitally integrated power transformers will shape the future. The ABB Ability™ Power Transformer provides digital capabilities standard from the factory. It's built on a future-proof platform that delivers health data and actionable intelligence to optimize reliAbility™, availability and productivity while improving capital efficiency. With this innovative technology in mind, we will highlight the importance of understanding the condition of power transformers and how digital insights benefit your operations. |
| 246298 | One on one conversation: Common questions from customers on BESS | ABB enabled customers to leverage battery energy storage systems (BESS) to support island, remote and grid tied utility applications and customers. We will discuss the current status of the market and how ABB has the longest operating history of any BESS in the world. Our panel will share additional insights into different chemistries and how BESS will be shaping the future of the energy industry, as well as leveraging this technology to integrate with gas peaker plants. Pat Hayes and Chris Melley will discuss the most often asked questions from customers on this technology. |
| 250460 | PG&E's program to upgrade controls of FACTS systems | PG&E undertook a replacement program in 2016 to upgrade modular advanced control for HVDC (MACH) control systems that were originally installed on 500 kV series capacitors and static Var compensators between 1999 and 2005. The replacement program will enable PG&E to securely interface with the controls to obtain real time information and obtain diagnostic information from systems that are located throughout PG&E's large geographic footprint in central and northern California. The upgraded controls will extend the life of each flexible AC transmission system (FACTS) by 15-20 years. |
| 245734 | Artificial intelligence for substation automation systems | The market is interested in utilizing the traditional automation system for more advanced artificial intelligence (AI) to achieve reductions in operation and maintenance costs. AI also provides additional benefits of asset management and non-operational data for general health analysis of the assets. This session will present a few of these AI features that are available today in our automation system library. |
| 246291 | Improving outage restoration: New technology offers safe, speedy recovery | Getting power back on after a storm or other outage is a matter of public safety. Use of ABB's mobile workforce management (MWFM) and advanced distribution management system (ADMS), integrated together, offers electric utilities a solution that helps get the lights on sooner after an outage. We'll explore how new technologies, such as drones, are being used for damage assessment. We'll also discuss upcoming technology for field crew, such as as-operated network model, switching order execution and on-demand content such as technical documentation via wearable technology. |
| 249713 | Energy optimization for industrial sites, smart cities and virtual power plants | Energy optimization can turn the disruptive effects of multi-source distributed generation into an efficient and profitable business for many energy market participants, including small-scale producers, industrial and commercial sites, and smart city energy providers. Changes in the energy landscape present an opportunity to leverage digitalization in three areas: industrial sites, smart cities and virtual power plants. We will show use cases to reduce energy costs while minimizing environmental impact, and to maximize revenues while reducing operational costs for decentralized power pools. |

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# Applications and Best Practices: Utilities

## Reliability and Resiliency

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 250008 | Case study: CenterPoint Energy and Hurricane Harvey |
| | 2:30 PM | 3:30 PM | 243844 | Simplicity in relay protection system design |
| | 4:00 PM | 5:00 PM | 245248 | Extending the life of your generator circuit breaker |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 234336 | ConEdison Jamaica substation plug and switch system |
| | 1:30 PM | 2:30 PM | 249259 | ABB's AssetShield resilient power transformer: Helping utilities protect key infrastructure |
| | 3:00 PM | 4:00 PM | 245244 | Transmission equipment diagnostics: Best practices in this digital era |
| | 4:30 PM | 5:30 PM | 245699 | HVDC interconnectors: A cost effective, reliable way to solve grid challenges |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 245296 | Gas-insulated substations for coastal urban environments |
| | 1:30 PM | 2:30 PM | 245507 | Success stories: Microgrids in the Caribbean |
| | 3:00 PM | 4:00 PM | 246246 | Cyber security: Third party secure integration and data exchange |
| | 4:30 PM | 5:30 PM | 249254 | Multifunctional transformers for contingency planning: Optimizing availability and investment |
| Thursday March 7 | 10:00 AM | 11:00 AM | 249978 | FACTS tutorial |
| | 11:30 AM | 12:30 PM | 245463 | How variable resources changed utility resource adequacy practices and introduced new tools/methods |
| | 1:45 PM | 2:45 PM | 249281 | With vacuum breakers you may be putting your transformer at risk – but not with ABB's distribution transformers with winding varistors |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 250008 | Case study: CenterPoint Energy and Hurricane Harvey | In this session, we will examine CenterPoint's intelligent grid and how it helped them respond to Hurricane Harvey. Advanced distribution management systems (ADMS) outage management and automated switching enhanced CenterPoint's ability to identify outages and restore power more quickly. |
| 243844 | Simplicity in relay protection system design | Simplicity is one of the key elements of a good relay protection system design, along with reliability, selectivity and speed. However, with the evolution of protection relays, protection schemes have evolved in a way that they can be described as anything but simple. This presentation will analyze the evolution of protection system design, and the advantages and disadvantages of the current approach. |
| 245248 | Extending the life of your generator circuit breaker | Protecting generation assets is crucial to maintaining plant reliability, and ensuring the ongoing operating performance of the generator circuit-breaker (GCB) is critical. Learn techniques to keep this valuable asset operating with maximum reliability. Topics will include proper application of GCBs, life cycle maintenance strategies, solutions for reducing plant shut down time (arcing chamber swap) and remote digital solutions for asset management. |
| 234336 | ConEdison Jamaica substation plug and switch system | ConEdison of New York City faces the extreme challenge of supplying reliable power to a major city on the world stage, with growing demand and real estate costs that prohibit system expansion. Plus, the ConEdison system is one of the oldest in the world, making upgrades an even bigger challenge. At the Jamaica substation, set on a city block in Queens, a single breaker would trip out two feeders of this sensitive substation. With no room to add additional breakers and/or disconnects, ConEdison turned to ABB for a compact solution. The result was the two-breaker plug and switch system (PASS). |
| 249259 | ABB's AssetShield resilient power transformer: Helping utilities protect key infrastructure | ABB has developed a solution to help utilities to enhance physical security and reliability for key infrastructure in an innovative and cost-effective way. Power transformers are one of the most critical assets in the grid. Malevolent attacks and extreme environments have the potential to damage this key equipment. Failure of a transformer can result in service interruption, considerable revenue loss, and may incur replacement and other collateral costs. |
| 245244 | Transmission equipment diagnostics: Best practices in this digital era | Technology advancements not only improve equipment but improve the methods and tools used to perform testing and diagnostics of that equipment. ABB's panel of experts will discuss best practices in maintenance diagnostics using new tools and techniques that leverage digital platforms and new technology. Topics will include remote monitoring and diagnostic tools, the transformer inspection robot, radiography, partial discharge testing, cable testing and life stretch. |
| 245699 | HVDC interconnectors: A cost effective, reliable way to solve grid challenges | High-voltage direct current (HVDC) is a highly efficient alternative for transmitting large amounts of electricity over long distances and for special purpose applications. HVDC technology is easily controlled and can stabilize and interconnect AC power networks that are otherwise incompatible. As a key enabler in the future energy system based on renewables, HVDC is truly shaping the grid of the future. |
| 245296 | Gas-insulated substations for coastal urban environments | The installation of substations with gas-insulated switchgear (GIS) allows for substation technology to be installed close to urban load centers and in locations with environmentally challenging aspects. Coastal cities with limited space, possible flooding or other natural disasters lurking around the corner are the reason to switch to economic, compact substation designs. |
| 245507 | Success stories: Microgrids in the Caribbean | Caribbean utilities constantly aim to improve their system resiliency. ABB is building out three significant projects in the Caribbean this year, including a record sized hybrid project in Jamaica. We will cover the Grand Bahamas microgrid, Aruba Controls and Jamaica's 24.5 MW microgrid. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 246246 | Cyber security: Third party secure integration and data exchange | Most of ABB's DCS and SCADA installations need to integrate and exchange data with third party systems. Usually, the focus is on securing the SCADA and DCS communications and applications, but actually there is a major security risk when integrating third party PLCs, DCSs, RTUs and other sources of information, as the control network is believed to be secure by default. The same applies when outputting information (from historians, web services or other communications protocols) without taking into consideration the possible risks to the control system. |
| 249254 | Multifunctional transformers for contingency planning: Optimizing availability and investment | The polytransformer is a universal multi-voltage transformer which may be used as a universal network-link transformer. It has compact dimensions to mechanically adapt and to be shipped to any substation within the scope and different voltage ratings to connect alternative transmission systems. High voltage mobile power transformers are modular mobile multivoltage transformers for transmission utilities. They provide fast deployment, quick and simple transportation, and multi-voltage polytransformer capabilities. |
| 249978 | FACTS tutorial | With the electric utility industry's ongoing shift from traditional thermal synchronous generation to renewables such as wind and solar based generation, significant change is rapidly impacting a once predictable business. With the new types of generation, located far from load centers and growing in adoption, transmission systems are constantly pushed closer to their stability and thermal limits. We will discuss how to apply and use flexible alternating current transmission systems (FACTS) equipment, series compensation and synchronous condensers to address a wide variety of system issues. |
| 245463 | How variable resources changed utility resource adequacy practices and introduced new tools/ methods | Variable sources (e.g., wind and solar) have brought challenges to utilities' resource planning. Planning practices have evolved and are adequate for low penetration of wind and solar. Now, the accelerating growth of variable resources both at the bulk-power level and at the distribution level adds more uncertainties. ABB Power Consulting has developed a new practice to include both centralized and distributed resources, which have been treated separately by the industry, in one framework. This session will discuss case studies, including how energy storage is used to mitigate uncertainties. |
| 249281 | With vacuum breakers you may be putting your transformer at risk – but not with ABB's distribution transformers with winding varistors | Are you using vacuum circuit breakers in your distribution network? Then you may be putting your transformer at risk. Depending on the system, network switching can damage electrical equipment that, over time, may lead to failure. Avoid complicated system studies and save yourself from costly outages with ABB’s distribution transformers with winding varistors for dry-type transformers. |

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# Applications and Best Practices: Utilities

## Safety and Regulatory Compliance

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 245401 | Safety benefits of our new MECB |
| | 2:30 PM | 3:30 PM | 249769 | Call to action: Developing robust security incident response practices across the whole organization |
| | 4:00 PM | 5:00 PM | 245865 | Simple tools to support meeting NERC TPL-007 requirements |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 249757 | Boiler modulating control and burner management replacement at Canadian Nuclear Laboratories |
| | 1:30 PM | 2:30 PM | 245240 | SF6 gas: Regulatory update, leak mitigation and e-gas development |
| | 3:00 PM | 4:00 PM | 249252 | TXpand - Fire risk mitigation in oil-filled power transformers with ABB's rupture resistant tank |
| | 4:30 PM | 5:30 PM | 245902 | Cyber security in nuclear power generation |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 237378 | The new IEC/IEEE standard for generator circuit-breakers: How it changes the game |
| | 1:30 PM | 2:30 PM | 249729 | Operator effectiveness and the control room in the age of digitalization |
| | 3:00 PM | 4:00 PM | 249772 | Digital programs to accelerate environmental sustainability and safety programs and compliance |
| | 4:30 PM | 5:30 PM | 245702 | Regulatory Compliance: Achieving safety performance improvement and establishing culture |
| Thursday March 7 | 10:00 AM | 11:00 AM | 234337 | ConEdison of New York's oil-free dry-type eco network transformers |
| | 11:30 AM | 12:30 PM | 250022 | A safety-driven industry first: Oil-filled SSVT for Internal Arc Protection Class II |
| | 1:45 PM | 2:45 PM | 246259 | Motorized remote racking of MVCBs |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 245401 | Safety benefits of our new MECB | In this presentation, we will take a deep dive into the new design features of the metal enclosed capacitor banks (MECBs) that ensure the safety of users and infrastructure. With arc flash regulations and the high demand for arc resistant designs, let's take a look at how ABB's capacitor bank performs. |
| 249769 | Call to action: Developing robust security incident response practices across the whole organization | Most cyber security standards require power operators to have an incident response (IR) plan. But for many, the plan is not exercised with the frequency and intensity needed to build the IR "muscle memory" that enables teams to smoothly and respectably execute an incident. Are HR, communications, legal and operations teams able to execute their IR roles and responsibilities? How can your organization prepare work with external stakeholders in an incident, like suppliers, service providers and outside agencies? How can you measure your organization's IR resiliency and drive to improve? |
| 245865 | Simple tools to support meeting NERC TPL-007 requirements | NERC is requiring utilities to perform a system analysis to understand solar storm impact on power systems to ensure grid stability. Tools ABB has developed support understanding transformer performance during solar disturbances. This presentation will cover the causes of geomagnetic induced currents (GICs), the effect of DC and GIC on power transformers, the impact of a GIC event on power systems, determining the GIC capability of a transformer design, and the system impact of a GIC event. We will also present results of actual system studies. |
| 249757 | Boiler modulating control and burner management replacement at Canadian Nuclear Laboratories | In this session, we will present the Canadian Nuclear Laboratories (CNL) design-build contract that was awarded to ABB to convert an oil fired boiler to natural gas and replace obsolete boiler modulating controls, burner management system and instrumentation. The scope included full mechanical design, supply and construction of the new natural gas train, the redesign of the oil fuel train, and the installation and recommissioning of the boiler control systems. |
| 245240 | SF6 gas: Regulatory update, leak mitigation and e-gas development | Join this panel discussion of SF6 gas industry experts to learn about the current regulatory environment and the role of SF6 gas in greenhouse gas contributions. Discussion topics include existing and proposed SF6 gas environmental regulations, importance of proper gas handling for environmental compliance, SF6 gas leak mitigation techniques and latest update on the development of an environmentally-friendly alternative to SF6 gas. |
| 249252 | TXpand - Fire risk mitigation in oil-filled power transformers with ABB's rupture resistant tank | Oil-filled transformers can suffer from internal arcs due to electrical failures during operation. Then a fast gas volume increase takes place, and an explosion can occur with severe damage either to equipment itself or surrounding personnel. ABB has fully developed and tested the rupture resistant tank concept, which is a transformer tank designed so that overpressure is not allowed without reaching a tank rupture limit at a certain level of energy arc. In 2017, ABB practiced the first worldwide real test on a full size transformer tank for a major 20 MJ dielectric fault. |
| 245902 | Cyber security in nuclear power generation | The increasing frequency and magnitude of cybercrimes, along with new types of threats, drive the need for enhanced cyber security programs to protect power generation facilities. Nuclear power plants, like other critical infrastructure, are more vulnerable than ever to cyberattacks. In response, ABB has implemented cyber security measures in its nuclear asset and operations management software that integrate with the broader company to provide multiple layers of defense. |
| 237378 | The new IEC/IEEE standard for generator circuit-breakers: How it changes the game | The growing worldwide demand for energy combined with the distributed electrical power generation structure has brought a rapid spread of generator applications. The need for power producers to ensure safety and protection, continuous operation and full protection of the generation assets under all fault conditions require a better definition of the performances that a generator circuit-breaker (GCB) must fulfill. The new IEC/IEEE 62271-37-013 Standard is the first global standard to defines this. We will present the main characteristics of the standard to clearly show why it is relevant. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 249729 | Operator effectiveness and the control room in the age of digitalization | Digitalization is transforming nearly every aspect of our lives by improving efficiency, collaboration and by closing the loop between data and action. When implemented properly, utilities can become self-sustaining, predictive, adaptive and able to evolve by learning from the past. The DCS is crucial to this success. With old, obsolete control rooms, operators are significantly distracted, impairing the generator from capitalizing on or even generating actionable data. Changing the control room to an operations-centric model is necessary to achieve the efficiency benefits of digitalization. |
| 249772 | Digital programs to accelerate environmental sustainability and safety programs and compliance | While Industry 4.0 is enabling important gains in efficiency and profitability, it's also supporting significant gains in safety and sustainability. Digital solutions focused on sustainability and safety make work flows and reporting easier for our colleagues, but it also can help provide unparalleled visibility across an organization, helping improve cultural alignment and awareness. From improvements in PPE to industrial energy efficiency optimization, workers have a greater opportunity to individually make a measurable contribution to safety and sustainability. |
| 245702 | Regulatory Compliance: Achieving safety performance improvement and establishing culture | Methods for improving business process inevitably impact the methods used to attempt to improve safety performance. Quality and safety have become synonymous, yet organizations continue to struggle with methods to reach their safety visions. Setbacks occur, and new safety initiatives are the result. This session will explore via real world examples the regulatory compliance requirements of high voltage electrical work and impact that increased regulation has on the "safety culture" of organizations. We'll also examine methods to achieve improved safety culture through grassroots compliance. |
| 234337 | ConEdison of New York's oil-free dry-type eco network transformers | ConEdison of New York has one of the largest network systems in the world, with approximately 27,000 network transformers under the city's streets and sidewalks. To increase safety for New York's population of over 10 million and to reduce the risk associated with oil spills from traditional oil-filled network transformers, ConEd tasked ABB with developing an electrically equivalent oil-free network transformer. |
| 250022 | A safety-driven industry first: Oil-filled SSVT for Internal Arc Protection Class II | “Safety first” should apply to equipment, just as it does to personnel behaviors. Internal arc faults cause violent explosions which rupture transformers and propel fragments, posing a serious safety hazard to substation equipment and personnel. Learn how to eliminate this risk with ABB's Station Service Voltage Transformer for Internal Arc Protection Class II (SSVT-IPC). This transformer is an industry-first design based on detailed finite element analysis studies to withstand and contain a 40kA RMS internal arc fault. Learn why this stronger design means a safer substation. |
| 246259 | Motorized remote racking of MVCBs | The racking of a medium voltage circuit-breaker (MVCB) is a severely critical operation that could expose operators to the risk of an arc flash incident. This operation, performed in front of the switchgear, requires heavy PPE to insure operator safety. The integrated racking mechanism allows the process of racking a MVCB into and out of all three of the ANSI breaker positions from a safe location. Outside the arc flash incident area, operators can avoid bulky PPE requirements and remove themselves from the arc flash risks presented during the racking of equipment on and off of the live bus. |

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# Applications and Best Practices: Technological Advancements

## Electrification Products Innovations

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 245920 | ABB Ability™ Electrical Distribution Control System: The Ability to send power to the bottom line |
| | 2:30 PM | 3:30 PM | 242703 | Increasing productivity with a digital customer experience (ABB empower) |
| | 4:00 PM | 5:00 PM | 246000 | Intelligent critical power distribution equipped with ABB's Cyberex PowerView monitoring system |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 245317 | TruONE™: A critical breakthrough for critical power |
| | 1:30 PM | 2:30 PM | 245353 | Break new ground: The next generation in molded case circuit breakers |
| | 4:30 PM | 5:30 PM | 243957 | Technical advances in power conversion |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 249184 | Smarter home technology |
| | 1:30 PM | 2:30 PM | 245355 | Crimps and the cloud |
| | 3:00 PM | 4:00 PM | 239446 | Understanding NEC arc flash reduction methods |
| | 4:30 PM | 5:30 PM | 245298 | "UP-date" existing facilities with the latest digital protection and monitoring innovations |
| Thursday March 7 | 10:00 AM | 11:00 AM | 233941 | New developments in arc flash mitigation of low voltage system overcurrent protective devices |
| | 11:30 AM | 12:30 PM | 245772 | LV and MV switchgear monitoring: From data on the ground to knowledge in the cloud |
| | 1:45 PM | 2:45 PM | 244287 | Cost-benefit analysis of active arc mitigation solutions |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 245920 | ABB Ability™ Electrical Distribution Control System: The Ability to send power to the bottom line | Monitor, manage and optimize facility energy consumption, anytime from anywhere, with ABB Ability™ Electrical Distribution Control System (EDCS). It is the innovative cloud-based platform which works via smartphone, tablet or computer in real time to optimize energy use and costs. Flexible, scalable and easy to implement, the ABB Ability™ EDCS simplifies building management, offers predictive capabilities that reduce downtime and maintenance, and enables users to dramatically reduce operational costs. Join us to learn how ABB Ability™ EDCS can add significantly to your bottom line. |
| 242703 | Increasing productivity with a digital customer experience (ABB empower) | ABB's empower platform is putting customer experience at the forefront of everything we do. Join this session to learn about empower, upcoming functionality and work we're doing to make your experience with ABB better every day. |
| 246000 | Intelligent critical power distribution equipped with ABB's Cyberex PowerView monitoring system | PowerView eliminates the need for multiple, expensive third party meters by consolidating all required power quality monitoring features (and more) into a single, revenue-grade monitoring product. This flexible metering solution not only simplifies troubleshooting for the end user via single point of contact for all metering functions (ABB), but the innovative I/O card design allows for seamless expansion or addition of other PowerView-supported functionalities (present and future). Additionally, the Cyberex PowerView monitoring systems will be able to integrate with the ABB Ability™ platform. |
| 245317 | TruONE™: A critical breakthrough for critical power | Increasing demand on an aging power grid creates a greater need for an alternative power supply. Places like data centers, hospitals, shopping malls and manufacturing facilities have something in common; in these facilities, even a brief power disruption can create havoc. The new ABB TruONE automatic transfer switch (ATS) provides seamless transfer of power in an easy to install package. Whether you are an OEM/DEM manufacturing electrical panels, a consultant engineer or facility manager, ABB TruONE ATS provides the perfect solution for your critical power requirements. |
| 245353 | Break new ground: The next generation in molded case circuit breakers | The Tmax XT is a game changer in the circuit-breaker market thanks to its innovative features across all levels of applications. In this workshop, we will showcase ways in which the new XT can improve operations. After examining ways that XT can save costs for 80% of all installations, we will examine more advanced installations such as those that include communications. Finally, we will look at applications that breakers have been previously unable to do themselves – opening up new opportunities for savings. We hope you will join us to learn more about this revolutionary product. |
| 243957 | Technical advances in power conversion | The classical idea of what a power supply is or does is changing. There is an accelerated evolutionary path for the power supply to reach new goals of performance while also providing more value to the user. This session will review areas of technology advancements within the power supply, show what the latest performance levels are and how these new advancements bring more value to a customer. It's got to be more than just delivering power! |
| 249184 | Smarter home technology | Welcome to the future, today. ABB-free@home isn't just another smart home solution. It's smarter than smart. Smarter than complicated installations, one-function devices and automation solutions that don't work together. ABB-free@home connects compatible devices and lets you manage them from one easy-to-use interface. It performs elaborate functions with ease and simplicity, so your home is safer, more comfortable and more enjoyable. That's smarter than smart home living. |
| 245355 | Crimps and the cloud | Your electrical circuit is only as good as your connection. The ABB Smart Tool+ measures and records the crimping pressure created during the crimping process at a given distance that the indenter has traveled. This data are then transferred from the tool to your mobile device. You can then upload the data from your mobile device to the cloud. Once the data is in the cloud, the contractor can create crimp reports to share internally and externally. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 239446 | Understanding NEC arc flash reduction methods (240.87) | NEC 240.87, arc flash reduction, requires one of several methods to be implemented when circuit breakers rated 1200A and greater are applied. These techniques range from the simple to the sublime. All have varying degrees of cost and effectiveness. Which one should you use? |
| 245298 | "UP-date" existing facilities with the latest digital protection and monitoring innovations | Countless electrical installations lack the control and monitoring features found in more modern facilities. However, you don't have to replace all of the electrical equipment to gain this important functionality. ABB offers a way to UP-date, UP-grade and UP-load your existing facility, maximizing UP-time with the Ekip UP multifunctional relay. |
| 233941 | New developments in arc flash mitigation of low voltage system overcurrent protective devices | New technologies available in High Pressure Contact (HPC) fused switches greatly increase bus protection. Using the new generation HPC switch allows the user to set even large-amperage switches low enough to respond to arcing faults at a trip speed associated with the instantaneous response of a low voltage circuit breaker trip unit, minimizing arc flash energy. This session will describe the new generation HPC switch design, and how it is applied to new low voltage systems and typical retrofit applications. |
| 245772 | LV and MV switchgear monitoring: From data on the ground to knowledge in the cloud | The interest in monitoring MV distribution equipment has surged in the past few years. This is driven by the reduction in the cost of electronics (sensors, communication modules, solid state storage), maturing diagnostics algorithms and the availability of digital platforms like ABB Ability™ to make information securely accessible, anytime and anywhere. The state-of-the-art in breaker and switchgear monitoring technologies will be presented in this session. We will place special emphasis on analytics that yield asset health metrics and that can be done either on edge devices or in the cloud. |
| 244287 | Cost-benefit analysis of active arc mitigation solutions | The use of active arc mitigation solutions is growing throughout our industry, as are the number of solutions available. But not all solutions are created equal! Not only do they offer different technical solutions, but they also can have very different costs. Since cost is a significant driver in the decision making process, choosing the one that provides the most value and return on that investment is crucial. In this session, we will review the available active arc mitigating solutions ABB has, with focus on the initial investment and total costs weighed against the benefits they provide. |

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# Applications and Best Practices: Technological Advancements

## Industrial Automation Innovations

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 246243 | Increasing conveyor system reliability using a systematic failure modes monitoring approach |
| | 2:30 PM | 3:30 PM | 250163 | Advanced Process Control methods for achieving control and optimization objectives |
| | 4:00 PM | 5:00 PM | 249778 | How digitalization improves steam power plant performance with advanced process control |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 243584 | System 800xA overview and update |
| | 1:30 PM | 2:30 PM | 243595 | Configure and maintain instruments more efficiently than ever before with ABB's FDI powered tools. |
| | 3:00 PM | 4:00 PM | 250368 | ABB Ability™ Symphony® Plus, the future of Automation |
| | 4:30 PM | 5:30 PM | 249477 | The journey towards autonomy in industrial operations |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 249963 | Digital twins: Accelerating the pace of innovation in machine design |
| | 1:30 PM | 2:30 PM | 249494 | Modular enabled automation solutions for the process industry |
| | 3:00 PM | 4:00 PM | 250131 | Symphony Plus SD Series turbine control: The next level |
| | 4:30 PM | 5:30 PM | 245391 | Introducing smart operations powered by ABB's Manufacturing Operations Management software suite |
| Thursday March 7 | 10:00 AM | 11:00 AM | 249489 | Approaching the finish line: Subsea electrification no longer just a dream |
| | 11:30 AM | 12:30 PM | 249962 | OPC UA Time-Sensitive Networking: Bridging the IT/OT divide in factory automation |
| | 1:45 PM | 2:45 PM | 239721 | How ABB digitalization and propulsion solutions are shaping the shipping industry |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 246243 | Increasing conveyor system reliability using a systematic failure modes monitoring approach | Presently, the healthiness of the conveyor belt is largely determined through physical inspections at regular intervals and time based maintenance. However, conveyor belt damage happens between these activities, causing huge production and time losses to plants. This session will explain how some traditional maintenance gaps in the conveyor condition based monitoring can be filled through the application of systematic failure modes monitoring. This monitoring takes advantage of existing digital data, delivering valuable information on potential failures of the conveyor systems. |
| 250163 | Advanced Process Control methods for achieving control and optimization objectives | Multivariable Model Predictive Control (MPC) and Advanced Regulatory Control (ARC) are two very effective Advanced Process Control (APC) methods to achieve control and optimization objectives, such as more stable operation, improved efficiency and increased throughput. MPC, ARC or a combination of the two can be utilized. Some examples of applications using MPC and ARC will be provided to show how the controls can be designed in different ways to achieve these goals. We will also examine the advantages of each, along with limitations, as well as choosing an approach for a specific application. |
| 249778 | How digitalization improves steam power plant performance with advanced process control | Advanced process control (APC) for power plants has become increasingly sophisticated over the past 20 years. Today's operators serve more of an executive or orchestration role – overseeing operations to ensure safety and intervening only as needed. The result is more accurate control over all of a plant's processes, not just a select few as in days past. APC and new digital solutions allow for greater optimization of a greater number of parameters, leading to higher efficiency and greater flexibility to meet market demands than ever before. |
| 243584 | System 800xA overview and update | Come to this session to learn what System 800xA is all about, along with highlights of the recently released version of System 800xA, version 6.1, including new flexible I/O offerings, safety controllers and engineering tools, just to name a few. In addition, we'll look into the near future and the valuable features that will soon follow. |
| 243595 | Configure and maintain instruments more efficiently than ever before with ABB's FDI powered tools. | ABB's field information management tool (FIM) is now integrated with System 800xA, not only simplifying device integration, but also connecting sensor data to the ABB Ability™ platform and enabling asset and fleet management. Learn more about the FIM as well as field device integration (FDI), NAMUR NE 107 and the use of standard device descriptions (DDs) for device integration. Using FIM for 800xA streamlines the installation, engineering and commissioning of the control system and field devices, and helps reduce overall project startup times. |
| 250368 | ABB Ability™ Symphony® Plus, the future of Automation | ABB Ability™ Symphony® Plus is the new generation of ABB's highly acclaimed Symphony family of automation systems. This session focuses on new developments and the future innovation of the ABB Ability Symphony Plus automation system, including Operations, Engineering and Control and I/O, highlighting our flexible deployment options with open architectures and open control networks, with integrated operations and control engineering to streamline application engineering. All of which enable your digital transformation and helps achieve high levels of productivity. |
| 249477 | The journey towards autonomy in industrial operations | Businesses in the industrial space have undergone a paradigm shift to move from isolated operations to collaborative and ultimately more autonomous operations. By 2025 we will witness humans working with systems in a collaborative way, leveraging artificial intelligence (AI) seamlessly. Disruptive technologies like AI, machine learning and augmented reality (AR) have all changed the way we do everyday tasks and in some cases made them autonomous. In this session, we will demonstrate how hands-free collaboration can help repair remote issues or predict plant incidents before they ever happen. |
| 249963 | Digital twins: Accelerating the pace of innovation in machine design | New market trends and consumer demand are forcing modern factories to adopt new approaches to manufacturing. These require machines to be more configurable and highly adaptive, while managing a higher throughput and larger product configurations. Machines cycles have become more complex, requiring a higher degree of synchronization. Simulation can be used to develop digital twins, which allow for rapid prototyping and the development of complex sequencing algorithms, in a virtual environment, without the need to build expensive prototypes. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 249494 | Modular enabled automation solutions for the process industry | Modular automation is the cornerstone of future process plants and crucial in the chemical and pharmaceutical industries, enabling reduced time to market, increased automation efficiency and higher flexibility. Modular automation is the future for flexible process plant production and a key element for the industrial internet of things (IIoT) and Industry 4.0. This technology helps process industries that face requirements such as more customized products, shorter delivery times and smaller batch series. Join this session to learn more. |
| 250131 | Symphony Plus SD Series turbine control: The next level | Join in this discussion to hear how ABB's third generation of turbine control technology and solutions have raised the bar in the turbine control industry. The latest released capabilities, the vision and roadmap of the future, and pilot project success stories from around the world will be highlighted. |
| 245391 | Introducing smart operations powered by ABB's Manufacturing Operations Management software suite | Industrial operations are constantly looking for ways to streamline, innovate and improve operations. ABB's Manufacturing Operations Management (MOM)/Manufacturing Execution System (MES) is a comprehensive software suite designed to boost productivity, quality and agility. Process and production intelligence apps provide the foundation for effectively identifying where to improve operations by accessing key data and insights. Manufacturing execution apps ensure operational consistency and orchestrate the complete production using workflows, standard operating procedures and quality checks. |
| 249489 | Approaching the finish line: Subsea electrification no longer just a dream | The "grand challenge" of placing power infrastructure on the seabed offers significant economic and technical advantages but also places extreme demands on the reliability, uptime and safety of the technology. ABB is about to complete a joint industry project (JIP) together with Equinor, Total and Chevron, in which we develop and qualify a collection of products (including full scale prototypes) enabling a highly reliable, fully qualified and market-ready subsea electrification and distribution system. This development will allow the industry to reach more extreme locations than ever before. |
| 249962 | OPC UA Time-Sensitive Networking: Bridging the IT/OT divide in factory automation | The divide between information technology (IT) and operational technology (OT) networks has limited factories to date. IT networks focus on security and data management; OT networks are optimized to produce deterministic response times for automation. New IEEE Ethernet standards have paved the way to securely and efficiently merge IT and OT. Powered by Time-Sensitive Networking (TSN) and the OPC Unified Architecture (OPC UA) data modeling capability, this combination of technologies allows real-time deterministic communications across a secure network, meeting the most stringent requirements. |
| 239721 | How ABB digitalization and propulsion solutions are shaping the shipping industry | With decreasing ice coverage, Arctic regions are of increasing political and economical interest for shorter shipping routes, natural resources, scientific research and other activities affecting welfare and security. ABB offers advanced solutions that make Arctic shipping technically feasible and economically attractive. ABB Ability™ addresses digitalization, which is an emerging megatrend changing the way the maritime industry operates. Azipod propulsion technology supports sustainable and efficient shipping. We will also review trends and developments in the Arctic maritime industry. |

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# Applications and Best Practices: Technological Advancements

## Power Grids Innovations

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 245783 | A vision for the future: Applying digital twin concepts |
| | 2:30 PM | 3:30 PM | 249497 | HVDC technology and applications |
| | 4:00 PM | 5:00 PM | 250142 | Digitization: A key to unlocking transformer potential |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 249712 | TXpert™: The world's first digital liquid-filled distribution transformer |
| | 1:30 PM | 2:30 PM | 245455 | AEP case study: Digital collaboration addresses extra high voltage grid |
| | 3:00 PM | 4:00 PM | 249162 | Cyber security for power grids |
| | 4:30 PM | 5:30 PM | 243782 | AI based islanding detection for utility and industrial applications |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 245230 | SF6 gas alternatives for high voltage switchgear |
| | 1:30 PM | 2:30 PM | 242741 | Modular hybrid microgrid solutions |
| | 3:00 PM | 4:00 PM | 245878 | The TXplore system: Perform internal transformer inspections without draining the oil |
| | 4:30 PM | 5:30 PM | 249280 | Dry-type network submersible transformers: Increase safety, reliability for distribution networks |
| Thursday March 7 | 10:00 AM | 11:00 AM | 245229 | Shunt reactor switching with high voltage circuit-breakers |
| | 11:30 AM | 12:30 PM | 249277 | Reduce downtime and increase revenue with the ABB Ability™ TXpert™ dry-type distribution transformer |
| | 1:45 PM | 2:45 PM | 244174 | Strengthen weak grids using hybrid synchronous condensers |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 245783 | A vision for the future: Applying digital twin concepts | This session will cover Ellipse Enterprise Asset Management (EAM) strategy, road map and demonstration of future releases, including optimization services and new HTML5 based user interface (UI) using micro service technology and device independent applications. |
| 249497 | HVDC technology and applications | High voltage direct current (HVDC) is a highly efficient alternative for transmitting large amounts of electricity over long distances and for special purpose applications. As a key enabler in the future energy system based on renewables, HVDC is truly shaping the grid of the future. This presentation will cover the theory, benefit, technology, applications (including interconnections between the regions and integrating renewable energy resources into the electric grid), reference projects and more. |
| 250142 | Digitization: A key to unlocking transformer potential | With the penetration of distributed energy generation, assets on the grid are exposed to new challenges, with transformers at the heart of the grid. The last decade has exposed these units to an increasing number of events, stretching their capabilities. Therefore, it is critical to monitor their health and diagnose these assets. This session will present the ABB Ability™ Power Transformer, which uses CoreTec devices to integrate a wide range of sensors and provide real-time monitoring and diagnosis using an on-site or a cloud solution of ABB Ability™ Ellipse APM (Asset Performance Management). |
| 249712 | TXpert™: The world's first digital liquid-filled distribution transformer | This session will describe a world-first innovation in distribution transformers, and explain the experience and benefits of deploying TXpert. Distribution transformers are a vital component of every grid; however, today they are subject to far more stresses that reduce their lifetime and could impact the grid. TXpert brings added value in areas such as increased safety, better replacement plans, greener for the environment, and cost savings in maintenance and inventory reduction. TXpert's built-in advanced analytics turn information into insights for a smarter, greener and stronger grid. |
| 245455 | AEP case study: Digital collaboration addresses extra high voltage grid | There has been a lot of focus on the effect of geomagnetic disturbances (GMDs) and the negative aspects of the resulting direct current (DC) induced in the power grid. NERC TLP-007 requires utilities to prepare mitigation strategies for the solar storm of the century. This case study will show how combining digital technology using fiber optic current sensors capable of measuring both AC and DC, with the right Intelligent Electronic Device (IED), provides an improved DC measurement system and demonstrated advantages of utilizing IEC 61850's process bus. |
| 249162 | Cyber security for power grids | In the session, we will present example technologies from Department of Energy (DOE) funded research projects related to defense-in-depth cyber security of energy delivery systems using domain principles. The technologies are geared towards electrical substations, microgrids and HVDC. They leverage the physics of these systems to evaluate the cyber security of incoming commands and measurements. |
| 243782 | AI based islanding detection for utility and industrial applications | Anti-islanding is a safety requirement for distributed energy resources (DERs) required by IEEE 1547 and IEC 62116. Existing implementations of this requirement either have blind spots or are too expensive. Such limitations are a barrier to adoption of DERs, slowing the energy transition away from fossil fuels. National Grid and PG&E will demonstrate the first phase study results utilizing ABB's new patent-pending artificial intelligence (AI) based islanding detection algorithm on their distribution circuits. The collaboration also aims at making the algorithm a new standard for the industry. |
| 245230 | SF6 gas alternatives for high voltage switchgear | Though SF6 gas has been the predominant insulation and interrupting medium utilized in HV switchgear for nearly 50 years, the high global warming potential (GWP) of SF6 is viewed as a major drawback for future technologies. As a result, manufacturers and users are seeking alternatives to SF6 gas with low GWP. This session will provide an introduction to ABB's eco-efficient technology for HV switchgear with a focus gas handling, from installation through end-of-life. |
| 242741 | Modular hybrid microgrid solutions | With the increased need to rapidly deploy energy solutions to support mobile disaster recovery efforts and storm restoration, and provide resiliency where no options previously existed, ABB leveraged its world-class, proven technology to provide a modular hybrid microgrid solution. This enables the rapid deployment of solar and battery storage solutions, as well as the option of fossil fired generation. This session will cover the merits and applications of this system. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 245878 | The TXplore system: Perform internal transformer inspections without draining the oil | ABB has developed a service to support an internal inspection of a power transformer while still filled with oil. Previously, when issues arose, it was necessary to drain out all the oil and send someone inside the confined space to perform an inspection. This is costly, time consuming, and puts personnel and the transformer at risk when entering the challenging confined space. ABB has introduced an untethered remote control “submarine” that allows a visual inspection of the transformer’s internal components by a transformer expert while the transformer remains filled with oil. |
| 249280 | Dry-type network submersible transformers: Increase safety, reliability for distribution networks | As cities become more densely populated, safety for people, property and the environment are of utmost concern for utilities. Having a safe and reliable network transformer is a must. Traditionally, network transformers use oils for dielectric resistance and cooling. Internal faults or short circuits on these transformers can lead to large street level events that cause significant damage and harm. ABB has developed the first ever, submersible, dry-type network transformer intended for critical vault locations to help contribute to building a stronger, safer and greener grid. |
| 245229 | Shunt reactor switching with high voltage circuit-breakers | Utilities increasingly employ reactors to control transmission line voltage by absorbing reactive power, thus preventing the line voltage from exceeding its design value. Switching a reactor causes fast front and higher peak transient recovery voltages across the circuit-breaker, challenging the breaker's endurance and the transmission system's reliability. We will discuss the ABB solution that exceeds current standard requirements for this highly variable and demanding switching application. Metal oxide varistors (MOV), applied to dead tank breakers, reduce the probability of re-ignition. |
| 249277 | Reduce downtime and increase revenue with the ABB Ability™ TXpert™ dry-type distribution transformer | The grid is evolving. Cities are growing. Industries are expanding. All of these changes are creating new stresses on distribution networks and transformers. Despite these challenges, ABB Ability™ TXpert dry-type transformers give new capabilities to increase uptime through a reliable and easy to use analytics platform. Come learn about all the new analytic features that will maximize your operations. |
| 244174 | Strengthen weak grids using hybrid synchronous condensers | With big changes in the network due to a higher share of solar and wind generation, traditional power plants’ contribution of inertia and short circuit current is going down. This makes the network weaker and more susceptible to disturbance. A setup of synchronous condensers, in conjunction with static var compensators (SVCs) or static synchronous compensators (STATCOMs), provides fast response reactive power and voltage control, together with increased system inertia and increased short circuit level. This session will focus on the benefits of combining STATCOMs and synchronous condensers. |

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# Applications and Best Practices: Technological Advancements

## Robotics and Motion Innovations

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 249142 | Servo motor breaker technology for continuous EAF transformer operations |
| | 2:30 PM | 3:30 PM | 244231 | Connected services and digitalization |
| | 4:00 PM | 5:00 PM | 233883 | RobotStudio virtual reality |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 244233 | The food and beverage factory of the future |
| | 1:30 PM | 2:30 PM | 249838 | Introducing IoT edge computing for mounted bearings |
| | 1:30 PM | 2:30 PM | 244236 | Service Robotics and Logistics: The New Frontier |
| | 3:00 PM | 4:00 PM | 244235 | One-stop-shop for the electric vehicle factory of the future |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 249250 | Sustainability of high efficiency synchronous reluctance motors |
| | 1:30 PM | 2:30 PM | 246315 | Visual air gap inspection for large synchronous motors and generators |
| | 3:00 PM | 4:00 PM | 244232 | Collaborative robotics |
| | 4:30 PM | 5:30 PM | 234241 | ABB Ability™ Connected Atomizer |
| Thursday March 7 | 10:00 AM | 11:00 AM | 246250 | Elastomeric tire couplings: Maximizing driven equipment life and increasing reliability |
| | 11:30 AM | 12:30 PM | 244236 | Service Robotics and Logistics: The New Frontier |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 249142 | Servo motor breaker technology for continuous EAF transformer operations | Electric arc furnace (EAF) transformer switching has been a recognized industry problem for reliability of the switching device. With over one hundred close-open operations per day requiring relentless furnace operation, ABB introduces a new servo motor drive operating mechanism, which was developed and deployed on three EAF transformers for Nucor Steel. During this case study, we will discuss performance reviews of the first Nucor installation, with an overview of the system and process benefits obtained. |
| 244231 | Connected services and digitalization | "Safe and flexible collaborative robots are only the starting point. The full benefit of the factory of the future will include digitalization – connecting robots to the broader manufacturing ecosystem to “close the loop” between the physical plant and the virtual world.<br><br>Learn how connected robots allow users to gain actionable and proactive intelligence from each stage of the automation life cycle, from design and build through operation and maintenance. Get real-time information to improve performance and reliability." |
| 233883 | RobotStudio virtual reality | RobotStudio® is not only our best offline programming, simulation and communication tool for ABB robots, but one of the most capable robotics tools in the industry. This software is consistently evolving and being developed, and today we have virtual reality (VR) capabilities that are above and beyond most customers' expectations. It provides capabilities for remote support and remote collaboration between engineers sitting at different locations. |
| 244232 | Collaborative robotics | "Within the Industry 4.0 ecosystem, robotic automation takes on an important role to enable the factory of the future. One of the latest and most exciting developments is the emergence of collaborative robots and related technologies, which have made robotic automation more accessible for a broad range of discrete manufacturers.<br><br>This session will cover the essentials of collaborative robotics, while focusing on how they are applied and how they will help shape the factory of the future." |
| 249838 | Introducing IoT edge computing for mounted bearings | How can the ABB Ability™ Smart Sensor for mounted bearings reduce downtime and save money? Bearings with rolling elements are a critical component in all rotating machinery. Over the life of a bearing, these rolling elements wear and start to cause heat and vibration. Early detection and analysis of these two factors can point to impending failure, possibly reducing downtime and damage to other components in the power train. Join us in taking a deeper dive into what causes a bearing to fail, what are fault frequencies and why edge computing is essential to the success of your process. |
| 244236 | Service Robotics and Logistics: The New Frontier | The development of service robotics is fast paced and dynamic. It is often difficult, however, to separate the hype and science fiction from the real technologies that will deliver customer value and change the face of industry. This moderated panel will cover current and future material handling/manipulation applications and discuss challenges to adoption in retail, healthcare, e-commerce, warehousing and distribution segments. ABB's current service robotics portfolio will be also be presented, along with new technologies and opportunities to come. |
| 244235 | One-stop-shop for the electric vehicle factory of the future | ABB offers a broad range of complete electric vehicle (EV) manufacturing solutions, including collaborative automation and state-of-the-art digital services through the ABB Ability™ platform. From bumper to bumper, ABB’s decades of experience in automotive and digital applications provide the flexibility, efficiency and scalability needed for EV operations to flourish. This session will examine robotic automations enhancements to these applications: body shop, paint, e-drive, battery, and final trim and assembly. |
| 249250 | Sustainability of high efficiency synchronous reluctance motors | The newest generation of ABB high efficiency synchronous reluctance motors (SynRM2) are special because they do not utilize rare earth permanent magnets but rather easily available ferrite magnets, making these motors more cost effective and accessible. As a result, we are now able to produce a motor that is more sustainable economically and ecologically and still meet or exceed IE5 efficiency levels. To fulfill all application needs, SynRM2 is available either as a packaged solution or integrated with a matched drive. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 246315 | Visual air gap inspection for large synchronous motors and generators | Visual inspection of the air gap will help in the early detection of issues in large motors and generators that might be only visible during a major outage. It helps to establish the condition of not just the stator but also the rotor. This inspection aims to: avoid the need to remove the rotor, reducing cost and time; enhance OEM-recommended preventive maintenance programs; eliminate the risk of secondary damage from rotor removal; and localize faults such as blocked stator ventilation ducts, discoloration/hot sports, rotor insulation plate movement and others. |
| 244233 | The food and beverage factory of the future | The food and beverage market is booming globally, and the challenges for the industry to develop high output, yet flexible production lines are ideally solved by robotic automation. This session will focus on new trends and technologies for robotic picking, packing and palletizing that efficiently adapt production and packaging to meet continually evolving customer tastes. Actual application case studies will provide insights on how robotic automation can enhance the production and packaging operations in a wide range of food and beverage industries and applications. |
| 234241 | ABB Ability™ Connected Atomizer | ABB’s vision for paint automation is a quality-driven approach that results in fewer defects and higher availability. The system provides smarter connected automation and advanced analytics, controlling every aspect of production from the first drop of paint to the final finishing steps. This new generation of connected robotic paint atomizers features multiple sensors that feed real time data from the point of application. |
| 246250 | Elastomeric tire couplings: Maximizing driven equipment life and increasing reliability | Urethane tire style couplings have become very popular across a broad range of common industrial applications. Unfortunately, for many reasons they experience a number of problems from a technical standpoint, creating a range of application-based issues that lead to unexpected failures. ABB's Dodge® Raptor's unique combination of natural rubber elastomeric material and patented WingLock™ element design solves problems associated with urethane based tire couplings. |
| 244236 | Service Robotics and Logistics: The New Frontier | The development of service robotics is fast paced and dynamic. It is often difficult, however, to separate the hype and science fiction from the real technologies that will deliver customer value and change the face of industry. This moderated panel will cover current and future material handling/manipulation applications and discuss challenges to adoption in retail, healthcare, e-commerce, warehousing and distribution segments. ABB's current service robotics portfolio will be also be presented, along with new technologies and opportunities to come. |

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# Applications and Best Practices: Hands-on Technical Training

## ABB Ability™ Solutions for Industrial Automation

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 255779 | ABB's plant asset management solution: Hands-on experience creating and deploying an asset model |
| | 4:00 PM | 5:00 PM | 255351 | ABB Ability™ System 800xA v.6.1 engineering update |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 255358 | System 800xA efficient engineering part 1: Workflow overview |
| | 1:30 PM | 2:30 PM | 253273 | Enhance onshore upstream oil and gas production with cloud computing: Hands-on experience |
| | 3:00 PM | 4:00 PM | 253262 | System 800xA efficient engineering part 2: Select I/O and xStream Engineering deep dive |
| | 4:30 PM | 5:30 PM | 253266 | ABB's FIM: Hands-on experience with FIM device configuration |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 255779 | ABB's plant asset management solution: Hands-on experience creating and deploying an asset model |
| | 1:30 PM | 2:30 PM | 255351 | ABB Ability™ System 800xA v.6.1 engineering update |
| | 4:30 PM | 5:30 PM | 255358 | System 800xA efficient engineering part 1: Workflow overview |
| Thursday March 7 | 10:00 AM | 11:00 AM | 253262 | System 800xA efficient engineering part 2: Select I/O and xStream Engineering deep dive |
| | 11:30 AM | 12:30 PM | 253266 | ABB's FIM: Hands-on experience with FIM device configuration |
| | 1:45 PM | 2:45 PM | 253273 | Enhance onshore upstream oil and gas production with cloud computing: Hands-on experience |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 255779 | ABB's plant asset management solution: Hands-on experience creating and deploying an asset model | Attend this hands-on session to experience ABB's new plant asset management (PAM) solution for control systems. In this session, you will learn how to create and deploy an asset model for basic and high value assets using the PAM workplace. You will also learn how to leverage the data model for fleet management and enhanced analysis of diagnostic data. The PAM will help you move from reactive to predictive maintenance of plant wide critical assets to maximize process uptime to save maintenance cost. What more could you ask for? |
| 255351 | ABB Ability™ System 800xA v.6.1 engineering update | If you are already familiar with how to configure System 800xA and want to know the changes that are coming in the latest release, v6.1, then this session is for you. This hands-on workshop will include a few of the efficiency boosting features that you should be aware of to ensure you are getting the most from your 800xA system. Included will be an introduction to the 'signal' concept to help connect I/O to applications automatically, an introduction to the Ethernet I/O wizard, and a new, more intuitive, Bulk Data Manager (BDM 2). |
| 255358 | System 800xA efficient engineering part 1: Workflow overview | System 800xA offers an incredibly capable platform with multiple ways to engineer automation projects, which can sometimes cause system programmers to wonder – which way is best? Come to this hands-on workshop to learn the ultimate in efficient engineering workflows for control strategies and graphics that embrace late binding principles and the power of System 800xA with its many time-saving features. |
| 253273 | Enhance onshore upstream oil and gas production with cloud computing: Hands-on experience | Unlock the potential of cloud computing to enhance your upstream production with artificial lift applications, 24/7 event notification and visualization on any device. This session will guide you to through the steps to configure the ABB Ability™ Upstream Production Platform to collect the gas lift application data and issue control commands, configure event notification via a text message and configure the graphical user interface (GUI). |
| 253262 | System 800xA efficient engineering part 2: Select I/O and xStream Engineering deep dive | In this hands-on session, program the Panel Builder 800 to communicate with AC800M using a memory membrane system (MMS), and learn the basics of building graphics using standard libraries and configurations to set up communication with AC800M. Find out how data can be exchanged using the built-in drivers. |
| 253266 | ABB's FIM: Hands-on experience with FIM device configuration | ABB's field information management tool (FIM) is now integrated with System 800xA, not only simplifying device integration but also connecting sensor data to the ABB Ability™ platform and enabling asset and fleet management. Attend this session to get hands-on experience using it to configure and integrate devices. Using FIM for 800xA streamlines the installation, engineering and commissioning of the control system and field devices and helps reduce overall project startup times. |
| 255779 | ABB's plant asset management solution: Hands-on experience creating and deploying an asset model | Attend this hands-on session to experience ABB's new plant asset management (PAM) solution for control systems. In this session, you will learn how to create and deploy an asset model for basic and high value assets using the PAM workplace. You will also learn how to leverage the data model for fleet management and enhanced analysis of diagnostic data. The PAM will help you move from reactive to predictive maintenance of plant wide critical assets to maximize process uptime to save maintenance cost. What more could you ask for? |
| 255351 | ABB Ability™ System 800xA v.6.1 engineering update | If you are already familiar with how to configure System 800xA and want to know the changes that are coming in the latest release, v6.1, then this session is for you. This hands-on workshop will include a few of the efficiency boosting features that you should be aware of to ensure you are getting the most from your 800xA system. Included will be an introduction to the 'signal' concept to help connect I/O to applications automatically, an introduction to the Ethernet I/O wizard, and a new, more intuitive, Bulk Data Manager (BDM 2). |
| 253271 | Try out ABB's process simulator: Learn how to configure an electrical model for dynamic simulation | Would you like to try our ABB process simulator? Find out how you can configure an electrical model for dynamic simulation of voltage, frequency and power flow. You can draw your single line diagram and configure the components and run scenarios to find out how to balance power sources versus the loads. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 255358 | System 800xA efficient engineering part 1: Workflow overview | System 800xA offers an incredibly capable platform with multiple ways to engineer automation projects, which can sometimes cause system programmers to wonder – which way is best? Come to this hands-on workshop to learn the ultimate in efficient engineering workflows for control strategies and graphics that embrace late binding principles and the power of System 800xA with its many time-saving features. |
| 253262 | System 800xA efficient engineering part 2: Select I/O and xStream Engineering deep dive | In this hands-on session, program the Panel Builder 800 to communicate with AC800M using a memory membrane system (MMS), and learn the basics of building graphics using standard libraries and configurations to set up communication with AC800M. Find out how data can be exchanged using the built-in drivers. |
| 253266 | ABB's FIM: Hands-on experience with FIM device configuration | ABB's field information management tool (FIM) is now integrated with System 800xA, not only simplifying device integration but also connecting sensor data to the ABB Ability™ platform and enabling asset and fleet management. Attend this session to get hands-on experience using it to configure and integrate devices. Using FIM for 800xA streamlines the installation, engineering and commissioning of the control system and field devices and helps reduce overall project startup times. |
| 253273 | Enhance onshore upstream oil and gas production with cloud computing: Hands-on experience | Unlock the potential of cloud computing to enhance your upstream production with artificial lift applications, 24/7 event notification and visualization on any device. This session will guide you to through the steps to configure the ABB Ability™ Upstream Production Platform to collect the gas lift application data and issue control commands, configure event notification via a text message and configure the graphical user interface (GUI). |

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# Applications and Best Practices: Hands-on Technical Training

## ABB Ability™ Symphony Plus

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 253192 | S+ Engineering hands-on technical training virtual experience part 1: Bulk engineering tool |
| | 2:30 PM | 3:30 PM | 253195 | S+ Engineering hands-on technical training virtual experience part 2: Configurable function codes |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 253200 | S+ Operations hands-on technical training virtual experience part 1: Database integration |
| | 1:30 PM | 2:30 PM | 253204 | S+ Engineering hands-on technical training virtual experience part 2: Graphics |
| | 3:00 PM | 4:00 PM | 253192 | S+ Engineering hands-on technical training virtual experience part 1: Bulk engineering tool |
| | 4:30 PM | 5:30 PM | 253195 | S+ Engineering hands-on technical training virtual experience part 2: Configurable function codes |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 253200 | S+ Operations hands-on technical training virtual experience part 1: Database integration |
| | 3:00 PM | 4:00 PM | 253192 | S+ Engineering hands-on technical training virtual experience part 1: Bulk engineering tool |
| | 4:30 PM | 5:30 PM | 253200 | S+ Operations hands-on technical training virtual experience part 1: Database integration |
| Thursday March 7 | 10:00 AM | 11:00 AM | 253195 | S+ Engineering hands-on technical training virtual experience part 2: Configurable function codes |
| | 11:30 PM | 12:30 PM | 253204 | S+ Engineering hands-on technical training virtual experience part 2: Graphics |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 253192 | S+ Engineering hands-on technical training virtual experience part 1: Bulk engineering tool | In this session, attendees will log into the ABB University virtual training server to experience the self-paced S+ Engineering virtual training environment available as an alternative to classroom training. The session utilizes lecture materials for topic learning and virtual machines for the students to work on lab exercises. This session will be a subset of the ABB University S312 course and will focus on the bulk engineering tool to demonstrate I/O list management to import information and assign signals to I/O channels using the I/O assignment tool. |
| 253195 | S+ Engineering hands-on technical training virtual experience part 2: Configurable function codes | In this session, attendees will log into the ABB University virtual training server to experience the self-paced S+ Engineering virtual training environment available as an alternative to classroom training. The session utilizes lecture materials for topic learning and virtual machines for the students to work on lab exercises. This session will be a subset of the ABB University S312 course and will focus on the configurable function code. The attendee will learn how to create and modify custom function codes that will meet specific needs for their system configuration. |
| 253200 | S+ Operations hands-on technical training virtual experience part 1: Database integration | In this session, attendees will log into the ABB University virtual training server to experience the self-paced S+ Operations virtual training environment available as an alternative to classroom training. The session utilizes lecture materials for topic learning and virtual machines for the students to work on lab exercises. This session will be a subset of the ABB University S321 course and will focus the integration of S+ Engineering and S+ Operations, use operations engineering to configure S+ Operations and access the S+ Operations tag configuration. |
| 253204 | S+ Engineering hands-on technical training virtual experience part 2: Graphics | In this session, attendees will log into the ABB University virtual training server to experience the self-paced S+ Engineering virtual training environment available as an alternative to classroom training. The session utilizes lecture materials for topic learning and virtual machines for the students to work on lab exercises. This session will be a subset of the ABB University S321 course and will show the attendee how to create a basic graphic symbol, use the symbol to indicate process dynamics and create a basic call to an Infi90 faceplate and custom faceplate. |
| 253192 | S+ Engineering hands-on technical training virtual experience part 1: Bulk engineering tool | In this session, attendees will log into the ABB University virtual training server to experience the self-paced S+ Engineering virtual training environment available as an alternative to classroom training. The session utilizes lecture materials for topic learning and virtual machines for the students to work on lab exercises. This session will be a subset of the ABB University S312 course and will focus on the bulk engineering tool to demonstrate I/O list management to import information and assign signals to I/O channels using the I/O assignment tool. |
| 253195 | S+ Engineering hands-on technical training virtual experience part 2: Configurable function codes | In this session, attendees will log into the ABB University virtual training server to experience the self-paced S+ Engineering virtual training environment available as an alternative to classroom training. The session utilizes lecture materials for topic learning and virtual machines for the students to work on lab exercises. This session will be a subset of the ABB University S312 course and will focus on the configurable function code. The attendee will learn how to create and modify custom function codes that will meet specific needs for their system configuration. |
| 253200 | S+ Operations hands-on technical training virtual experience part 1: Database integration | In this session, attendees will log into the ABB University virtual training server to experience the self-paced S+ Operations virtual training environment available as an alternative to classroom training. The session utilizes lecture materials for topic learning and virtual machines for the students to work on lab exercises. This session will be a subset of the ABB University S321 course and will focus the integration of S+ Engineering and S+ Operations, use operations engineering to configure S+ Operations and access the S+ Operations tag configuration. |
| 253192 | S+ Engineering hands-on technical training virtual experience part 1: Bulk engineering tool | In this session, attendees will log into the ABB University virtual training server to experience the self-paced S+ Engineering virtual training environment available as an alternative to classroom training. The session utilizes lecture materials for topic learning and virtual machines for the students to work on lab exercises. This session will be a subset of the ABB University S312 course and will focus on the bulk engineering tool to demonstrate I/O list management to import information and assign signals to I/O channels using the I/O assignment tool. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 253200 | S+ Operations hands-on technical training virtual experience part 1: Database integration | In this session, attendees will log into the ABB University virtual training server to experience the self-paced S+ Operations virtual training environment available as an alternative to classroom training. The session utilizes lecture materials for topic learning and virtual machines for the students to work on lab exercises. This session will be a subset of the ABB University S321 course and will focus the integration of S+ Engineering and S+ Operations, use operations engineering to configure S+ Operations and access the S+ Operations tag configuration. |
| 253195 | S+ Engineering hands-on technical training virtual experience part 2: Configurable function codes | In this session, attendees will log into the ABB University virtual training server to experience the self-paced S+ Engineering virtual training environment available as an alternative to classroom training. The session utilizes lecture materials for topic learning and virtual machines for the students to work on lab exercises. This session will be a subset of the ABB University S312 course and will focus on the configurable function code. The attendee will learn how to create and modify custom function codes that will meet specific needs for their system configuration. |
| 253204 | S+ Engineering hands-on technical training virtual experience part 2: Graphics | In this session, attendees will log into the ABB University virtual training server to experience the self-paced S+ Engineering virtual training environment available as an alternative to classroom training. The session utilizes lecture materials for topic learning and virtual machines for the students to work on lab exercises. This session will be a subset of the ABB University S321 course and will show the attendee how to create a basic graphic symbol, use the symbol to indicate process dynamics and create a basic call to an Infi90 faceplate and custom faceplate. |

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# Applications and Best Practices: Hands-on Technical Training

## ABB Ability™ System 800xA

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 255787 | Customer reference group introduction to virtual training |
| | 2:30 PM | 3:30 PM | 253260 | Configuring Process Panel 800 |
| | 4:00 PM | 5:00 PM | 253208 | 800xA hands-on technical training virtual experience part 1: Simple reports |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 253214 | System 800xA and Compact: Engineering AC800M control strategies |
| | 1:30 PM | 2:30 PM | 253764 | System 800xA and Compact HMI: Configuring PG2 graphics |
| | 3:00 PM | 4:00 PM | 253208 | 800xA hands-on technical training virtual experience part 1: Simple reports |
| | 4:30 PM | 5:30 PM | 253214 | System 800xA and Compact: Engineering AC800M control strategies |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 253764 | System 800xA and Compact HMI: Configuring PG2 graphics |
| | 1:30 PM | 2:30 PM | 253260 | Configuring Process Panel 800 |
| | 3:00 PM | 4:00 PM | 253208 | 800xA hands-on technical training virtual experience part 1: Simple reports |
| | 4:30 PM | 5:30 PM | 253214 | System 800xA and Compact: Engineering AC800M control strategies |
| Thursday March 7 | 10:00 AM | 11:00 AM | 253764 | System 800xA and Compact HMI: Configuring PG2 graphics |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 255787 | Customer reference group introduction to virtual training | This session will introduce our customer reference group to ABB University's virtual training platform. Experience the class delivery platform that will help you receive the training that you need while eliminating travel costs and time away from home for your employees. |
| 253260 | Configuring Process Panel 800 | In this hands-on session, program the Panel Builder 800 to communicate with AC800M using a memory membrane system (MMS) and learn the basics of building graphics using standard libraries and configurations to set up communication with AC800M. Find out how data can be exchanged using the built-in drivers. |
| 253208 | 800xA hands-on technical training virtual experience part 1: Simple reports | In this session, attendees will log into the ABB University virtual training server to experience the self-paced 800xA virtual training environment available as an alternative to classroom training. The session utilizes lecture materials for topic learning and virtual machines for the students to work on lab exercises. This session will be a subset of the ABB University T315H course and will focus on creating simple reports based on Microsoft Excel data access, set up a scheduled task to generate scheduled reports and use snapshot reports. |
| 253214 | System 800xA and Compact: Engineering AC800M control strategies | This hands-on technical training session will show participants how easy it is to configure control strategies in the AC800M controller platform using System 800xA and Compact's Control Builder engineering environment. This session will include lab exercises to support the instructor's lecture. |
| 253764 | System 800xA and Compact HMI: Configuring PG2 graphics | This hands-on technical training session will introduce the participants to how easy it is to configure operator graphics using System 800xA and Compact HMI's PG2 graphics configuration software. This session will include lab exercises to support the instructor's lecture. |
| 253208 | 800xA hands-on technical training virtual experience part 1: Simple reports | In this session, attendees will log into the ABB University virtual training server to experience the self-paced 800xA virtual training environment available as an alternative to classroom training. The session utilizes lecture materials for topic learning and virtual machines for the students to work on lab exercises. This session will be a subset of the ABB University T315H course and will focus on creating simple reports based on Microsoft Excel data access, set up a scheduled task to generate scheduled reports and use snapshot reports. |
| 253214 | System 800xA and Compact: Engineering AC800M control strategies | This hands-on technical training session will show participants how easy it is to configure control strategies in the AC800M controller platform using System 800xA and Compact's Control Builder engineering environment. This session will include lab exercises to support the instructor's lecture. |
| 253764 | System 800xA and Compact HMI: Configuring PG2 graphics | This hands-on technical training session will introduce the participants to how easy it is to configure operator graphics using System 800xA and Compact HMI's PG2 graphics configuration software. This session will include lab exercises to support the instructor's lecture. |
| 253260 | Configuring Process Panel 800 | In this hands-on session, program the Panel Builder 800 to communicate with AC800M using a memory membrane system (MMS) and learn the basics of building graphics using standard libraries and configurations to set up communication with AC800M. Find out how data can be exchanged using the built-in drivers. |
| 253208 | 800xA hands-on technical training virtual experience part 1: Simple reports | In this session, attendees will log into the ABB University virtual training server to experience the self-paced 800xA virtual training environment available as an alternative to classroom training. The session utilizes lecture materials for topic learning and virtual machines for the students to work on lab exercises. This session will be a subset of the ABB University T315H course and will focus on creating simple reports based on Microsoft Excel data access, set up a scheduled task to generate scheduled reports and use snapshot reports. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 253214 | System 800xA and Compact: Engineering AC800M control strategies | This hands-on technical training session will show participants how easy it is to configure control strategies in the AC800M controller platform using System 800xA and Compact's Control Builder engineering environment. This session will include lab exercises to support the instructor's lecture. |
| 253764 | System 800xA and Compact HMI: Configuring PG2 graphics | This hands-on technical training session will introduce the participants to how easy it is to configure operator graphics using System 800xA and Compact HMI's PG2 graphics configuration software. This session will include lab exercises to support the instructor's lecture. |

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# Applications and Best Practices: Hands-on Technical Training

## B&R PLCs, Servos and Motion Devices

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 253896 | Digital twins: Using 3D machine simulation to reduce development time |
| | 2:30 PM | 3:30 PM | 253930 | Advanced analytics for brownfield assets using B&R's Orange Box. |
| | 4:00 PM | 5:00 PM | 253940 | ACOPOStrak: Next generation industrial transport technology |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 253941 | Diagnosing and enhancing B&R powered machines with web based tools |
| | 1:30 PM | 2:30 PM | 253896 | Digital twins: Using 3D machine simulation to reduce development time |
| | 3:00 PM | 4:00 PM | 253930 | Advanced analytics for brownfield assets using B&R's Orange Box. |
| | 4:30 PM | 5:30 PM | 253940 | ACOPOStrak: Next generation industrial transport technology |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 253941 | Diagnosing and enhancing B&R powered machines with web based tools |
| | 1:30 PM | 2:30 PM | 253896 | Digital twins: Using 3D machine simulation to reduce development time |
| | 3:00 PM | 4:00 PM | 253930 | Advanced analytics for brownfield assets using B&R's Orange Box. |
| | 4:30 PM | 5:30 PM | 253940 | ACOPOStrak: Next generation industrial transport technology |
| Thursday March 7 | 10:00 AM | 11:00 AM | 253941 | Diagnosing and enhancing B&R powered machines with web based tools |
| | 11:30 AM | 12:30 PM | 253896 | Digital twins: Using 3D machine simulation to reduce development time |
| | 1:45 PM | 2:45 PM | 253930 | Advanced analytics for brownfield assets using B&R's Orange Box. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 253896 | Digital twins: Using 3D machine simulation to reduce development time | In this session, you will learn and experience how digital twin technology enables machine builders to prove new machine concepts without having to mechanically build the machine. Application software developers use such tools to shorten machine commissioning cycles. |
| 253930 | Advanced analytics for brownfield assets using B&R's Orange Box. | B&R's Orange Box lets users access previously unreadable energy and process data from digitally isolated machinery. The Orange Box is able to read data from the machine without any changes to existing hardware or software. Clearly visualized performance metrics make it easy to identify opportunities for targeted improvement so machinery can be operated more efficiently. During this session, you will learn how to use and configure the Orange Box for brownfield installations. |
| 253940 | ACOPOStrak: Next generation industrial transport technology | ACOPOStrak is a new technology from B&R that features independent shuttles moved by permanent magnets along a long stator linear motor track. Product movements can be configured individually as well as batch grouping and ungrouping. The dramatic increase in processing speed makes your line more productive. By the use of B&R's digital twin technology, you will be introduced to ACOPOStrak and SuperTrak, and how they help you increase your machine's productivity while reducing the machine's footprint. |
| 253941 | Diagnosing and enhancing B&R powered machines with web based tools | Plant service technicians and engineers who service machines and equipment powered by B&R controls and PLCs do not need any special programing tools to diagnose or add small features to the machines. Through the use of a web browser, the machine's hardware can be diagnosed, and the status of function blocks can be monitored live. Optionally for machines equipped with B&R's HTML5 tool, mapp CodeBox, additional ladder diagram code can be created on the machine without any programming tools. |
| 253896 | Digital twins: Using 3D machine simulation to reduce development time | In this session, you will learn and experience how digital twin technology enables machine builders to prove new machine concepts without having to mechanically build the machine. Application software developers use such tools to shorten machine commissioning cycles. |
| 253930 | Advanced analytics for brownfield assets using B&R's Orange Box. | B&R's Orange Box lets users access previously unreadable energy and process data from digitally isolated machinery. The Orange Box is able to read data from the machine without any changes to existing hardware or software. Clearly visualized performance metrics make it easy to identify opportunities for targeted improvement so machinery can be operated more efficiently. During this session, you will learn how to use and configure the Orange Box for brownfield installations. |
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# Applications and Best Practices: Hands-on Technical Training

## Distribution Automation

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 252011 | System reliability advancements achieved through modern DFR evaluation tools |
| | 2:30 PM | 4:30 PM | 252012 | Design, implement and test redundant network in substations and utilities. |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 252017 | Optimizing SCADA networks with IEC 61850 MMS |
| | 1:30 PM | 3:30 PM | 252139 | Relion® technology builds cost effective schemes to improve safety and efficiency of operations |
| | 4:30 PM | 5:30 PM | 252167 | SCADA control applications using DNP3.0, Modbus and IEC 61850 MMS |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 252017 | Optimizing SCADA networks with IEC 61850 MMS |
| | 1:30 PM | 4:00 PM | 252012 | Design, implement and test redundant network in substations and utilities. |
| | 4:30 PM | 5:30 PM | 252171 | Practical considerations when working with IEC 61850 GOOSE multivendor projects |
| Thursday March 7 | 10:00 AM | 12:30 PM | 252139 | Relion® technology builds cost effective schemes to improve safety and efficiency of operations |
| | 1:45 PM | 2:45 PM | 252011 | System reliability advancements achieved through modern DFR evaluation tools |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 252011 | System reliability advancements achieved through modern DFR evaluation tools | Among other requirements, the IEC 61850 standard was designed to allow interoperability between products from different vendors. The standard has been so successful worldwide that even though it was originally defined exclusively for substation automation systems, it has since been extended to other application areas beyond the switch yard. However, the standard does not regulate on the tools used for IEC 61850 engineering, and there are parts of the standard that are optional, not mandatory. This means that some design considerations need to be addressed when working in multivendor projects. |
| 252012 | Design, implement and test redundant network in substations and utilities. | When an IEC 61850 generic object oriented substation events (GOOSE) implementation is used in substations and utilities, a redundant network is a critical requirement. This session will focus on the design of a redundant network with parallel redundancy protocol (PRP) and media redundancy protocol (MRP) with relays and switches. The hands-on exercise includes designing a redundant network, wiring and configuring ABB Relion® relays and ABB Ethernet switches, setup of a virtual LAN (VLAN), watching communications on the redundant network, and testing and troubleshooting redundant communication. |
| 252017 | Optimizing SCADA networks with IEC 61850 MMS | This session will discuss IEC 61850 manufacturing message specification (MMS) configuration of COM600 and a Relion® relay, and acquaint the user with the benefits it offers. MMS is a client-server based communication protocol and is based on the concept of a client polling a server for data. In addition, the server can also generate an event upon change of state and send that information to the client in an unsolicited manner. |
| 252139 | Relion® technology builds cost effective schemes to improve safety and efficiency of operations | The configuration of a Relion distribution relay consists of connections between an application's functions according to the needs of a particular functional application. The configurations can be easily modified to user specific requirements by using the application configuration tool (ACT). This session will cover some simple yet practical examples of ACT logic applications that can be applied in Relion relays for a variety of applications. Participants will develop and test applications like breaker delay closing, pole disagreement and zone sequence coordination logic. |
| 252167 | SCADA control applications using DNP3.0, Modbus and IEC 61850 MMS | In this session, we will discuss various control applications for SCADA using the distribution automation controller COM600. |
| 252017 | Optimizing SCADA networks with IEC 61850 MMS | This session will discuss IEC 61850 manufacturing message specification (MMS) configuration of COM600 and a Relion® relay, and acquaint the user with the benefits it offers. MMS is a client-server based communication protocol and is based on the concept of a client polling a server for data. In addition, the server can also generate an event upon change of state and send that information to the client in an unsolicited manner. |
| 252012 | Design, implement and test redundant network in substations and utilities. | When an IEC 61850 generic object oriented substation events (GOOSE) implementation is used in substations and utilities, a redundant network is a critical requirement. This session will focus on the design of a redundant network with parallel redundancy protocol (PRP) and media redundancy protocol (MRP) with relays and switches. The hands-on exercise includes designing a redundant network, wiring and configuring ABB Relion® relays and ABB Ethernet switches, setup of a virtual LAN (VLAN), watching communications on the redundant network, and testing and troubleshooting redundant communication. |
| 252171 | Practical considerations when working with IEC 61850 GOOSE multivendor projects | Among other requirements, the IEC 61850 standard was designed to allow interoperability between products from different vendors. The standard has been so successful worldwide that even though it was originally defined exclusively for substation automation systems, it has since been extended to other application areas beyond the switch yard. However, the standard does not regulate on the tools used for IEC 61850 engineering, and there are parts of the standard that are optional, not mandatory. This means that some design considerations need to be addressed when working in multivendor project. |

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# Applications and Best Practices: Hands-on Technical Training

## Drives, PLCs, Servos and Motion 1

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 250823 | AC/DC drives new product release overview: "All compatible" functionality |
| | 2:30 PM | 3:30 PM | 250825 | ACS580 AC drive basic operation, wiring and programming: Hands-on experience, part 1 |
| | 4:00 PM | 5:00 PM | 250828 | ACS580 AC drive basic operation, wiring and programming: Hands-on experience, part 2 |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 250829 | ACS580 AC drive operation, troubleshooting and maintenance: Hands-on experience, part 1 |
| | 1:30 PM | 2:30 PM | 250830 | ACS580 AC drive operation, troubleshooting and maintenance: Hands-on experience, part 2 |
| | 3:00 PM | 4:00 PM | 250825 | ACS580 AC drive basic operation, wiring and programming: Hands-on experience, part 1 |
| | 4:30 PM | 5:30 PM | 250828 | ACS580 AC drive basic operation, wiring and programming: Hands-on experience, part 2 |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 250835 | ACS380 AC drive configuration: Hands-on experience, part 1 |
| | 1:30 PM | 2:30 PM | 250840 | ACS380 AC drive configuration: Hands-on experience, part 2 |
| | 3:00 PM | 4:00 PM | 250842 | ACS480 AC drive configuration: Hands-on experience, part 1 |
| | 4:30 PM | 5:30 PM | 250845 | ACS480 AC drive configuration: Hands-on experience, part 2 |
| Thursday March 7 | 10:00 AM | 11:00 AM | 250847 | DCS880 DC drive configuration: Hands-on experience, part 1 |
| | 11:30 AM | 12:30 PM | 250848 | DCS880 DC drive configuration: Hands-on experience, part 2 |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 250823 | AC/DC drives new product release overview: "All compatible" functionality | This training will provide an overview of the new drive technology available through ABB. The intent and focus will be on the "all compatible" product lines, which include AC and DC products. Key software characteristics for AC and DC drives will be demonstrated. These characteristics provide the optimal solution for general industrial applications, pumps and fans, including energy savings calculations. During this workshop, you will have the opportunity to see first-hand the unique software features that make these products extremely flexible for a variety of applications. |
| 250825 | ACS580 AC drive basic operation, wiring and programming: Hands-on experience, part 1 | This technical training and hands-on lab provides an overview of the ACS580 AC drive and demonstrates the key software characteristics that make it the optimal solution for general industrial applications, and pumps and fans. During this workshop, we will not use "pre-wired" demo cases. You will have the opportunity to physically wire a drive hardware unit and test an external I/O panel interface with that hardware unit. Standard control and several unique software features will be explored. |
| 250828 | ACS580 AC drive basic operation, wiring and programming: Hands-on experience, part 2 | Continued from the previous session, this technical training and hands-on lab provides an overview of the ACS580 AC drive and demonstrates the key software characteristics that make it the optimal solution for general industrial applications, and pumps and fans. During this workshop, we will not use "pre-wired" demo cases. You will have the opportunity to physically wire a drive hardware unit and test an external I/O panel interface with that hardware unit. Standard control and several unique software features will be explored. |
| 250829 | ACS580 AC drive operation, troubleshooting and maintenance: Hands-on experience, part 1 | This technical training and hands-on lab will provide the opportunity to troubleshoot common drive system problems using pre-wired external I/O panels and drive hardware units. During this workshop, we will not use "pre-wired" demo cases. You will have the opportunity to physically verify a hard-wired drive system and check the integrity of drive, motor and control interface. Troubleshooting through hardware and software techniques will also be explored. |
| 250830 | ACS580 AC drive operation, troubleshooting and maintenance: Hands-on experience, part 2 | Continued from the previous session, this technical training and hands-on lab will provide the opportunity to troubleshoot common drive system problems using pre-wired external I/O panels and drive hardware units. During this workshop, we will not use "pre-wired" demo cases. You will have the opportunity to physically verify a hard-wired drive system and check the integrity of drive, motor and control interface. Troubleshooting through hardware and software techniques will also be explored. |
| 250825 | ACS580 AC drive basic operation, wiring and programming: Hands-on experience, part 1 | This technical training and hands-on lab provides an overview of the ACS580 AC drive and demonstrates the key software characteristics that make it the optimal solution for general industrial applications, and pumps and fans. During this workshop, we will not use "pre-wired" demo cases. You will have the opportunity to physically wire a drive hardware unit and test an external I/O panel interface with that hardware unit. Standard control and several unique software features will be explored. |
| 250828 | ACS580 AC drive basic operation, wiring and programming: Hands-on experience, part 2 | Continued from the previous session, this technical training and hands-on lab provides an overview of the ACS580 AC drive and demonstrates the key software characteristics that make it the optimal solution for general industrial applications, and pumps and fans. During this workshop, we will not use "pre-wired" demo cases. You will have the opportunity to physically wire a drive hardware unit and test an external I/O panel interface with that hardware unit. Standard control and several unique software features will be explored. |
| 250835 | ACS380 AC drive configuration: Hands-on experience, part 1 | This technical training and hands-on lab will provide an overview of the ACS380 AC drive and demonstrate the key software characteristics that make it the optimal solution for general industrial applications, pumps and fans, including an energy savings calculator. During this workshop, you will have access to the ACS380 demo case and the opportunity to work with several of the unique software features that make this product extremely flexible for a variety of applications. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 250840 | ACS380 AC drive configuration: Hands-on experience, part 2 | Continued from the previous session, this technical training and hands-on lab will provide an overview of the ACS380 AC drive and demonstrate the key software characteristics that make it the optimal solution for general industrial applications, pumps and fans, including an energy savings calculator. During this workshop, you will have access to the ACS380 demo case and the opportunity to work with several of the unique software features that make this product extremely flexible for a variety of applications. |
| 250842 | ACS480 AC drive configuration: Hands-on experience, part 1 | This technical training and hands-on lab provides an overview of the ACS480 AC drive and demonstrates the key software characteristics that make it the optimal solution for general industrial applications, pumps and fans. During this workshop, you have access to the ACS480 demo case and the opportunity to work with several of the unique software and hardware features that make this product extremely flexible for a variety of applications. |
| 250845 | ACS480 AC drive configuration: Hands-on experience, part 2 | Continued from the previous session, this technical training and hands-on lab provides an overview of the ACS480 AC drive and demonstrates the key software characteristics that make it the optimal solution for general industrial applications, pumps and fans. During this workshop, you have access to the ACS480 demo case and the opportunity to work with several of the unique software and hardware features that make this product extremely flexible for a variety of applications. |
| 250847 | DCS880 DC drive configuration: Hands-on experience, part 1 | Discover the key software and performance characteristics that enable the DCS880 DC drive to perform a multitude of motor control applications. During this technical training and hands-on lab, you will have access to the DCS880 demo case and the opportunity to commission the drive from start to finish and then edit parameters to configure the drive for application specific tasks. |
| 250848 | DCS880 DC drive configuration: Hands-on experience, part 2 | Continued from the previous session, discover the key software and performance characteristics that enable the DCS880 DC drive to perform a multitude of motor control applications. During this technical training and hands-on lab, you will have access to the DCS880 demo case and the opportunity to commission the drive from start to finish and then edit parameters to configure the drive for application specific tasks. |

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# Applications and Best Practices: Hands-on Technical Training

## Drives, PLCs, Servos and Motion 2

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 2:30 PM | 3:30 PM | 250849 | Drive/PLC integration "basic" interface: Hands-on experience, part 1 |
| | 4:00 PM | 5:00 PM | 250850 | Drive/PLC integration "basic" interface: Hands-on experience, part 2 |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 250851 | AC500 PLC and HMI communications to the ACS880 via Ethernet: Hands-on experience, part 1 |
| | 1:30 PM | 2:30 PM | 250853 | AC500 PLC and HMI communications to the ACS880 via Ethernet: Hands-on experience, part 2 |
| | 3:00 PM | 4:00 PM | 250856 | ABB drives connectivity to RSLogix 5000 controllers using new enhanced AOI, part 1 |
| | 4:30 PM | 5:30 PM | 250860 | ABB drives connectivity to RSLogix 5000 controllers using new enhanced AOI, part 2 |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 250856 | ABB drives connectivity to RSLogix 5000 controllers using new enhanced AOI, part 1 |
| | 1:30 PM | 2:30 PM | 250860 | ABB drives connectivity to RSLogix 5000 controllers using new enhanced AOI, part 2 |
| | 3:00 PM | 4:00 PM | 250866 | ACS880 AC drive configuration: Hands-on experience, part 1 |
| | 4:30 PM | 5:30 PM | 250867 | ACS880 AC drive configuration: Hands-on experience, part 2 |
| Thursday March 7 | 10:00 AM | 11:00 AM | 250866 | ACS880 AC drive configuration: Hands-on experience, part 1 |
| | 11:30 AM | 12:30 PM | 250867 | ACS880 AC drive configuration: Hands-on experience, part 2 |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 250849 | Drive/PLC integration "basic" interface: Hands-on experience, part 1 | This technical training and hands-on lab will provide a basic overview of drive/PLC communications interface. This session is intended for those individuals new to PLC control systems. An ABB PLC will be used to demonstrate how a drive can easily be controlled through connectivity rather than hard-wired inputs/outputs (I/O). We will explore the communications interface, which applies to many industrial applications. During this workshop, we will review hard-wired I/O drive control, followed by an exploration of how a PLC communications control method can optimize a drive system. |
| 250850 | Drive/PLC integration "basic" interface: Hands-on experience, part 2 | Continued from the previous session, this training and hands-on lab will provide a basic overview of drive/PLC communications interface, intended for those new to PLC control systems. An ABB PLC will be used to demonstrate how a drive can easily be controlled through connectivity rather than hard-wired inputs/outputs (I/O). We will explore the communications interface, which applies to many industrial applications. During this workshop, we will review hard-wired I/O drive control, followed by an exploration of how a PLC communications control method can optimize a drive system. |
| 250851 | AC500 PLC and HMI communications to the ACS880 via Ethernet: Hands-on experience, part 1 | This technical training and hands-on lab will provide an overview of communication protocols for industrial applications with ABB's AC and DC drives and the PC tools they use. We will briefly discuss the various protocols and then participants will configure and establish communications control with the drive using Modbus TCP/IP communications and PC tools for the ACS880. Additionally, you will learn how to use the associated drive's PC tool through an instructor-led, hands-on session and through a self directed lab for establishing the communications link. |
| 250853 | AC500 PLC and HMI communications to the ACS880 via Ethernet: Hands-on experience, part 2 | Continued from the previous session, this technical training and hands-on lab will provide an overview of communication protocols for industrial applications with ABB's AC and DC drives and the PC tools they use. We will briefly discuss the various protocols and then participants will configure and establish communications control with the drive using Modbus TCP/IP communications and PC tools for the ACS880. Additionally, you will learn how to use the associated drive's PC tool through an instructor-led, hands-on session and through a self directed lab for establishing the communications link. |
| 250856 | ABB drives connectivity to RSLogix 5000 controllers using new enhanced AOI, part 1 | This technical training and hands-on lab provides an opportunity to review the RSLogix 5000 PLC interface with ABB drives, focusing on the ACS880 drives. In addition, we will explore ABB's eCO PLC interface with ABB drives as well as various other PLC manufacturers. We will also take an in-depth look at add-on instructions (AOI) and user-defined data types (UDTs), as well as explore how simple procedures allow for a multitude of flexible configurations. |
| 250860 | ABB drives connectivity to RSLogix 5000 controllers using new enhanced AOI, part 2 | Continued from the previous session, this technical training and hands-on lab provides an opportunity to review the RSLogix 5000 PLC interface with ABB drives, focusing on the ACS880 drives. In addition, we will explore ABB's eCO PLC interface with ABB drives as well as various other PLC manufacturers. We will also take an in-depth look at add-on instructions (AOI) and user-defined data types (UDTs), as well as explore how simple procedures allow for a multitude of flexible configurations. |
| 250856 | ABB drives connectivity to RSLogix 5000 controllers using new enhanced AOI, part 1 | This technical training and hands-on lab provides an opportunity to review the RSLogix 5000 PLC interface with ABB drives, focusing on the ACS880 drives. In addition, we will explore ABB's eCO PLC interface with ABB drives as well as various other PLC manufacturers. We will also take an in-depth look at add-on instructions (AOI) and user-defined data types (UDTs), as well as explore how simple procedures allow for a multitude of flexible configurations. |
| 250860 | ABB drives connectivity to RSLogix 5000 controllers using new enhanced AOI, part 2 | Continued from the previous session, this technical training and hands-on lab provides an opportunity to review the RSLogix 5000 PLC interface with ABB drives, focusing on the ACS880 drives. In addition, we will explore ABB's eCO PLC interface with ABB drives as well as various other PLC manufacturers. We will also take an in-depth look at add-on instructions (AOI) and user-defined data types (UDTs), as well as explore how simple procedures allow for a multitude of flexible configurations. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 250866 | ACS880 AC drive configuration: Hands-on experience, part 1 | This technical training and hands-on lab will provide an overview of the ACS880 AC drive and demonstrate the key software characteristics that make it the optimal solution for the most demanding industrial applications. During this workshop. you will have access to the ACS880 demo case and the opportunity to commission the drive from start to finish and then edit parameters to configure the drive for application specific tasks and performance applications. |
| 250867 | ACS880 AC drive configuration: Hands-on experience, part 2 | Continued from the previous session, this technical training and hands-on lab will provide an overview of the ACS880 AC drive and demonstrate the key software characteristics that make it the optimal solution for the most demanding industrial applications. During this workshop. you will have access to the ACS880 demo case and the opportunity to commission the drive from start to finish and then edit parameters to configure the drive for application specific tasks and performance applications. |
| 250866 | ACS880 AC drive configuration: Hands-on experience, part 1 | This technical training and hands-on lab will provide an overview of the ACS880 AC drive and demonstrate the key software characteristics that make it the optimal solution for the most demanding industrial applications. During this workshop. you will have access to the ACS880 demo case and the opportunity to commission the drive from start to finish and then edit parameters to configure the drive for application specific tasks and performance applications. |
| 250867 | ACS880 AC drive configuration: Hands-on experience, part 2 | Continued from the previous session, this technical training and hands-on lab will provide an overview of the ACS880 AC drive and demonstrate the key software characteristics that make it the optimal solution for the most demanding industrial applications. During this workshop. you will have access to the ACS880 demo case and the opportunity to commission the drive from start to finish and then edit parameters to configure the drive for application specific tasks and performance applications. |

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# Applications and Best Practices: Hands-on Technical Training

## Electrification Products Industrial Solutions (formerly GE)

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 251977 | Becoming an empower super user: Hands-on training |
| | 2:30 PM | 3:30 PM | 251985 | Digital control solutions |
| | 4:00 PM | 5:00 PM | 251978 | Hands-on experience with empower's latest features |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 251979 | Dive deep into EPIS product configurators |
| | 1:30 PM | 2:30 PM | 251977 | Becoming an empower super user: Hands-on training |
| | 3:00 PM | 4:00 PM | 251978 | Hands-on experience with empower's latest features |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 251979 | Dive deep into EPIS product configurators |
| | 1:30 PM | 2:30 PM | 251983 | Hands-on introduction to ABB's envisage energy management system |
| | 3:00 PM | 4:00 PM | 251987 | Experience how easy it is to increase uptime, reduce arc flash hazard and increase productivity |
| | 4:30 PM | 5:30 PM | 251989 | Hands-on with EntellEon |
| Thursday March 7 | 10:00 AM | 11:00 AM | 251980 | Switch-mode rectifiers are here to stay: Practical industrial battery chargers for your systems |
| | 11:30 AM | 12:30 PM | 251987 | Experience how easy it is to increase uptime, reduce arc flash hazard and increase productivity |
| | 1:45 PM | 2:45 PM | 251983 | Hands-on introduction to ABB's envisage energy management system |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 251977 | Becoming an empower super user: Hands-on training | With ABB's empower platform, distributors, partners and OEMs can take advantage of online tools to become more productive and better engage with their ABB orders. Join this technical training session to learn about advanced features that will enable you to become an empower super user. |
| 251985 | Digital control solutions | The equipment you purchase today will need to evolve as your electrical distribution system changes to meet the various needs of your facility over time. The digital control solution will provide more than simply over-current protection. It will ideally minimize operational costs by monitoring and reporting health, asset utilization and maintenance needs. In addition, it is flexible enough to communicate to power management systems as well as integrate with other smart devices. It has an easy-to-use interface to access real information about your power distribution system. |
| 251978 | Hands-on experience with empower's latest features | ABB's empower platform continues to improve and expand to deliver value for distributors. Join this technical training session to get first-hand experience using empower's latest features, including Project Notebook and project automation solutions. |
| 251979 | Dive deep into EPIS product configurators | Leveraging ABB's empower platform, learn the ins and outs of EPIS products including panelboards, switchboards, MCCs, and more! Hear about the latest product updates and get tips to increase your knowledge of our product configurators. |
| 251977 | Becoming an empower super user: Hands-on training | With ABB's empower platform, distributors, partners and OEMs can take advantage of online tools to become more productive and better engage with their ABB orders. Join this technical training session to learn about advanced features that will enable you to become an empower super user. |
| 251978 | Hands-on experience with empower's latest features | ABB's empower platform continues to improve and expand to deliver value for distributors. Join this technical training session to get first-hand experience using empower's latest features, including Project Notebook and project automation solutions. |
| 251979 | Dive deep into EPIS product configurators | Leveraging ABB's empower platform, learn the ins and outs of EPIS products including panelboards, switchboards, MCCs, and more! Hear about the latest product updates and get tips to increase your knowledge of our product configurators. |
| 251983 | Hands-on introduction to ABB's envisage energy management system | The envisage energy management system (EMS) connects both your new technology and legacy equipment into a single system that has the ability to give customers insight into their facility in ways never before imaginable. With this vendor agnostic solution, customers can now easily get one pane of glass to monitor and analyze their facility's energy profile. |
| 251987 | Experience how easy it is to increase uptime, reduce arc flash hazard and increase productivity | The Entellisys protection, monitoring and control system enables reduced arc flash incident energy while maintaining selectivity, provides information at your fingertips to increase uptime, and simplifies maintenance over the course of the equipment's life. Join this hands-on session to experience how you can lower your total cost of ownership and improve system performance. The Entellisys architecture brings cost effective bus differential, dynamic zone selective interlocking and control schemes to ANSI low voltage switchgear. |
| 251989 | Hands-on with EntellEon | At ABB EPIS, our vision is that we bring electricity from any power plant to any plug. The EntellEon is a recent new product introduction (NPI) aimed at reshaping low voltage distribution. It has a customer centric design made to be simple, responsive and revolutionary. Come learn about this product and how it improves upon the current state of the art. See how it provides value for distributors, OEMs, contractors and end users. Finally, get hands-on exposure to this product. Lets write the future by enabling a stronger, smarter, greener power grid. |
| 251980 | Switch-mode rectifiers are here to stay: Practical industrial battery chargers for your systems | Small size, plug and play modules, reliability and serviceability – see how these are all features of the latest in stationary battery chargers. Ease of use, rapid replacements and easy setup are all features that you can explore in this interactive session. See how easy remote monitoring can be and how it can change your operations. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 251987 | Experience how easy it is to increase uptime, reduce arc flash hazard and increase productivity | The Entellisys protection, monitoring and control system enables reduced arc flash incident energy while maintaining selectivity, provides information at your fingertips to increase uptime, and simplifies maintenance over the course of the equipment's life. Join this hands-on session to experience how you can lower your total cost of ownership and improve system performance. The Entellisys architecture brings cost effective bus differential, dynamic zone selective interlocking and control schemes to ANSI low voltage switchgear. |
| 251983 | Hands-on introduction to ABB's envisage energy management system | The envisage energy management system (EMS) connects both your new technology and legacy equipment into a single system that has the ability to give customers insight into their facility in ways never before imaginable. With this vendor agnostic solution, customers can now easily get one pane of glass to monitor and analyze their facility's energy profile. |

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# Applications and Best Practices: Hands-on Technical Training

## Low Voltage Products = High Level Performance

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 252328 | Increasing the speed of OEM panel assembly |
| | 2:30 PM | 3:30 PM | 252329 | Learn how to monitor, optimize and utilize predictive maintenance data with ABB Ability™ EDCS |
| | 4:00 PM | 5:00 PM | 252330 | Make breaker accessories a snap |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 252333 | Selecting the right ATS system for your application |
| | 1:30 PM | 2:30 PM | 252334 | Simplification of communication network construction in electrical distribution systems |
| | 3:00 PM | 4:00 PM | 252336 | Sentry safety relays: An innovation leader |
| | 4:30 PM | 5:30 PM | 252339 | Pluto Safety PLC: Hot swap demonstration |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 252337 | The vital solution: Making equipment safety simple |
| | 1:30 PM | 2:30 PM | 252328 | Increasing the speed of OEM panel assembly |
| | 3:00 PM | 4:00 PM | 252329 | Learn how to monitor, optimize and utilize predictive maintenance data with ABB Ability™ EDCS |
| | 4:30 PM | 5:30 PM | 252330 | Make breaker accessories a snap |
| Thursday March 7 | 10:00 AM | 11:00 AM | 252333 | Selecting the right ATS system for your application |
| | 11:30 AM | 12:30 PM | 252334 | Simplification of communication network construction in electrical distribution systems |
| | 1:45 PM | 2:45 PM | 252337 | The vital solution: Making equipment safety simple |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 252328 | Increasing the speed of OEM panel assembly | In today's competitive market, every minute counts. With ABB's innovative line of protection and control products, increase the speed of your OEM panel assembly. In this hands-on session, learn how ABB components can help you improve your bottom line. |
| 252329 | Learn how to monitor, optimize and utilize predictive maintenance data with ABB Ability™ EDCS | In this hands-on training session, we will outline the ease of use and key benefits of ABB Ability™ Electrical Distribution Control System (EDCS). We will take a look at the advanced analytics, predictive maintenance and power monitoring tools to help implement an effective energy management program. |
| 252330 | Make breaker accessories a snap | Zoom in on the next generation of molded case circuit breaker (MCCB) accessories. This hands-on workshop will examine the details of accessories for the new Tmax XT. From the easy, snap-in-place accessories to our virtual reality (VR) app – you'll see it all. We will also share best practices in managing field inventory that can save you precious time and inventory space in your application. |
| 252333 | Selecting the right ATS system for your application | ABB has a wide range of solutions for automated transfer switching (ATS) of power. Come join us to learn how to create the perfect ATS for your application. |
| 252334 | Simplification of communication network construction in electrical distribution systems | Configuring communication systems can be very complex and time consuming. Traditional systems are labor intensive and have many components. Join us for this session to learn about ABB's plug and play approach for setting up advanced communication networks. |
| 252336 | Sentry safety relays: An innovation leader | Through a combination of theory and hands-on practical labs, participants will learn the features and capabilities of the Sentry line of safety relays. This session will familiarize you with the various models of safety relays used for specific applications, as well as how to configure a live working demo. Attendees will leave with their own Sentry demo box with a BSR10, BSR23, SSR10, TSR20 and USR10 pre-wired with an Eden OSSD safety sensor and reset box. |
| 252339 | Pluto Safety PLC: Hot swap demonstration | The Pluto Safety PLC is a feature packed solution in a small package. With leading edge technology and connectivity, Pluto is truly a product designed to address the most pressing industry issues. We will demonstrate a hot swap of Pluto Safety PLC on a network, eliminating downtime due to catastrophic failures in a safety system. Attendees will have hands-on training and will demonstrate replacing a functioning safety PLC on a network with a new safety PLC using ABB Jokab Safety Hot Swap. Attendees will receive a Pluto Safety PLC upon completion of the workshop. |
| 252337 | The vital solution: Making equipment safety simple | Join us as our machine safety experts explain how to make machine safety simple. We will explain the shortcoming of devices on a dual channel system, and how ABB Jokab Safety developed a better system that we call DYNLink. We will take you through how easy it is to wire up and modify a DYNLink system. When you finish wiring the DYNLink system, we will then show you how diagnose an error in the system without a multimeter. |
| 252328 | Increasing the speed of OEM panel assembly | In today's competitive market, every minute counts. With ABB's innovative line of protection and control products, increase the speed of your OEM panel assembly. In this hands-on session, learn how ABB components can help you improve your bottom line. |
| 252329 | Learn how to monitor, optimize and utilize predictive maintenance data with ABB Ability™ EDCS | In this hands-on training session, we will outline the ease of use and key benefits of ABB Ability™ Electrical Distribution Control System (EDCS). We will take a look at the advanced analytics, predictive maintenance and power monitoring tools to help implement an effective energy management program. |
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| COURSE CODE | SESSION TITLE | ABSTRACT |
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| 252337 | The vital solution: Making equipment safety simple | Join us as our machine safety experts explain how to make machine safety simple. We will explain the shortcoming of devices on a dual channel system, and how ABB Jokab Safety developed a better system that we call DYNLink. We will take you through how easy it is to wire up and modify a DYNLink system. When you finish wiring the DYNLink system, we will then show you how diagnose an error in the system without a multimeter. |

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# Applications and Best Practices: Hands-on Technical Training

## Low Voltage Products. High Quality. Hands On.

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 252352 | 2020 code updates |
| | 2:30 PM | 3:30 PM | 252325 | 21st century connection with Smart® Tool + |
| | 4:00 PM | 5:00 PM | 255508 | ABB Installation Products for the food and beverage industry |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 272988 | Grounding and Bonding: Blackburn Compression - Connectivity |
| | 1:30 PM | 2:30 PM | 252356 | PMA |
| | 3:00 PM | 4:00 PM | 255508 | ABB Installation Products for the food and beverage industry |
| | 4:30 PM | 5:30 PM | 255570 | Meeting the challenge of surge protection for modern electrical systems |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 272989 | Extending the life of your electrical system in corrosive environments |
| | 1:30 PM | 2:30 PM | 252325 | 21st century connection with Smart® Tool + |
| | 3:00 PM | 4:00 PM | 252352 | 2020 code updates |
| | 4:30 PM | 5:30 PM | 253049 | ABB T&B Liquidtight Systems™ |
| Thursday March 7 | 10:00 AM | 11:00 AM | 253050 | PMA: What is it and where can we use it? |
| | 11:30 AM | 12:30 PM | 272989 | Extending the Life of Your Electrical System in Corrosive Environments |
| | 1:45 PM | 2:45 PM | 272988 | Grounding and Bonding: Blackburn Compression - Connectivity |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 252352 | 2020 code updates | The NEC is ever changing. Stay up to date with the latest changes to the code. |
| 252325 | 21st century connection with Smart® Tool + | Extend your quality control influence down to the connection level. New technology now provides the opportunity to not only identify individual connections, but to create, save and share valuable data for the connections you make. |
| 255508 | ABB Installation Products for the food and beverage industry | With growing regulatory requirements regarding food safety and the high visibility of recalls, food and beverage facilities are under increasing pressure to ensure a clean, safe production environment. ABB Installation Products provides a wide range of conduit and cable management products designed specifically to handle the challenges of the food and beverage industry. These products feature corrosion resistant materials that withstand demanding washdown requirements while also helping to reduce contamination. |
| 272988 | Grounding and Bonding: Blackburn Compression - Connectivity | Grounding and Bonding of electrical circuits are two separate but equally important topics. Attendees will recognize the difference between grounding and bonding; then learn about idea, tools, and techniques to meet the requirement of each. CEU are available for this session |
| 252356 | PMA | Critical, moving systems place heavy demands on the wiring and cables that enable them to operate. Examine the options available when choosing appropriate cable protection. |
| 255508 | ABB Installation Products for the food and beverage industry | With growing regulatory requirements regarding food safety and the high visibility of recalls, food and beverage facilities are under increasing pressure to ensure a clean, safe production environment. ABB Installation Products provides a wide range of conduit and cable management products designed specifically to handle the challenges of the food and beverage industry. These products feature corrosion resistant materials that withstand demanding washdown requirements while also helping to reduce contamination. |
| 255570 | Meeting the challenge of surge protection for modern electrical systems | Realizing that the surge threat to electrical systems is more than mere awareness of lightning strikes, a fuller knowledge of the challenges presented by surge is a necessity. Find out about the different faces of surge and how to mitigate and prevent potential damage to your system. |
| 272989 | Extending the life of your electrical system in corrosive environments | Corrosion within Electrical Systems presents serious threats to the system, the people who service the system, and those served by the system. Understanding the varied causes for corrosion and their symptoms are the first step to combat this threat. |
| 252325 | 21st century connection with Smart® Tool + | Extend your quality control influence down to the connection level. New technology now provides the opportunity to not only identify individual connections, but to create, save and share valuable data for the connections you make. |
| 252352 | 2019 code updates | The NEC is ever changing. Stay up to date with the latest changes to the code. |
| 253049 | ABB T&B Liquidtight Systems™ | You already know about the superior protection our 52/5300 series of fittings provides, but do you know about the protection available to you when you pair our fittings with our Liquidtight Systems conduit? Here you'll learn more about the value of our extensive testing and how it can help you ensure your customer has one less fear when it comes to ingress protection. |
| 253050 | PMA: What is it and where can we use it? | PMA is a corrugated nylon conduit that we've had in our bag for several years now, but where do we use it? Where can we find success with PMA in the U.S., and how do we go about choosing it for the correct application? We will answer those questions and more. |
| 272989 | Extending the Life of Your Electrical System in Corrosive Environments | Corrosion within Electrical Systems presents serious threats to the system, the people who service the system, and those served by the system. Understanding the varied causes for corrosion and their symptoms are the first step to combat this threat. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 272988 | Grounding and Bonding: Blackburn Compression - Connectivity | Grounding and Bonding of electrical circuits are two separate but equally important topics. Attendees will recognize the difference between grounding and bonding; then learn about idea, tools, and techniques to meet the requirement of each. CEU are available for this session |

GEORGE R. BROWN CONVENTION CENTER | HOUSTON, TEXAS | MARCH 4-7, 2019

# Applications and Best Practices: Hands-on Technical Training

## Measurement made easy for oil and gas

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 3:30 PM | 251407 | Analytical measurement to improve quality and profitability: Upstream and midstream applications |
| | 4:00 PM | 5:00 PM | 251408 | Analytical measurement to improve quality and profitability: Refining and petrochemical applications |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 251409 | Digital technology: Well pad data production automation and optimization via the cloud |
| | 1:30 PM | 5:30 PM | 251410 | Gas measurement: Total package solutions to improve profitability, operating efficiency at well pad |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 251411 | Level measurement solutions for oil and gas |
| | 1:30 PM | 5:30 PM | 251412 | Remote modular controller configuration, operation and integration for liquid and gas measurement |
| Thursday March 7 | 10:00 AM | 12:30 PM | 251413 | Liquid measurement: Total package solutions for accurate custody transfer applications |
| | 1:45 PM | 2:45 PM | 251409 | Digital technology: Well pad data production automation and optimization via the cloud |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 251407 | Analytical measurement to improve quality and profitability: Upstream and midstream applications | This session will provide an introduction on the theory and selection of different analytical techniques used in both the upstream and midstream oil and gas segments to improve product quality and optimize profitability. Attendees will obtain a basic understanding of common types of liquid and gas analyzers found in key applications and why that analyzer technology is important. Analyzer technology covered will include gas chromatography, tunable diode laser (TDL) and Fourier Transform Infrared (FT-IR) spectroscopy, and a variety of continuous gas analyzers. |
| 251408 | Analytical measurement to improve quality and profitability: Refining and petrochemical applications | This session provides an introduction on theory and selection of different analytical techniques used in the downstream oil and gas segments to improve product quality and optimize profitability. Attendees will obtain a basic understanding of common types of liquid and gas analyzers found in key applications and why that analyzer technology is important. Analyzer technology covered will include gas chromatography, tunable diode laser (TDL) and Fourier Transform Infrared (FT-IR) spectroscopy, and a variety of continuous gas analyzers. |
| 251409 | Digital technology: Well pad data production automation and optimization via the cloud | Gain remote access from anywhere to well pad status and reporting. Using ABB's remote controller, instrumentation and connectivity allows operators and supervisors to perform site control and optimization utilizing cloud tools. For example, wellhead data mining can be used to optimize artificial lift applications. And running analysis software provides configuration recommendations and preventive diagnostics suggestions based on wellhead performance. |
| 251410 | Gas measurement: Total package solutions to improve profitability, operating efficiency at well pad | This class is an overview of the µFLOG5 and XSeries flow computers. We will explore the history of the flow computer unit (FCU) and the features of the FCU, including applications and operations. This session covers the 32 bit loader, collecting and saving data, calibration, trending, display programming, operations, and Ethernet remote communications. |
| 251411 | Level measurement solutions for oil and gas | This session focuses on the selection of the right product for oil and gas applications. Attendees will obtain a basic understanding of which level technology is best for a particular application type, how that level technology works and why it is important. Level technology covered will include laser, guided wave radar, magnetostrictive, magnetic level gauge, ultrasonic, level switches and vibrating fork. |
| 251412 | Remote modular controller configuration, operation and integration for liquid and gas measurement | Discover ABB’s powerful new solution with the remote modular controller (RMC). We will cover various aspects of the RMC configuration, such as functionality and performance, integration into ABB enclosures (XCORE), examples of different well pad configuration files, interfacing with different instrumentation, host systems and local HMIs. |
| 251413 | Liquid measurement: Total package solutions for accurate custody transfer applications | This two-hour workshop covers liquid custody transfer applications such as lease automatic custody transfers (LACTs), crude oil gathering stations and pipeline metering stations using the FlowX line of flow computers and the Spirit software solutions. |
| 251409 | Digital technology: Well pad data production automation and optimization via the cloud | Gain remote access from anywhere to well pad status and reporting. Using ABB's remote controller, instrumentation and connectivity allows operators and supervisors to perform site control and optimization utilizing cloud tools. For example, wellhead data mining can be used to optimize artificial lift applications. And running analysis software provides configuration recommendations and preventive diagnostics suggestions based on wellhead performance. |

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# Applications and Best Practices: Hands-on Technical Training

## Measurement made easy for process industries and utilities

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 5:00 PM | 250516 | Flow measurement primer: Theory, selection and operation |
| | 10:30 AM | 11:30 AM | 251025 | Pressure and temperature measurement primer: Innovations that lower operating costs, improve safety |
| Tuesday March 5 | 1:30 PM | 4:00 PM | 251160 | Level measurement primer: Theory, selection and operation |
| | 4:30 PM | 5:30 PM | 251177 | Valve positioner setup and calibration: Optimize your valve control |
| | 10:30 AM | 11:30 AM | 251178 | New ABB Ability™ digital service solutions: Reducing onsite, non-critical maintenance by up to 100% |
| Wednesday March 6 | 1:30 PM | 2:30 PM | 251179 | CEMS: Lowering your cost of ownership |
| | 3:00 PM | 5:30 PM | 251183 | Analyzer primer: New innovations that will lower your operating costs for water quality optimization |
| Thursday March 7 | 10:00 AM | 12:30 PM | 251189 | Control loop configuration: How to configure a simple control loop |
| | 1:45 PM | 2:45 PM | 251178 | New ABB Ability™ digital service solutions: Reducing onsite, non-critical maintenance by up to 100% |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 250516 | Flow measurement primer: Theory, selection and operation | This session provides one hour of introduction on theory, selection and process applications. It will be followed by two hours of hands-on exercises with various flow technologies. Attendees will obtain a basic understanding of which flow measurement technology is best for a particular application type, how that flow technology works and how they make flow measurement easy. Flowmeters will include electromagnetic, vortex, swirl and Coriolis mass as well as other representative technologies. |
| 251025 | Pressure and temperature measurement primer: Innovations that lower operating costs, improve safety | This session will feature hands-on demonstrations of key pressure and temperature devices, relating to types of communication, sensors and installation options. We will also work with software configuration tools. One tool is ABB's Field Information Manager (FIM), field device integration (FDI)-based software for device management with electronic device description (EDD) technology. We'll also review Asset Vision Basic, which provides an open interface for ABB and third party device type managers (DTMs). |
| 251160 | Level measurement primer: Theory, selection and operation | This session provides one hour of introduction on theory, selection and applications, followed by one hour of hands-on experience with different level technologies. Attendees will obtain a basic understanding of which level technology is best for a particular application type, how that level technology works and why it is important. Level technologies covered will include laser, guided wave radar, magnetostrictive, magnetic level gauge, ultrasonic, level switches and vibrating fork. |
| 251177 | Valve positioner setup and calibration: Optimize your valve control | In this one hour hands-on training, learn how to install and calibrate a new state-of-the-art digital positioner on an existing valve to improve performance and operating efficiency. |
| 251178 | New ABB Ability™ digital service solutions: Reducing onsite, non-critical maintenance by up to 100% | In this session, attendees will experience how new digital instrumentation and analyzer technology helps to optimize operation and maintenance processes. Real examples will be demonstrated for troubleshooting continuous gas analyzers by combining dynamic QR codes with augmented reality (AR), as well as enhancing availability through automated condition monitoring and verification tools. In addition, we will provide an overview of gas leak detection services, by foot, car and drone. |
| 251179 | CEMS: Lowering your cost of ownership | This one hour session will explore and demonstrate with hands-on examples how the cost of ownership for continuous emission monitoring systems (CEMS) can be significantly reduced. Options include simplified and user-friendly design (e.g., new CL3020 chemiluminescence detector (CLD) NOx analyzer with option for two detectors inside one housing), unique features (e.g., internal gas-filled calibration cells, revolutionary new microwing technology for paramagnetic O2 analysis) and digital innovations (e.g., dynamic QR codes on the analyzer display and condition monitoring services). |
| 251183 | Analyzer primer: New innovations that will lower your operating costs for water quality optimization | This session will cover continuous water measurement intended for industrial process and wastewater water applications. Topics will include innovations in the continuous water analyzer (CWA) portfolio which focus on a simplified product line offering advanced digital capability, easy maintenance and low cost of ownership. The initial session will cover analyzer theory, selection and process application, followed by an hour-long hands-on exercise with common water analyzers utilized in industrial applications. |
| 251189 | Control loop configuration: How to configure a simple control loop | In this two-hour hands-on training session, attendees will learn how to configure a control loop using a single loop controller and a measurement device. |
| 251178 | New ABB Ability™ digital service solutions: Reducing onsite, non-critical maintenance by up to 100% | In this session, attendees will experience how new digital instrumentation and analyzer technology helps to optimize operation and maintenance processes. Real examples will be demonstrated for troubleshooting continuous gas analyzers by combining dynamic QR codes with augmented reality (AR), as well as enhancing availability through automated condition monitoring and verification tools. In addition, we will provide an overview of gas leak detection services, by foot, car and drone. |

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# Applications and Best Practices: Hands-on Technical Training

## Motors and Mechanical

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 261707 | Dodge Passport: Smarter, easier and faster bulk material handling conveyor design |
| | 2:30 PM | 3:30 PM | 255850 | ABB Ability™ Smart Sensor for LV motors |
| | 4:00 PM | 5:00 PM | 255700 | Smart Sensor for mounted bearings: Get connected |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 261707 | Dodge Passport: Smarter, easier and faster bulk material handling conveyor design |
| | 1:30 PM | 2:30 PM | 255700 | Smart Sensor for mounted bearings: Get connected |
| | 3:00 PM | 4:00 PM | 255850 | ABB Ability™ Smart Sensor for LV motors |
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| | 11:30 AM | 12:30 PM | 255700 | Smart Sensor for mounted bearings: Get connected |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 261707 | Dodge Passport: Smarter, easier and faster bulk material handling conveyor design | Utilizing real-world case studies, participants will learn first-hand how to use Dodge Passport, the online selection program for Dodge mechanical products. Dodge Passport features an intuitive application-based approach to quickly and easily design belt conveyors. Using application specific design parameters, Passport empowers customers to seamlessly selects complete packages of ABB motor and mechanical products for belt conveying applications. |
| 255850 | ABB Ability™ Smart Sensor for LV motors | The ABB Ability™ Smart Sensor for motors allows you to check the health of a motor through vibration and temperature analyses, either onsite or remotely. Through this hands-on activity, we will review proper sensor mounting, configure the sensor in the mobile app and review the resulting data in the portal. |
| 255700 | Smart Sensor for mounted bearings: Get connected | The ABB Ability™ Smart Sensor for mounted bearings is a battery operated advanced sensor that can communicate wirelessly – through smartphones or other devices – with engineering, maintenance, procurement or other relevant personnel. It provides vibration, temperature information and health indication of bearings that can prevent unexpected breakdown, increase safety and extend equipment life. You'll learn what sensor registration process looks like and how to activate and commission this new ABB Ability™ sensor's family member. |
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GEORGE R. BROWN CONVENTION CENTER | HOUSTON, TEXAS | MARCH 4-7, 2019

# Applications and Best Practices: Hands-on Technical Training

## Wireless Communications

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 262224 | Introduction to ABB Wireless |
| Tuesday March 5 | 1:30 PM | 2:30 PM | 262224 | Introduction to ABB Wireless |
| | 3:00 PM | 4:00 PM | 262226 | ABB Wireless: TropOS broadband mesh routers configuration |
| Wednesday March 6 | 1:30 PM | 2:30 PM | 262224 | Introduction to ABB Wireless |
| | 3:00 PM | 4:00 PM | 262226 | ABB Wireless: TropOS broadband mesh routers configuration |
| Thursday March 7 | 10:00 AM | 11:00 AM | 262226 | ABB Wireless: TropOS broadband mesh routers configuration |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 262224 | Introduction to ABB Wireless | ABB Wireless provides a family of products to enable the communication of critical information from remote and disparate locations often underserved by communications options. Building on top of industry standards, ABB Wireless products build a communication network which automatically and dynamically self-creates, self-optimizes and self-heals from component failures to ensure high-availability access to important information at the source of its creation. Instructor-led discussions and hands-on labs will reinforce the industry-leading capabilities provided by ABB Wireless products. |
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| 262226 | ABB Wireless: TropOS broadband mesh routers configuration | ABB Wireless' TropOS product family is a fast-evolving broadband mesh platform offering new, advanced communication services. In this gloves-off, hands-on training session, we will let you get first-hand experience with several services and features that make this technology one-of-a-kind in the world of interoperable wireless communications. |
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GEORGE R. BROWN CONVENTION CENTER | HOUSTON, TEXAS | MARCH 4-7, 2019

# Applications and Best Practices: Business Forum

## Business Trends and Professional Development

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 245885 | ABB Sustainability - sustainable value creation for our customers |
| | 2:30 PM | 3:30 PM | 281986 | US and Global economic outlook |
| | 4:00 PM | 5:00 PM | 282225 | Strategic partnering & collaboration \| An executive discussion |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 282228 | CEO Town Hall |
| | 1:30 PM | 2:30 PM | 245998 | Introduction to blockchain and its application |
| | 3:00 PM | 4:00 PM | 282229 | How diversity and inclusion can help you win |
| | 4:30 PM | 5:30 PM | 282232 | Tech Talk: Where will innovation come from when everything is digitalized? |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 282233 | Navigating conflict and difficult conversations (personal and professional) |
| | 1:30 PM | 2:30 PM | 282235 | Interrupting unconscious bias workshop |
| | 3:00 PM | 4:00 PM | 282236 | Bore no more 1 |
| | 4:30 PM | 5:30 PM | 282237 | Bore no more 2 |
| Thursday March 7 | 10:00 AM | 11:00 AM | 282238 | You're not moving SLOW enough |
| | 11:30 AM | 12:30 PM | 282240 | Managing and motivating a multigenerational workforce |
| | 1:45 PM | 2:45 PM | 282241 | Small talk is big talk: Trust-building in the workplace in the 21st century |

| COURSE CODE | SESSION TITLE | |
|---|---|---|
| 245885 | ABB Sustainability - sustainable value creation for our customers | At ABB, Sustainability is embedded in our business through integration of the three pillars of Sustainability: economic success, environmental stewardship, social progress and, with the notion that we can run the world without consuming the earth. Our four market-leading businesses, led by empowered entrepreneurs, drive sustainable value creation…as evidenced by ABB's eco-efficiency portfolio representing 60% of ABB revenues. ABB's SVP of Group Sustainability will describe how ABB provides products, services and solutions to meet tomorrow's challenges . . . today. |
| 281986 | US and Global economic outlook | The economic trends are shifting. Seeing those shifts, understanding them, and setting realistic expectations for the remainder of 2019 and for 2020 will require business leaders to be keenly aware of the changes taking place. Thinking and planning for the changes before they are on your door step is key to being successful as we go through the business cycle. Attend and learn what the leading indicators are telling us and what it all means going forward.<br><br>In that context, we will be discussing: Brexit, tariffs, utilities, infrastructure, oil & gas, food & beverage, automotive, process and discrete manufacturing industries. |
| 282225 | Strategic partnering & collaboration \| An executive discussion | New technology and innovative service delivery models are making it possible for companies in a wide range of industries to focus more on their core competency. But this trend also highlights the importance of collaboration with partners in a growing portion of the company's operations. From supply chains to distribution channels, from process industries to discrete manufacturing, strategic partnerships are on the rise in number and importance. Join us for a range of perspectives from top executives working at leading firms in three representative industries. |
| 282228 | CEO Town Hall | |
| 245998 | Introduction to blockchain and its application | As a foundation technology for cryptocurrencies, blockchain has been called revolutionary and disruptive, yet it remains a mystery for many of us. This session provides a basic and demystifying introduction to the key concepts of blockchain technologies and presents examples of current and emerging applications from multiple industries. We'll focus on the big picture with just enough detail to understand the potential for this innovative technology. Bring your questions. |
| 282229 | How diversity and inclusion can help you win | What's the ROI of Diversity and Inclusion? A successful implementation of a Diversity & Inclusion talent strategy and an inclusive organizational culture are now on many multinational and regional organizations; agendas. Do you wonder about the exact return on investment of these mindset- and people-focused strategies? Attend this panel discussion with key ABB customers and partners who will speak to how D&I efforts have helped them win. |
| 282232 | Tech Talk: Where will innovation come from when everything is digitalized? | Digitalization is a long-term trend affecting every part of the economy from established sectors like Food & Beverage to disruptive new industries like EV charging. As businesses and industries move along the adoption curve and digital technologies become commoditized, domain expertise and experience become the currency of the digital economy. Join us for a conversation with, Ivo Steklac, Chief Technology officer for EVgo, the nation's largest public EV fast charging network, ABB's Chief Digital Officer Guido Jouret and CTO Bazmi Husain as we explore how competition and industry experience will drive innovation in the digital economy. |
| 282233 | Navigating conflict and difficult conversations (personal and professional) | Being a successful professional; and personal -- requires having conversations that are difficult, not to mention important, awkward, tricky, meaningful, and powerful. The goal isn't to avoid these conversations; it's to find ways to have these conversations well. This workshop gives participants simple, direct ways to see conflict and resistance as opportunities for communication and growth in their work lives, and their personal relationships. Learn how to approach difficult conversations with skill and confidence, no matter who you're talking to! |

| | | |
|---|---|---|
| 282235 | Interrupting unconscious bias workshop | Unconscious biases are learned stereotypes that are automatic, unintentional, deeply ingrained, universal, and able to influence behavior. This unconscious bias workshop, facilitated by Catalyst - a global non-profit that helps companies build inclusive cultures; is designed to expose people to their unconscious biases, provide tools to adjust automatic patterns of thinking, and ultimately eliminate discriminatory behaviors. |
| 282236 | Bore no more 1 | You speak volumes, even before you've said a single word. From the way you use your hands, eyes, and face, to the way you give pause, pace, and pitch to their voices, you constantly broadcast how you really feel; and how their audience should feel about you. The most successful presenters know their subject, their audience, and how to deliver their message in a way that engages, educates, and, ultimately, sells. Bore No More will help you anyone who presents internally or externally to manage their anxiety, delivery, and the audience. |
| 282237 | Bore no more 2 | Want to be a more compelling speaker, inspiring leader, successful networker, and persuasive professional? Then you need to know how to tell a story. Stories are how leaders at all levels win hearts and minds, keep listeners interested and engaged, and build trust. In this session, you'll learn the science of why stories work (often better than numbers, facts and statistics), and how to tell a simple story that moves people to take action. |
| 282238 | You're not moving SLOW enough | This session explores the link between delaying gratification and our ability to persuade people. Interaction with people we desire to influence, presents us with a painful choice: instant gratification vs. lasting impact. Most of us go for the first, but doing so greatly limits our ability to achieve the second. This is due mostly "Gratification Traps," common pitfalls that we all experience in our workplace interactions. This session will focus on identifying three such traps and using a simple 5-step method to avoid them. |
| 282240 | Managing and motivating a multigenerational workforce | Never before has there been such a diversity of generations in the workforce. Each cohort has different values, attitudes, expectations, needs, and motivations, all of which can make it more challenging to manage and integrate into a corporate culture. Creating and maintaining a high-performing workforce is at the core of nearly every business strategy, and the rewards for doing it right include increasing employee satisfaction, reducing turnover, optimizing productivity and positioning the organization for growth. Multigenerational workplace expert and New York Times bestselling author Lindsey Pollak, often called a "translator" among the generations, will share her expert insights and recommend immediately actionable strategies to turn your organization's generational diversity into a competitive advantage. |
| 282241 | Small talk is big talk: Trust-building in the workplace in the 21st century | Many people don't enjoy Small Talk and feel that it's a waste of time; just a meaningless stage in the interaction. They couldn't be more wrong! Small Talk is an important stage in trust building and can have a significant impact on the outcome of the meeting. This is the moment when both people, unknowingly, evaluate the level of chemistry between them, as a critical foundation for their future interactions. Small talk is one example of "Social Evolution": the phenomenon of humanity moving from living in communities of individuals to being part of a global community of billions. In today's world, knowing how to prepare for, and then manage, a Small Talk "session" is a powerful skill. |

GEORGE R. BROWN CONVENTION CENTER | HOUSTON, TEXAS | MARCH 4-7, 2019

# Applications and Best Practices: Business Forum

## Advanced Services and Lifecycle Strategies

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 249379 | Service and the digital future: How will augmented reality impact your business |
| | 2:30 PM | 3:30 PM | 245914 | Delivering value with digital solutions |
| | 4:00 PM | 5:00 PM | 246018 | Increased productivity with high switching applications |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 245739 | Product life cycle solution to maximize uptime and optimize operation cost |
| | 1:30 PM | 2:30 PM | 245792 | Plant fingerprint: How to increase equipment performance and production efficiency |
| | 3:00 PM | 4:00 PM | 245750 | Arc flash solutions to protect people, plant equipment, and production uptime |
| | 4:30 PM | 5:30 PM | 245810 | Remote condition monitoring: Driving decisions |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 249333 | Embracing digital for a safe, reliable and optimized operation |
| | 1:30 PM | 2:30 PM | 245707 | Assess it before you regret it |
| | 3:00 PM | 4:00 PM | 249964 | Process analytical service agreements using digital tools to minimize downtime |
| | 4:30 PM | 5:30 PM | 245850 | Eating the data elephant one bite at a time and what the future holds for diagnosing transformers |
| Thursday March 7 | 10:00 AM | 11:00 AM | 249177 | Digital asset management: What it could mean for your plant or grid |
| | 11:30 AM | 12:30 PM | 250325 | Reduce control room footprint/costs and improve operational efficiency through digital collaboration |
| | 1:45 PM | 2:45 PM | 249145 | Reliability as a service |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 249379 | Service and the digital future: How will augmented reality impact your business | This panel discussion will focus on the emerging use of augmented reality (AR) to support service activities. Participants will learn how this technology is being developed and what impact it will have on the way utilities and industry perform service, train and support employees, and dramatically reduce response diagnosis during troubleshooting. In addition to ABB experts discussing the future of AR, a U.S. utility customer will participate on the panel to share their vision and development activities with AR. |
| 245914 | Delivering value with digital solutions | How can you better plan, build, operate and maintain your plant? By focusing on improving availAbility™, productivity, quality, safety and security. Customer cases will show how ABB Ability™ Services have helped customers in various industries to know more, do more, do better, together. |
| 246018 | Increased productivity with high switching applications | In production applications where high switching of an electrical system is present, the switching process itself is critical in both the output of the process as well as a significant cost to production. In industries like steel where arc furnace and ladle furnaces are used, the frequent electrical switching, from 20-400 operations a day, are largely dependent on the switching element. Depending on the life of the switching element and its reliability, the production output and costs to produce are greatly affected. In these high switching situations, the cost per operation becomes critical. |
| 245739 | Product life cycle solution to maximize uptime and optimize operation cost | Join our industrial solutions forum to learn through customer experience how life cycle solutions can help you better plan, operate and maintain your plant. Our discussion will focus on improving availability, productivity, quality, safety and security. |
| 245792 | Plant fingerprint: How to increase equipment performance and production efficiency | In any industry, a plant fingerprint is the optimal solution to increase equipment performance and production efficiency. As your strategic partner to maximize your return on investment (ROI), ABB will assess the overall life cycle of your equipment and establish a multi-year plan to ensure equipment components do not become obsolete and the equipment performance is optimized throughout its life. |
| 245750 | Arc flash solutions to protect people, plant equipment, and production uptime | Learn ways to reduce your risk profile related to arc flash related incidents! With 2018 NFPA 70E and IEEE 1584 pending changes, employers and facility owners must document that they have trained employees to properly identify levels of PPE and that they have an electrical maintenance program in place. Performing an incident energy analysis is the first step in determining ways to reduce the arc flash exposure risk to personnel working around electrical equipment, minimize damage to equipment if an arc event occurs and shorten loss of production time if repairs are needed. |
| 245810 | Remote condition monitoring: Driving decisions | Understanding the operating environment, controlling costs and having access to good information are essential in managing businesses effectively. This requires dynamic visibility to the operation and analytics that provide real data. Remote condition monitoring provides decision makers with a place to store critical data, tools to analyze it and the ability to make informed decisions from any location at any time, whether they are stationary or on their mobile devices. We will review the data that is critical for success and the technology available to gather that data. |
| 249333 | Embracing digital for a safe, reliable and optimized operation | The traditional methods of automation system maintenance don't work today. Plant staffing is changing across system life cycles: shrinking staffs compel industries to look for increased support from vendors, unmanned and reduced manned solutions are more common, and decades of experience and knowledge are leaving with workforce retirements. Today, advancements in digital services mean that someone doesn't have to go and physically touch every asset. With the right tools, the data stream flowing from plant assets can be used it to prevent failures or reduce downtime and product instability. |
| 245707 | Assess it before you regret it | Age, environmental impact and operational patterns contribute greatly to the gradual deterioration of substation equipment. Factors influencing substation performance include the design/layout, quality of maintenance actions taken and spare parts availability. When the substation life cycle reaches its design limits, it is time to make a decision about its future. Multiple technical solutions can be considered to reduce risk and extend the substation life, but the first step to identifying the optimal solution is to assess the substation's current condition. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 249964 | Process analytical service agreements using digital tools to minimize downtime | Reliable process analytical equipment is critical for monitoring gas quality and meeting regulatory requirements. Flexible, high value service agreements that combine scheduled maintenance with remote condition monitoring, to predict failure before it happens, can put your mind at ease. Maintenance costs can be minimized when services are bundled into agreements with partners you can trust. |
| 245850 | Eating the data elephant one bite at a time and what the future holds for diagnosing transformers | This session takes a high level view of power transformer fleet assessments and the massive amounts of data they can generate. Owners must have tools to turn both online and offline data into information that supports effective operations and maintenance actions. Based on the winner of the 2018 CIGRE Technical Exhibition Best Paper awarded to ABB, we will discuss the automatic classification of power transformer operating conditions using machine learning algorithms: the adequacy of data imputation, data overload and the widely common problem of missing data. |
| 249177 | Digital asset management: What it could mean for your plant or grid | Our customers are faced with daily challenges such as dealing with an aging infrastructure, a retiring or thin workforce, clean energy mandates, increased global competition and stretched budgets. These challenges make it difficult to meet their business goals and thrive. In this talk, we will highlight how ABB can help overcome these challenges by digitalization of the life cycle management of your assets. We'll cover densification of assets (to improve health observability) to different business models ABB offers enabling digital assets management or asset management as a service. |
| 250325 | Reduce control room footprint/costs and improve operational efficiency through digital collaboration | A collaborative operations approach that applies performance management, remote monitoring and preventive analysis technologies is ensuring security, improving efficiency and increasing productivity in many industries globally. Geographically strategic collaborative operations centers are connecting producer operators and supplier experts across enterprise-wide production facilities and headquarters to domain and technology experts, shortening time-to-resolution for operational issues. This session will highlight collaborative operations in oil and gas, power generation, and pulp and paper. |
| 249145 | Reliability as a service | Inspired by Rolls Royce's "Power by the Hour™" proven model and ABB CDO Guido Jouret's message to drive new business models with ABB Ability™, the Singapore team has come out with an outcome based service using the ABB Ability™ Smart Sensor. For a fixed monthly fee, ABB monitors the motors and delivers better reliability, reduced downtime and lower maintenance. Denka Asia Pacific chose this innovative business model for 23 LV motors at their chemical plant on Jurong Island. |

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# Applications and Best Practices: Business Forum

## Cyber Security: Managing Risks in a Digital World

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 249342 | The state of cyber security in operational technology |
| | 2:30 PM | 3:30 PM | 249294 | Protecting industrial control systems, and key lessons from Triton |
| | 4:00 PM | 5:00 PM | 249298 | Cyber security: The backbone of digitalization |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 249307 | Leveraging the cloud is a security imperative |
| | 1:30 PM | 2:30 PM | 249287 | Cloud applications: Digital trust and leveraging analytics |
| | 3:00 PM | 4:00 PM | 249923 | The unique cyber security challenges for consumer products |
| | 4:30 PM | 5:30 PM | 249892 | IT/OT convergence challenges in the utility industry |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 245389 | Cyber security best practices for the digital substation |
| | 1:30 PM | 2:30 PM | 249312 | Getting started on OT cyber security management without disrupting your OT |
| | 3:00 PM | 4:00 PM | 249326 | IT + OT + safety + cybersecurity = Industrial control system security model |
| | 4:30 PM | 5:30 PM | 249328 | Securing IIoT gateways and devices |
| Thursday March 7 | 10:00 AM | 11:00 AM | 250092 | Cyber risk: Insurance vs. mitigation |
| | 11:30 AM | 12:30 PM | 249874 | Cyber security of industrial robots |
| | 1:45 PM | 2:45 PM | 249325 | Incident response: We've been hacked! Now what? |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 249287 | The state of cyber security in operational technology | Forget the hype and hysteria; industrial control systems today are truly under attack. Unplanned downtime is the enemy, and manufacturers need to understand that security is a moving target. What works today may not work tomorrow. In a lively free-flowing question and answer session, hear how end users, solution providers, standards organizations and suppliers plan to stay one step ahead of the bad guys. |
| 249294 | Protecting industrial control systems, and key lessons from Triton | The industrial control systems (ICS)/critical infrastructure space is still discussing and investigating the implications of 2017's Triton malware and attack. Mandiant consultants have first-hand knowledge of how the attack unfolded, and more importantly, what security controls could have help prevent the attack. This presentation will examine key controls that apply to most control systems. Since many facets of critical infrastructure involve ICS/operational technology (OT), these lessons are important for security practitioners, executives, and ICS operators to understand. |
| 249298 | Cyber security: The backbone of digitalization | Although there is plenty of excitement around the positive impacts of digitalization – such as gains from process optimization, reduced maintenance costs, and increased revenues from higher availability factors – within the power generation industry there is still hesitancy to adopt more networked digital solutions. Simply put, for many generators, cyber security concerns and their potential to impact safety and availability outweigh the benefits of digitalization. |
| 249307 | Leveraging the cloud is a security imperative | Once a topic of security concern, migration to the cloud has now become fundamental to improving the security posture of organizations and unlocking agile business. Business leaders and security professionals agree that the inherent benefits of cloud – including on-demand scale for analytics, pervasive application of controls and centralized management – provide significant advantages. The benefits of the platform coupled with an unprecedented global shortage in cyber skills make cloud the security platform of choice. |
| 249342 | Cloud applications: Digital trust and leveraging analytics | ABB Ability™ is a pioneering solution that provides the industry with comprehensive control and analytics features for performance optimization and to identify anomalous activities for increased security. With the increasing risk of information leakage during digitalization, we showcase the security mechanisms currently used by ABB Ability™ that protect our customers' data. As we research more privacy-preserving data solutions as well as analytics to improve security, ABB is in a strategic position to engage more customers by protecting extremely sensitive data and business interests. |
| 249923 | The unique cyber security challenges for consumer products | ABB provides products and solutions not only for industrial customers, but also to the consumer space (e.g., smart homes). Design considerations for each sector are not the same, as the threat vectors are different. This session will discuss the strategies and methods to create effective cyber security in consumer products that are robust enough to withstand cyberattacks while maintaining core functionality, and resilient enough to recover in the event of security compromise. This is achieved by a defense in depth strategy starting from product design to independent security tests. |
| 249892 | IT/OT convergence challenges in the utility industry | Cyber security must be at the heart of any operational technology (OT) project as these systems now include smart sensors, gateways and edge computing devices that interact with the utility's information technology (IT) infrastructure. The largest energy utility in the U.S., Duke Energy, will share why cyber security is a necessity to be deployed and how you can manage complex cyber security challenges successfully as IT and OT converge. |
| 245389 | Cyber security best practices for the digital substation | Utility interest in the digital substation has increased, driven by demand for reliability improvements and cost savings. However, a major stumbling block is a perception and fear that going digital exposes utility assets to cyber threats and NERC CIP non-compliance. The session will discuss cyber security best practices and IEEE/IEC industry standard associations' activities working with the regulators to address a technical solution for digital substation cyber security compliance. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 249312 | Getting started on OT cyber security management without disrupting your OT | In this session, we present how Hemlock Semiconductor Corporation introduced a systematic cyber security management system to reduce the operational cyber security risks in a step-by-step approach. This aimed to introduce basic effective risk reduction while simultaneously avoiding potentially disruptive changes and delays due to time-consuming detailed analysis. By following a staged approach, basic countermeasures could be introduced with limited changes, reducing most common risks, in parallel to a more comprehensive risk analysis and security management system design. |
| 249326 | IT + OT + safety + cybersecurity = Industrial control system security model | Isn't it time to accelerate your cyber efforts? An industrial incident always has a risk of people getting hurt; whether the cause is a faulty safety system or a compromised one doesn't change the effects. A company that puts safety as top priority must address cyber security as a top priority as these two topics are intrinsically linked. Domtar Paper has adopted an approach where they take on cyber security together with safety rather than treating these topics separately. This has resulted in improved safety, increased availability, enhanced integrity and improved confidentiality. |
| 249328 | Securing IIoT gateways and devices | Hardware-based trust serves as the foundation to securing industrial internet of things (IIoT) gateways and devices that collect, process and forward sensitive business data to connected cloud platforms. Learn more about how ABB Ability™ is following the Endpoint Security Best Practices (ESBP) from the Industrial Internet Consortium (IIC) to achieve a high level of trust in a connected world. Understand what's required to transfer data from a trustworthy device to a secure cloud. |
| 250092 | Cyber risk: Insurance vs. mitigation | As cyber security concerns increase, organizations are seeking to protect their operations with more than just technology and personnel. The cyber risk insurance market is a growing industry that companies are looking to utilize in order to offset some risk. Learn about how these programs are being developed and about ways organizations can make the best use out of the available options. |
| 249874 | Cyber security of industrial robots | Industrial robots are a complex system used for manufacturing critical components. A single vulnerability could introduce defects into manufacturing processes, cause physical damage and even potentially harm people. Learn about the transformation in the robotics industry, from robots traditionally in a cage and not connected, to a modern solution without fences, with robots working in close collaboration with humans and connected to internet. How is the industry facing the challenge of addressing security in the entire safety function, which now is increasingly implemented in software? |
| 249325 | Incident response: We've been hacked! Now what? | Join this session to review incident response best practices and lessons learned from ABB's Global Cyber Security Incident Response Team (CSIRT). We will review hacker techniques, incident response planning basics and the fundamental process of responding to an incident. We will also review lessons learned from previous cyber security incidents. |

GEORGE R. BROWN CONVENTION CENTER | HOUSTON, TEXAS | MARCH 4-7, 2019

# Applications and Best Practices: Business Forum

## Realizing the Full Benefits of Digitalization

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 234901 | The future of B2B eCommerce and digital customer experience |
| | 2:30 PM | 3:30 PM | 235869 | Digitalization for power T&D: Where to start? |
| | 4:00 PM | 5:00 PM | 243965 | Considerations for the protection and control for digital switchgear to maximize your investment |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 245700 | Digitalization readiness |
| | 1:30 PM | 2:30 PM | 245704 | Network Manager analytics for wind farms: Unlocking the hidden value in your operational technology |
| | 3:00 PM | 4:00 PM | 245733 | Leveraging AI and machine learning |
| | 4:30 PM | 5:30 PM | 245791 | Mission critical communications fuel the benefits of digitalization |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 246311 | ABB and digital partners: Supporting the path of our customers' digital transformation |
| | 1:30 PM | 2:30 PM | 246020 | ABB and HPE: Enabling IIoT for true customer value |
| | 3:00 PM | 4:00 PM | 246253 | How ABB and Microsoft are driving joint innovation |
| | 4:30 PM | 5:30 PM | 249715 | The future of work in the digital power plant |
| Thursday March 7 | 10:00 AM | 11:00 AM | 249836 | Digital projects |
| | 11:30 AM | 12:30 PM | 249383 | New technologies and PUCs |
| | 1:45 PM | 2:45 PM | 249462 | Digitalization is the way to the future – and it's here today! |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 234901 | The future of B2B eCommerce and digital customer experience | The B2B space is undergoing unprecedented change with growth of eCommerce solutions for manufacturers and distributors. No longer is this only an area of opportunity for consumer-centric business models. Join this fireside chat to learn how ABB is approaching the evolution of customer experience through eBusiness solutions, digital tools and non-traditional marketing to make it easier for customers to buy online. |
| 235869 | Digitalization for power T&D: Where to start? | Most transmission and distribution (T&D) utilities understand the benefits of digitalization, and many are developing plans to digitalize various aspects of their business. However, a common challenge is deciding the best place to start given the need to prove the technology, show short term business value and scale the projects to maximize return on investment. This session will explore options for starting and scaling digitalization projects, provide guidance on what steps to take to achieve the objectives, and highlight real-world examples. |
| 243965 | Considerations for the protection and control for digital switchgear to maximize your investment | Medium voltage switchgear used for the distribution of electrical energy is a very important element of electrical networks, the function of which is to ensure uninterrupted power supply to the whole network. With the integration of MV sensors for current and voltage measurement, we can show how ABB protective relays and the IEC 61850 architecture within digital switchgear can save you time, reduce your cost of ownership and give you a level of flexibility not found anywhere before. |
| 245700 | Digitalization readiness | The ABB Ability™ solutions catalog defines 'Ability Levels,' each with a set of solution types. The levels indicate growing maturity of the technology, collaboration and value. The examples in the catalog show ABB is competent in application areas that align with our customers' businesses. Digitalization readiness extends the concept with more rigor for how we determine which solutions align with customers' expectations, and identifies the areas to be addressed to drive a road map from the current to desired level of maturity from three perspectives: data, intelligence and organization. |
| 245704 | Network Manager analytics for wind farms: Unlocking the hidden value in your operational technology | As the use of wind energy to meet emissions targets at state and regional levels increases, wind farm operators are seeking ways to optimize performance of their assets and deliver reliable power to the grid. With wind farm monitoring systems providing intelligence about wind turbine performance and sensors collecting data on turbine components, wind farm owners still face a challenge to turn this data into useful insights and maximize uptime. We will provide an overview of how ABB's analytics solutions can help wind farm owners optimize performance of their assets and minimize downtime. |
| 245733 | Leveraging AI and machine learning | Artificial intelligence (AI) and machine learning promise to revolutionize and alter the landscape of tasks currently being performed by humans, allowing systems to scale and automating tasks that would otherwise be onerous and repetitive. In this session, we will describe industrial tasks/use cases that are well suited for AI/machine learning and give an overview of how ABB builds AI and machine learning pipelines to automate tasks. |
| 245791 | Mission critical communications fuel the benefits of digitalization | This session addresses the communications issues associated with digitalization and how to ensure that your critical communications infrastructure is ready for the demands of digitalization. The rapid growth in data and devices resulting from digitalization requires a highly reliable and secure communications infrastructure to handle the device connectivity and volume of data. This session will focus on realizing the full benefits of digitalization by ensuring that your communications infrastructure is ready for the digitalization challenge. |
| 246311 | ABB and digital partners: Supporting the path of our customers' digital transformation | Hear from ABB's leading partners on how to develop leading edge digital solutions. Partners such as Microsoft, HPE or IBM will share their learnings on the digital transformation with joint customers. |
| 246020 | ABB and HPE: Enabling IIoT for true customer value | ABB and Hewlett Packard Enterprise (HPE) formed a global digital alliance late in 2017. Through the convergence of ABB's deep domain expertise in operational technologies (OT) and HPE's leadership in information technologies (IT), we jointly create incremental value for our customers; we turn industrial data into insights and action, thereby enabling our customers to increase efficiency and flexibility of their core operations. This session will focus on illustrating tangible industrial internet of things (IIoT) use cases, which we have been addressing with innovative, joint digital solutions. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 246253 | How ABB and Microsoft are driving joint innovation | The panel will discuss how information technology (IT) and operational technology (OT) companies can drive innovation in their own products by learning from each other's requirements. At a high level, we will share our experiences of the last two years of partnership between ABB and Microsoft. Learn how Microsoft innovations are integrated into ABB's industrial solutions, and how ABB's requirements are driving the evolution of Microsoft's industry-leading platform for internet of things (IoT) development, Azure IoT. |
| 249715 | The future of work in the digital power plant | The near-certainty of technology change, coupled with uncertain implications, creates opportunities for us to impact the future state. Beyond specific work tasks, these uncertain implications will impact how we hire, train, retain and build the workforce of the future. In this discussion we will highlight relevant emerging technologies, discuss probable implications on the future of work in the digital power plant, and describe the role we will all have in creating this exciting future. |
| 249836 | Digital projects | In this session, we will reveal how we drive digital innovation in ABB. Utilizing real world case studies, our digital leads from different divisions and businesses will explain how they are leading ABB’s digital transformation journey, how they are co-developing exciting new products together with their customers and how they escape “pilot purgatory” and scale their digital solutions. |
| 249383 | New technologies and PUCs | As new grid technologies and innovations that benefit customers become available, what are the best strategies for engaging with policymakers and public utility commissions (PUCs) to implement these new technologies? Some technologies face unique challenges, such as EV charging infrastructure and battery energy storage. Through recent experiences, the panel will discuss successful and unsuccessful strategies and tactics for engaging with policymakers and utility commissions to implement new grid technologies and suggest possible frameworks for the future. |
| 249462 | Digitalization is the way to the future – and it's here today! | In this panel discussion, service and maintenance leaders will discuss how digitalization is unlocking the potential of the future. Learn how digital sensors, advanced analytics, virtual reality (VR) and augmented reality (AR) will help you improve availability, productivity, quality, safety and security. |

GEORGE R. BROWN CONVENTION CENTER | HOUSTON, TEXAS | MARCH 4-7, 2019

# Applications and Best Practices: Business Forum

## Safety, Production and Human Factors

| DATE | START TIME | END TIME | COURSE CODE | SESSION TITLE |
|---|---|---|---|---|
| Monday March 4 | 1:00 PM | 2:00 PM | 243618 | Using digital technologies to make a step change in reducing human errors in procedures |
| | 2:30 PM | 3:30 PM | 245918 | The true cost of inadequate machine safety |
| | 4:00 PM | 5:00 PM | 249801 | Learning how to safely – and successfully – operate within challenging business climates |
| Tuesday March 5 | 10:30 AM | 11:30 AM | 249138 | ABB improves safety and business performance with SafeStart |
| | 1:30 PM | 5:30 PM | 240000 | Who really cares about workplace safety? |
| Wednesday March 6 | 10:30 AM | 11:30 AM | 239918 | Ten feet tall and bulletproof |
| | 1:30 PM | 2:30 PM | 239915 | Employee engagement: Myth or magic? |
| | 3:00 PM | 4:00 PM | 239884 | Reducing serious injuries and fatalities: Three approaches and their effectiveness |
| | 4:30 PM | 5:30 PM | 249247 | Life-saving leadership gravity |
| Thursday March 7 | 10:00 AM | 11:00 AM | 249249 | Adopting a human factors approach improves culture and supervisory communication skills |
| | 11:30 AM | 12:30 PM | 239997 | The bad side of town |
| | 1:45 PM | 2:45 PM | 239911 | Managing complex change: The challenge of implementing a significant improvement initiative |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 243618 | Using digital technologies to make a step change in reducing human errors in procedures | No matter what industry or activity, when a human is performing a task, there is a possibility that the person carrying out that task could make a mistake. This session will provide examples of how poor procedures have led to human errors causing incidents, introduce human factors theory and explain some of errors to which people are susceptible. Learn how emerging technologies such as digitalized procedures and augmented reality (AR), together with the "big data" captured in these systems, can enable the adoption of mobile procedures and help deliver continuous improvement and reduced errors. |
| 245918 | The true cost of inadequate machine safety | Machine safety standards are constantly evolving in North America, and this creates challenges for the manufacturing industry. As globalization continues to affect both machine builders and end users, it requires everyone to have a broader understanding of machine safety requirements. This forum will navigate the harmonization of the machine safety industry and illustrate how you can provide a safe working environment and ultimately protect your bottom line. We will review the many aspects needed to derive a comprehensive safety plan that will minimize risks. |
| 249801 | Learning how to safely – and successfully – operate within challenging business climates | Learn how to safely and successfully operate within challenging business climates. This session will include how to incorporate lean principles in safety to increase efficient productivity in all levels of operation. |
| 249138 | ABB improves safety and business performance with SafeStart | A safer workplace begins with stronger personal awareness. ABB has adopted and implemented SafeStart in over 30 U.S. manufacturing facilities. SafeStart has provided practical techniques to keep workers alert to risk all day, every day – not only at work, but at home and on the road. SafeStart programs within ABB have become a proven method to create “leading” indicators to drive not only improved safety performance, but also business performance from quality and productivity to off-the-job safety and a positive safety culture. |
| 240000 | Who really cares about workplace safety? | Besides safety folks and OSHA, nobody is looking for more safety training, better safety systems or a safer working environment – even though they should be. Safety pays big dividends to the bottom line, and an injured worker not only hurts the safety record, he or she affects costs, morale, quality and productivity. Even the person whose life in on the line often has little concern for their own safety. So, how do you get people to actually care about safety? This session will highlight common challenges and demonstrate to leaders the things that will make safety a priority for everyone. |
| 239918 | Ten feet tall and bulletproof | Do the terms “That will never happen to me,” or how about, “I’ve been doing this job for 30 years and never been hurt,” sound familiar? Do you have people in your organization that are “10 feet tall and bulletproof?” This session will address how to take us from thinking we are “safe enough” already to exploring how to get the attention of management to address those things that will enhance our safety culture. In this session, we will discuss the transition that all employees make from thinking that nothing can hurt us to learning from our mistakes. |
| 239915 | Employee engagement: Myth or magic? | How often do you hear statements like, “We can’t seem to get our employees involved,” “We need to get our employees on the same page,” “No one seems to care,” or “Our employees seem to have their own agenda”? Getting employees engaged takes a lot more than simply wanting them to be engaged. The task is a function of cultural change, and changing culture can be hard work – but it doesn’t have to be. This presentation will use real life stories and experience that will help make your journey a little easier and much more likely to be successful. |
| 239884 | Reducing serious injuries and fatalities: Three approaches and their effectiveness | Over the last decade, there's been a disturbing trend when it comes to safety. Recordable injury rates have steadily been declining, but the rates of serious injuries and fatalities (SIFs) have remained flat or are increasing. Could "Zero Harm" initiatives be making this situation worse by diluting the focus of improvement strategies away from what really matters? This session will take a look at three different strategies for improving what is arguably an organization's most important safety performance metric and discuss their effectiveness. |

| COURSE CODE | SESSION TITLE | ABSTRACT |
|---|---|---|
| 249247 | Life-saving leadership gravity | Engaged employees are safer employees. The fact is well-established in the research. But why? And how? What's the mechanism that turns a nebulous aspect like engagement into concrete improved safety numbers? Both in his own research and by assembling a wealth of empirical, peer-reviewed studies across a host of hazardous industries, New York Times bestselling author Rodd Wagner cracks the code on how culture and leadership effectiveness lead directly to lives and limbs saved. The presentation is a crucial briefing for any leader who supervises people who work around deadly hazards. |
| 249249 | Adopting a human factors approach improves culture and supervisory communication skills | This is a true, first-hand account of the successes, failures and insights from a safety culture change project that unfolded in a manufacturing facility from 2003 to 2009. A key change in safety training was used to catalyze the transformation by sharing a language that involved more people in the safety conversation and promoted a culture of learning from incidents, rather than blaming. The project achieved a 60% reduction in injuries from a baseline that was 50% better than the industry average. Non-occupational injury trends followed suit to produce a return of $2.3M in 20 months. |
| 239997 | The bad side of town | "Have you ever noticed how being on the bad side of town heightens your awareness level? Whether you've had a bad experience, or simply by the reputation of an area, there's an overwhelming urge for self-preservation.<br><br>Can this awareness level be applied to recognizing your state of mind when a production error or workplace injury occurs? Explore the signs that you are on the ""bad side of town"" at work when it comes to errors and mistakes that could lead to loss of productivity or an injury, and use the tools provided in this session to manage those states." |
| 239911 | Managing complex change: The challenge of implementing a significant improvement initiative | The idea of change can cause some hearts to race, but like it or not, things do change. Often things need to change for the survival of the organization. The real issue isn't the act of changing; it is creating an atmosphere and system so the change is successful, meaning it was efficiently executed and effectively functioning in a timely manner. We will cover what is required to facilitate positive change. |