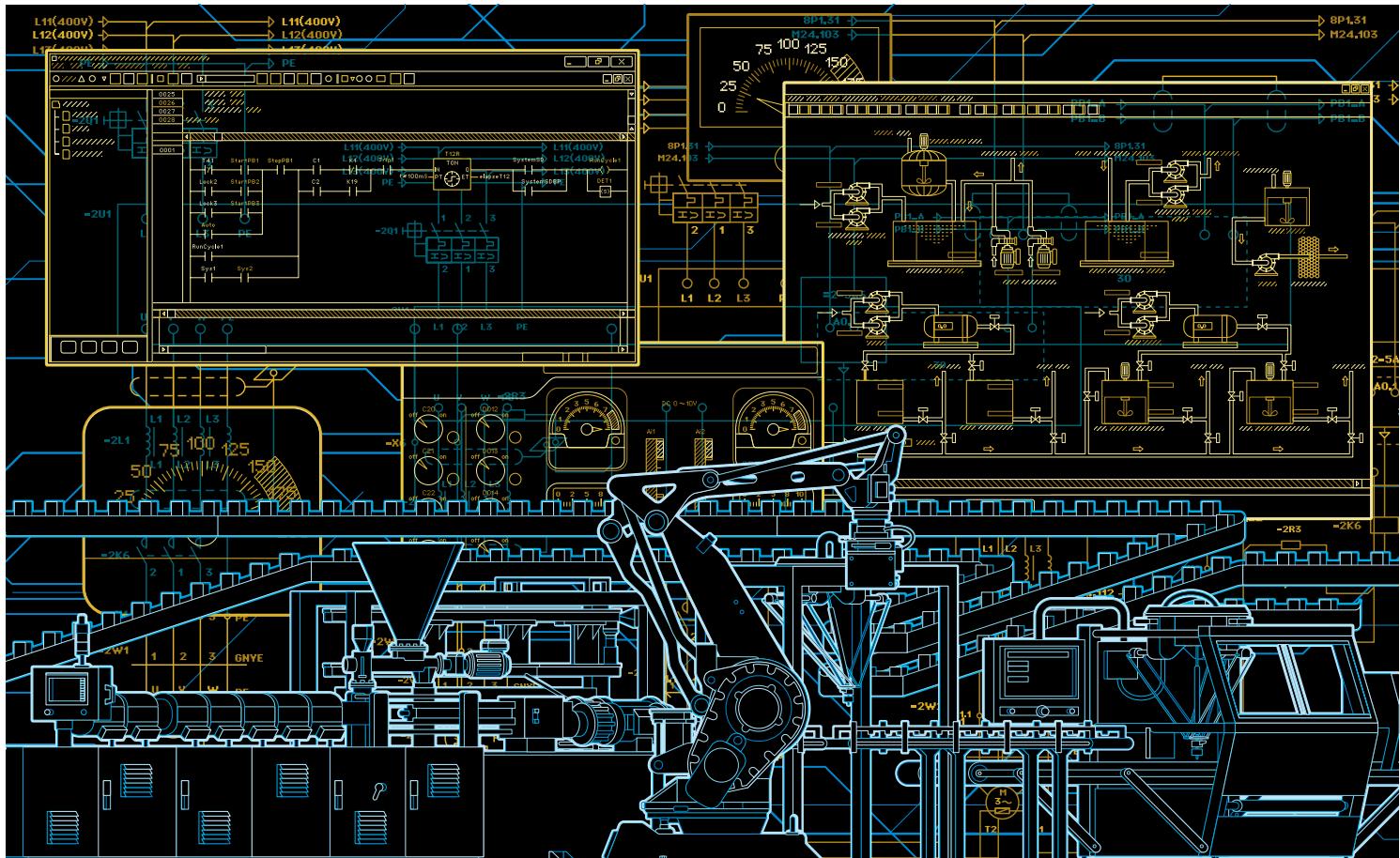


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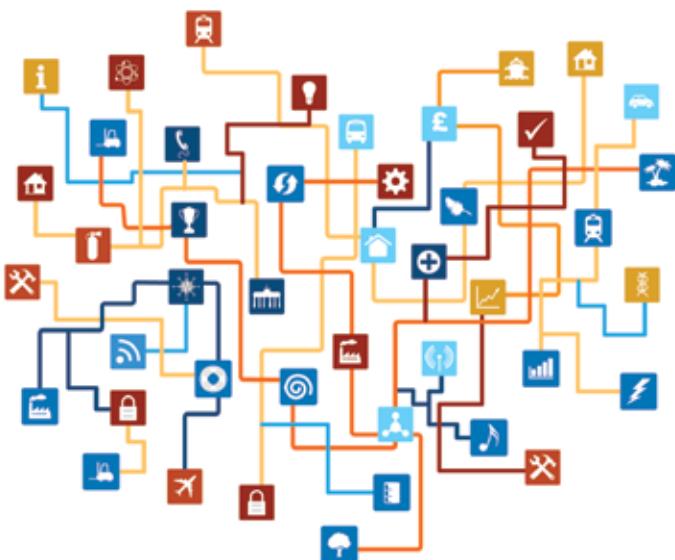
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"Don't touch my food"

Help produce packaged food hygienically with ABB Robots and automation products.

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Bazmi Husain

Managing Director
ABB India Limited

Dear friends,

The fourth Industrial Revolution is a stimulus that will drive the next bout of improvements in manufacturing operations and productivity. Industry has evolved from mechanical production facilities, through electrically charged assembly line production to electronics-based controls.

By combining components of the cyber and physical world, industry is moving towards making manufacturing systems flexible and integrated, with an increased focus on collaboration. New technology applications will give us the ability to access and understand every measurable parameter in our plants and their interactions.

Social machines, thinking factories, global facilities, smart products and virtual production advance productivity by making us agile and responsive to

market needs. This intelligence also pre-empts and mitigates safety risks – key, if world-class businesses wish to make in India.

This issue of Contact provides an overview of automation solutions already deployed by ABB – case studies of enhancing customer operations, and perspectives from industry. Happy reading!

Best regards,

Bazmi Hussain



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Partnering with the United Nations

ABB teams with the UN to fast-track the adoption of minimum efficiency performance standards and boost energy efficiency in motors and transformers.

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ABB automation and control systems ensure uninterrupted processing of more than a billion liters of milk.

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In brief

ABB CEO visits India

During his visit to India in December 2014, Ulrich Spiesshofer met the leading industrial houses and several strategic customers. His interactions shaped a view that utilities in India were well on their way to adopting renewables as a key source of energy.



ABB's TOSA bus technology wins innovation prize

ABB - developed boost charging technology and traction equipment for electric buses recognized at German EBUS Award 2014.

The technology incorporated on TOSA, the first 100% electric articulated bus, was recognized at the EBUS Award 2014 on October 10. TOSA, which has now been in operation in Geneva, Switzerland, for over a year, won the Power Train and Charging Technology categories for its innovative on-board traction system and fast in-route charging. The EBUS Award is selected by a jury of worldwide recognized experts and the German public transportation association under the patronage of Alexander Dobrindt, Germany's Minister of Transport and Digital Infrastructure.

PGCIL felicitates ABB's superior project management

Powergrid Corporation of India Limited (PGCIL), which transmits and distributes over half the power in India, felicitated ABB India for commissioning the last link substation in the national power grid, nine months ahead of schedule.

The 765/400 kilovolt (kV) substation at Sholapur links the country's southern grid to the national power grid. The scope of the project included design, engineering, manufacturing, supply, erection, and testing as well as the civil works for the 765 kV and 400 kV substation including the 500 MVA transformers.

With the completion of the Raichur-Sholapur high-voltage transmission line, all of India's five regional grids are now connected into a national power grid and operate on a single frequency. This marks the realization of India's 'One Nation – One Grid – One Frequency' vision, defined in the 1990s. The national grid will help achieve a secure electricity supply in the country by transferring power from resource-



R N Nayak, Chairman and Managing Director of PGCIL felicitated N Venu, President, Power Systems, ABB India.

rich regions to load-centric consumption centers.

"We are proud to be associated with a project of such national importance," said N Venu. "ABB has been a pioneer in India's power network for many decades. We remain committed to developing and manufacturing solutions for the power sector in India."

Unleashing the full potential of energy efficiency

ABB India captivated customers at the Energy Efficiency Summit organized by CII between 29 October and 1 November, 2014. Madhav Vemuri, Country Service Manager, Vineet Sikka, VP - Marketing, Discrete Automation and Motion business and Sunil J, Product Manager, KNX gave presentations at the event on different streams in energy efficiency – from holistic solutions to VSDs and Motors and Building Automation.

ABB also showcased some key products like Solar Pump Drive, KNX home solutions offerings.

"It was a very interesting and enriching experience for us, as we had an opportunity to interact with many key stakeholders from different industry sectors and market segments. The sustained interest and drive on EE portfolio / solutions from a wide spectrum of industry and infrastructure



Madhav Vemuri, Country Service Manager made the case for improving efficiency.

verticals was encouraging," said Madhav Vemuri.

Renewable Energy India helping shape responsible energy

ABB India showcased its latest offering for the fast-growing renewable energy sector at the eighth edition of exhibition and conference, Renewable Energy India expo.

Over 2,000 delegates, 440 exhibitors and 100 speakers from over 35 countries converged at Greater Noida for the three day exhibition and conference on renewable energy. At the event, ABB India displayed its innovative solutions for secure and efficient solar and wind energy, under the theme 'Harnessing the power of renewables'.

Technologies like HVDC and HVAC, and turnkey solutions of electrical balance of plants were showcased using innovative touch screen platforms, along with ABB's broad portfolio of solutions for solar energy, offshore and onshore wind and hydroelectric power.

The stall inaugurated by S.L. Kapoor, Director and Head of Engineering, Welspun Energy, had over 300 visitors and numerous meetings.



Visitors at the ABB stall showed keen interest in the ABB central inverter.

ABB chosen by Shell as global supplier for low voltage switchgear and motor control centers

ABB has signed a five-year agreement with Shell to become its global single-source supplier of low-voltage switchgear, motor control centers and related services.

The five-year global agreement, with an option for an additional five-year extension, covers the sales, support and service of low-voltage switchgear and motor control centers for green-field and brown-field sites.

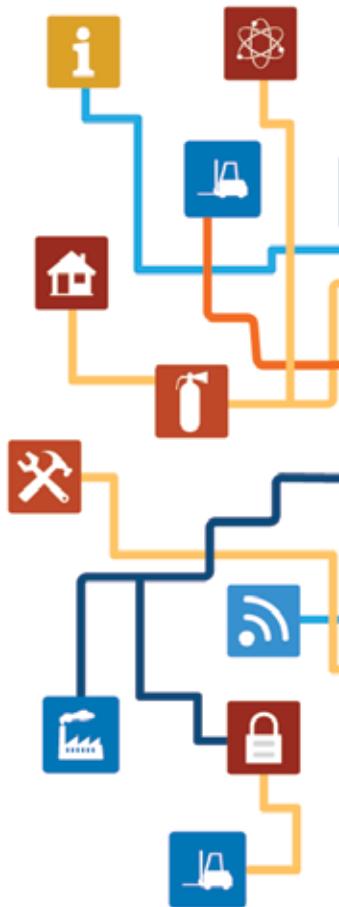
"Over 40 years of experience have gone into ABB switchgear designs. We have installed millions of units globally for our customers, in some of the world's most harsh environments. The reliability of our products, together with our focus on supporting our customers' service needs, were fundamental aspects in securing this important contract."



Over 40 years of experience have gone into ABB switchgear designs and millions of units have been installed.

A connected world

Working towards a world that is connected and smart so that industries are more automated and responsive to our changing demands.



A world without the Internet is unimaginable and almost absurd. Connectivity is the core of our existence as human beings today. From being able to work in remote locations to attending cross-country conference calls, organizations have come to believe that connectivity improves productivity.

If being connected and smart is so essential, what about industries? Can industries benefit from improved connectivity?

A McKinsey report says that in manufacturing, the potential for cyber-physical systems to improve productivity in the production process and the supply chain is vast. Consider processes that govern themselves, where smart products can take corrective action to avoid damages

and where individual parts are automatically replenished.

So in effect, we are talking about making factories more automated and responsive to our changing demands. It's an Industrial Revolution in the making and is being talked about even before it happens.

What is Industry 4.0?

The first Industrial Revolution was driven by the steam engine and mechanization, the second by Henry Ford's assembly line and the third in the 1970s, when computers revolutionized the workplace. Now the three have amalgamated, putting us at the dawn of Industry 4.0, an age where 'smart devices' really are smart enough to assume major control over our machines of manufacturing and distribution.

The vision of Industry 4.0 is for 'cyber-

physical production systems' in which sensor-laden 'smart products' tell machines how they should be processed. Processes would now govern themselves in a decentralized, modular system. Smart embedded devices start working together wirelessly either directly or via the Internet 'cloud' – the Internet of Things (IoT) – to once again revolutionize production. Rigid, centralized factory control systems give way to decentralized intelligence as machine-to-machine communication hits the shop floor. This is the core idea of the Fourth Industrial Revolution.

Emerging markets leapfrogging in technology

Contact spoke to Pierre Leretz, President, ABB Process Automation, India, Middle East and Africa to find out how this fourth



“Here it’s interesting to mention that 40% share of worldwide manufacturing is held by emerging countries. They have doubled their share in the last two decades – so they are fertile grounds for the fourth Industrial Revolution,” Pierre Leretz, President, India, Middle East and Africa, Process Automation, ABB

Industrial Revolution as its termed is shaping in the IMA region.

Leretz said that the IMA region is leapfrogging through the stages of development of cities, infrastructure as well as industries – making themselves fertile grounds for intelligent industries.

“Here, it’s interesting to mention that 40% share of worldwide manufacturing is held by emerging countries. They have doubled

their share in the last two decades and are willing to invest in advanced technologies,” added Pierre.

In these countries, it’s easier to implement the next level of process automation as there is rarely any industrial baggage. In ABB, 50% of our offering is software related and hence we are ready to take the industries in the country to the next level of automation. Internet penetration in countries like India may have just crossed 16% of the population, but in absolute numbers this percentage works out to nearly 10 times the population of Australia. “With newer industrial zone development and investment in new factories in the region, we believe that we could be seeing automated and intelligent factories sooner rather than later. Oil & Gas and mining are industries that can richly profit from such



An integrated solution helps close gaps in the value chain.

automation and remote monitoring," he added.

Automation reduces safety risks

Leretz explains the concept further by taking the example of mining industry that is significant in the region. Mining is labor intensive, expensive and can pose a threat to the health and safety of the workers.

There tends to be islands of automation in the mining industry. "If we were to look at one mining activity, it may have up to four process areas where operators run

their own machines and there is hardly any collaboration or integration between them. So, optimizing the complete value chain becomes a tough job and the key is to have a full unified view of production from raw material to processing, stock pile and delivery. An integrated solution helps close gaps in the value chain and with good communication, even the blasting and crushing in the mine can be optimized with grinding process and with the concentrator in the whole.

So with complete and extended

automation, we can mitigate safety risks as well as close gaps in the value chain," explained Leretz.

An excellent example of a product that ABB sells to achieve this result is the 800xA – which is in essence a modern cockpit for any industry and vastly improves asset management.

Reducing costs and increasing efficiency

Automation and electrical integration is the next frontier in delivering a unified environment that will drive improvements in productivity, increase safety, and reduce costs. With the growing number of complex plant system interfaces and fewer employees to maintain such systems, a need for integrating both automation and electrical aspects into one system has arisen.

Recently, ABB unveiled a technology that is designed to help engineers easily resolve electrical problems in mines right from their control room.

The new technology, called the System 800xA mining integrated distribution automation system (MIDAS) Library, features an enhanced substation control and monitoring platform that provides the team with real-time analytics, including graphical status, interlocks and measurement and phasor diagrams.

The library is integrated with ABB's System 800xA, which monitors and controls various automated industrial processes. "The MIDAS Library also makes it simple for engineers to deal with intelligent electronic devices for protection and control of the electrical system."

The operator can monitor and gain access to the entire electrical infrastructure of the mine from a single workstation and a single software package, the company said in a statement.

Technicians not only receive information about the latest condition of their electrical systems but can also correct them remotely, reducing the time taken to rectify issues and ensuring safety by preventing the team from entering the mine.

The team can find the root cause of the problem and fix it immediately, without disrupting work at the mine or increasing operational costs.

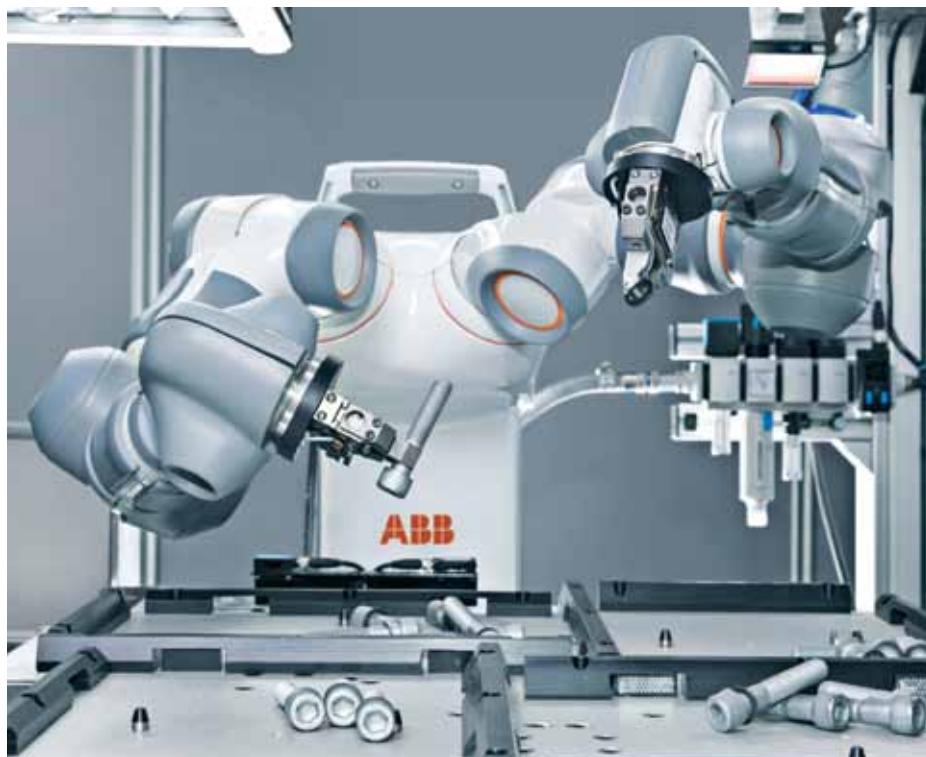
Load shedding during power interruptions is critical. Pulp and Paper, Steel, Aluminum, and Cruise Ship industries consume large quantities of energy. They need to manage electricity as a raw material cost through peak shaving and power consumption prediction. Such integration

ABB's sixth generation of System 800xA enhances security, supports upgrades on older platforms like Windows XP

System 800xA is known for delivering productivity through consolidating process, electrical, safety, and telecoms in one system and providing the ultimate high performance operator control room environment featuring the Extended Operator Workplace.

This sixth generation release, commonly called v6, is not only for new projects but has been specially developed to support upgrades of older DCS systems running on unsupported operating systems such as Microsoft XP. System 800xA v6 provides customers with a more secure automation environment that lowers the total cost of ownership, while providing countless opportunities to improve operational productivity.

To know more contact the local ABB Office or go to <http://new.abb.com/control-systems/the-world-control-tour/800xa-v6>



YUMI: ABB's Dual arm robot has sensor technology and can respond to the environment around it.

“So with complete and extended automation, we can mitigate safety risks as well as close gaps in the value chain,” - Pierre Leretz.

makes running energy intensive plants easier, cost effective and efficient.

Robots - the future of the industry

Apart from this ABB also has made huge advancement in robotics in a way in which today humans and robots can work alongside.

ABB's new dual-arm robot is an entirely new concept in robotics that has sensor technology which enables it to gauge tolerances – so as to apply the correct amount of pressure – and to respond to the environment around it, which means it can work safely alongside humans, with no need for cages and other protective equipment.

Far from taking jobs away from people, ABB sees increasingly that robots and automation support industries to move up the value chain. Countries with the highest density of robots, such as South Korea, Japan and Germany, tend to have the lowest unemployment rates and China, faced with a contracting labor force, is now the world's largest market for robots.

What about the data?

A related development in industry is the explosion of mass data. Advances in

sensor technology mean that our machines are increasingly capable of monitoring themselves and the world around them and sending that data to diagnostic control centers which determine whether human intervention is required.

ABB is at the forefront of these developments and is driving the technologies that are making them possible through its own research and by working with leading institutions such as the Federal Institute of Technology in Zurich (ETH) . Together, we are pushing the boundaries of technology and innovation to decouple economic growth from energy consumption and environmental impact, and to achieve a better world.

ABB is confident it will see the next stage of manufacturing in the IMA region characterized by better adaptability, resource efficiency and ergonomics as well as the integration of customers and business partners in business and value processes.

One of the largest DCS and MES projects for integrated decorative paint process in the world

Asia's third largest paint company, Asian Paints set up a greenfield plant for decorative paints with production capacity of 225,000 kilo liter per annum (kl/a) water based paint, 70,000 kl/a of solvent based paint and 5,000 kl/a of machine colorants at Khandala.

After rigorous market research, Asian Paints selected ABB for the design, engineering, project management, installation, commissioning and service of the integrated MES (Manufacturing Execution Systems) and DCS solutions for its new plant. Having around 42,000 I/Os, it is an end-to-end solution that controls and integrates plant processes from raw material receipt, storage and transportation to paint manufacture and packing.

MES enables higher plant efficiency and productivity, as well as greater flexibility and agility throughout the production processes of polymer, resin, water and solvent based paints. The system, with its increased reliability, ultimately results in savings, better material usage and reduced losses that may arise out of production breakdown. ABB Smart client enables the management to have the key production data and reports just at a click of a button.

ABB solutions not only reduced manpower required to operate the plant and production cycle time, but also significantly cut the downtime. Involving a high degree of customer interfacing, ABB was the single-point for turnkey automation (DCS and MES) of the plant, from concept to commissioning.



IRB 340 FlexPicker packing candy at Zaini's in Italy.

"Don't touch my food"

Increased pace of life has made processed food acceptable with people demanding more hygienic and healthy packaged food

If you're involved in the Food and Beverage industry you know quite well that it has undergone some dramatic changes in the recent past—and have likely experienced them firsthand. Whereas once it was commonplace to have long production runs and a relatively limited group of standard package sizes, end-users are now more interested in on-demand packaging, short production runs, mix-

and-match variety packs and individualized packaging configurations.

In addition, the time between ordering a new production line and the start of production is shrinking while the containers are becoming more intricate and portions more uniform in order to be pleasing to consumers.

About a century ago the nascent automotive industry started out by



IRB 260 and IRB 660 robots packing and palletizing canned food at SPC Armona in Australia.

producing electric vehicles. Even big names such as Porsche started their business on a pure-electric basis. In the hundred-year hiccup that followed we have burned billions of tons of fossil fuel, but the clean times of pure electric are returning.

Packaged Food but healthy

Around the world, many more people are happy to eat packaged foods and buy consumer goods in association with an increased standard of living and population growth. Lifestyle changes associated with this increase mean people are cooking less and depending more on processed or premade items. Consumers are also becoming more health conscious and demanding fresher products, which require shorter delivery times.

At the same time competition between food and beverage brands, as well as distributors and retailers, is fierce, and packaging plays a greater role in this battle for consumer eyeballs and loyalty. Food safety is also an increasing concern, so much so that the desire for food and beverage products that have been untouched by human hands during their processing is rising.

When all of these factors are taken together, it's enough to make even the most hardened production supervisors lose sleep – or even hair.

Flexible and smart

Equipment manufacturers are realizing the truly profound impact they can have on the profitability of a Food and Beverage operation by the way in which they design a solution – and the smart ones

are responding by thinking outside of the conventional box.

By replacing conventional machines with industrial robots, the headaches associated with the demands of the modern Food and Beverage industry can be met head-on. Six-axis robots provide the flexibility needed for incredibly dynamic production environments, while sacrificing none of the speed or accuracy of conventional equipment.

With robotic automation it becomes an easy task to change package styles and configurations as the market demands, as well as change production lines quickly to remove unpopular products and introduce new ones. In fact, some processors these days may only have 20-40 minute runs or very short contracts to produce a particular item.

Helps fresh product sale

A common misperception is that robots are only suitable for long runs of the same product when in reality a robot typically has the fastest changeover once programmed and can adapt quickly to changing production contracts. Robots can also drastically shorten the time between production and delivery to a retailer, thereby allowing for the sale of fresher products. Food safety concerns regarding contamination and tracking products as they move through the system are also addressed by robotics due to the nature of automated systems and the lack of human hands touching the product.

Helping remain competitive

To this point, the Food and Beverage

industry has operated on a fairly low level of technology and the thought of employing robotics has remained a daunting task. To automate these kinds of operations it is a must to have tools that enable more integrators and end customers to incorporate and maintain robotic systems. Increasing ease of use and developing standardized function packages are therefore essential for the industry.

At ABB, we have addressed these issues with many new products, including PC-based programming and simulation tools such as Pickmaster 3, our Picking PowerPac and our Palletizing PowerPac, as well as standardized solutions such as our Integrated Vision, RacerPack flow packaging solution, and other plug-and-play function packages. We have also increased the flexibility of our robots with an entire family of IRB 360 FlexPickers, a family of palletizing robots and 6-axis articulated robots to meet virtually any requirement.

ABB's aim is to decrease the perception that robots are a specialized piece of production equipment that requires too much training and effort to integrate. In reality, they are the masters of flexibility and should be seen as a standard item for those operations that want to remain competitive.

Fits into small spaces

Over time, robots have proven themselves critical to creating the flexible, agile and speedy solutions that today's Food and Beverage operations need to remain competitive. Modern robotic systems from ABB and its partners can deal with speeds and situations that humans simply can't, as well as handle things that were previously thought to be impossible to automate. They can fit into very small footprints and eliminate the conventional equipment that typically needs large, fixed spaces to work. In short, industrial robots can now handle almost any task required by the Food and Beverage industry, but it takes a team of knowledgeable experts to help your operation make the leap. With ABB at your back, you know that expertise is available anytime and anywhere – for any type of project.

For more on ABB's robotics solution, log on to new.abb.com/products/robotics



Better flow at Unilever

Tetra Pak and ABB work together to reduce wastage and improve traceability.

Unilever in Helsingborg produces margarine, soft cheese and cream, amongst other things dairy products. Margarine production is a complicated process with an oil and a water phase. In this process, vegetable oils are mixed with water, salts and citric acids. A control system is necessary for keeping track of the process.

"The system is connected to Unilever's SAP business system where all product recipes are stored," says Jonas Westergren from Unilever. "We program the recipe depending on the type of margarine we will be producing and everything is then handled automatically."

Three companies were represented around the table – Unilever, Tetra Pak and ABB.

"Unilever stands for knowledge of the product, Tetra Pak knows the processes and we from ABB provides specialist knowledge for control and monitoring," says Magnus Högstedt, responsible for the food and beverage branch at ABB. "All three of us have been collaborating for many years."

Replacing spares is expensive

Three years ago, the old control system was approaching the end of its life cycle.

"It's worked fine, year in and year out, even if it's now beginning to show its age," says Jonas Ekenberg, who is a technical operator at Unilever and has worked with the system for many years. "But spare parts were getting expensive and difficult to find. The keyboards alone cost SEK 30,000 to

replace, and we found the last one in Brazil. The system wasn't just worn out but it was also small, which entailed few opportunities for changes and expansion."

"We were running three heavy processes at one plant with just eight megabytes of RAM," says Jonas Engdahl from Unilever.

Smooth partnership

The company began looking around in the market and requested tenders from several companies.

"In this project, Tetra Pak has functioned as the contact with the customer and we from ABB have served as the subcontractor," says Magnus Högstedt.

"Besides our close collaboration with Unilever for many years, thanks to our partner agreement, we and ABB have continuous communication about

which systems are on the market," says Magnus Ramstedt, responsible for automation sales at Tetra North Europe. "It was therefore natural that the initial contact was made between Unilever and us. Tetra Pak ultimately received the order and then collaborated with ABB in the delivery."

"It can be easier to stay with the same product family, and by doing so, we could retain a portion of the old system," says Jonas Ekenberg.

From this point, things moved rather quickly. Two operators from Unilever were sent to Tetra Pak for training in the 800xA system. They in turn, trained the other seven operators.

"We're responsible for process-related control and system software," says Magnus Höglstedt. "Tetra Pak has handled project management and planning, design of operator interfaces, batch control and traceability via their automation concept Tetra PlantMaster, which was specifically configured for liquid foodstuffs production."

Better control

Last autumn, the new system was ready to be put in service – five control systems and seven servers in the Windows environment. The new system was tested during four weekends with the old system in standby mode, just in case something should happen.

"After that, we went live with the new system, maintaining production monitoring around the clock for two weeks to assure production and to help the operators in the transition from the old system to the new," says Ulf Kjellberg from Tetra Pak. "The switch entails a number of changes and improvements."

"I'm very happy with the new recipe manager," says Jonas Engdahl. "Now we can put together our own recipes, which we couldn't with the old system. Sometimes, we used to have to call in a programmer."

Everyone gathered around the table to list what has become better: Increased flexibility, easier to handle maintenance, modern IT environment and more exact reporting of consumption. The latter is important because it saves money. Discards have also been reduced.

"Even here, quite a bit of money is involved because it's a matter of incorrect mixtures," says Jonas Westergren. "In the old system, a valve could be left open and an incorrect mixture of two tons could run straight through. Now a safety system is activated if this should occur. Traceability has

Unilever Sweden

Unilever Sweden is divided into three subsidiaries: GB Glace, Lever Fabergé and Unilever Bestfoods, which is located in Helsingborg. About 150 people work at the plant in Helsingborg. Margarine, such as Milda and Flora, is produced there, as well as cream for cooking and dessert cheeses.

Tetra Pak

Tetra Pak develops and markets systems for processing, packaging and distribution of liquid foodstuffs. Tetra Pak is represented in a total of 119 countries and has approximately 22,900 employees worldwide. The delivery included project management, programming in 800xA, batch control software Tetra PlantMaster Production Execution, traceability and reporting via Tetra PlantMaster, Production Integrator, as well as connection to Unilever's business system SAP.

ABB

ABB delivered the System 800xA automation platform, programming in 800xA, four operator stations and five ABB AC800M controllers.



also become better.

"If anything goes wrong and a customer notices something odd with a delivery of margarine, we can go back in time, from the pallet where the batch was placed to which batch it came from, and investigate what has happened."

A benefit of the new system is improved working environment, for those who worked in the so-called "hot room". In conjunction with the project, the room was rebuilt and the temperature could be reduced from 60 degrees to 40. Overall, the upgrade of the systems cost SEK 10 million.

Increased flexibility, easier to handle maintenance, modern IT environment and more exact reporting of consumption.

The subsea factory of the future

Per-Erik Holsten, Global Industry Group Manager, Chemical, Oil and Gas at ABB on how offshore platforms could become rarer.





Could you give us more details about the development project with Statoil? And what is the solution for the oil and gas industry?

In our collaboration with Statoil, we are developing and testing equipment for subsea conditions at a depth of 3000 meters. Here we are talking about solutions for transmission, distribution and power conversion designed to power and control subsea pumps and gas compressors installed in deep water and performing over vast distances. At these depths you need to have quite a bit of redundancy and to make sure that every piece of equipment operates safely, reliably and efficiently. We are currently running a development project with Statoil to ensure that these new technologies perform under these special conditions.

How does this get done at present?

Currently, it is more of a hydraulic solution. The reason for this new technology is that it will help with removing the offshore platform in the long term, and have everything subsea. This is a concept we, together with our partner Statoil, call the 'subsea factory'. It also means supplying power and control to enable separation of the oil and the gas down there which is generally done on the offshore platform. This can now be done subsea.

What's new about the approach and why do you think it will be successful at this time?

The approach we are taking is delivering our entire portfolio to be utilized at depths of 3000 meters. So you take your control equipment, electrical and telecommunication equipment and bring them to this depth, which is a very harsh environment. This will enable all oil and gas companies to go to subsea structure, even in the very difficult locations where you have difficulties in setting an offshore

oil platform.

This new technology enables the vision of "The Subsea Factory of the Future". As we progress in our testing, we are quite confident that this will be a successful development, and oil and gas companies will adopt it in their projects.

If you succeed, what difference will it make?

I think this technology will be a game changer for the oil and gas industry, as it will allow companies to access offshore fields that they can't access now. Also, this new technology is cost effective, as it will reduce maintenance costs.

What other challenges do you expect to face?

It's important to ensure that of the equipment we provide is safe and reliable. That's why we are having this heavy testing process with Statoil, the whole concept is that it has to be put it down there for a long period of time, and to ensure that it works perfectly for that period of time.

How long will it take to see oil and gas companies to adapt this type of technologies?

Currently we are testing and selecting the right technology, and we expect that this technology will be available for use between 2018 and 2020. Some parts of the solutions are already available like the subsea transformer that can be used subsea to a depth of 3000 meters.

What are the midterm and final "exams" to check for success?

We need first to ensure that this technology works under the high pressure conditions that exist subsea, and also we need to make sure that this technology can work for long time without failure, which are the two key points being verified.



At 30,000 liters of milk per hour, a single drop of rancid milk or any other agent could curdle milk from several dozen herders. ABB's CIP Solution provides effective filtration while reducing loss of milk.

Keeping the world's largest milk cooperative healthy

ABB automation and control systems ensure uninterrupted processing of more than a billion liters of milk... and counting.

A partnership between Amul, the world's largest dairy cooperative, and the knowledge and experience of ABB is helping India's farmers keep pace with accelerating demand for milk products that have been a force in improving quality of life and boosting rural economic growth for decades.

Amul's challenge is preserving millions of liters of perishable milk (current capacity of 14 million liters daily) in a hot tropical country collected from dispersed villages and households. This requires intensive logistics planning to gather milk, after which ABB's advanced automation keeps Amul's operations running smoothly - and lays the groundwork for future growth.

ABB was initially brought in six years ago to upgrade automation and control systems at Amul's Dairy III at Anand, Gujarat. Not only was there minimal downtime for Amul's operations amid the transition to ABB's 800xA control systems, but the systems' adaptability ensured the cooperative's expansions in 2012 and 2013 was seamless, keeping precious milk from going to waste.

"Amul has championed the application of leading edge technologies," said T R Ravishankar, ABB's Control Technologies Business Unit Manager. "The successful deployment of our flexible solutions in 2008, with a good track record, led Amul to opt for more ABB solutions as it expanded."

Rapid growth requires advanced technology

The unfailing perseverance of leaders like Dr. Verghese Kurien, its first chief executive officer, and H. M. Dalaya, who helped spur its technological innovations, turned Amul into the co-op it is today, with an annual turnover of more than \$3 billion. Production has doubled to some 130 million tons annually over the last two decades.

With rapid growth, however, the cooperative's embrace of technology

has been key to successful aggregation, processing and distribution of a time-sensitive item like milk after it's collected from so many producers.

That's where ABB comes in: Its 800xA control systems, relied upon broadly in industries including food and beverage, oil and gas and mining, provide Amul with intuitive automation and maintenance solutions that ensure a hygienic, efficient environment for processing and preserving milk's goodness.

For instance, ABB provides automation for milk reception, pasteurization and for monitoring and control while transferring milk, cream and butter milk from reception tanks to packaging. Automation determines percentage of milk, cream fat, and non-fat solids, while queue-handling ensures prompt refilling of silos to maintain continuity without delays.

Rapid growth requires advanced technology

ABB developed a customized cleaning-in-place (CIP) solution to sanitize equipment such as the silos, milk and cream pasteurizers, cream tanks, dispatch lines and butter-making machines.

At 30,000 liters of milk per hour, a single drop of rancid milk or any other agent could curdle milk from several dozen herders. The CIP solution provides efficient filtration, automatic de-clogging, high and medium pressure cleaning with multiple repetitions, while reducing loss of milk and limiting need for cleaning agents.

For more information on how ABB products can help your food and beverages reach the market hygienically log on to www.abb.com/food&beverage

Partnering with the United Nations for ‘Sustainable Energy for all’

ABB teams with UN and global leaders in equipment manufacturing leaders to fast-track the adoption of minimum efficiency performance standards and boost energy efficiency in motors and transformers.



“Energy is the golden thread that connects economic growth, increased social equity and a healthy environment. Sustainable development is not possible without sustainable energy,” said United Nations Secretary-General, Ban Ki-moon, at the launch of “Sustainable Energy for All (SE4ALL) in New York.”

Energy efficiency, the quickest and most cost-effective way to mitigate climate change, was a key focus in the SE4ALL program tasked with taking concrete action on climate change through changes in the way we use energy.

The UN and its partners, of which ABB is a global one for transformers and motors, are also about to launch a new global partnership to accelerate the transition

to efficient refrigerators, air conditioners, motors, distribution transformers and information technology. Shifting global markets to efficient appliances and equipment will reduce global electricity consumption by about 10 per cent, save 350 billion US dollars on electricity bills each year, and the equivalent in CO2 emissions from 600 large coal fired power plants. Leading appliance and equipment manufacturers, such as ABB for motors and transformers, will play a key role in making this transition happen.

“I am pleased to represent ABB at this important gathering and have the opportunity to highlight ABB’s commitment to energy efficiency and how our technology can mitigate environmental impact,” said Daniel Assandri, Country Manager for ABB

in Canada. ABB joined other manufacturers as well as UN ambassadors from three nations to kick off an international effort to fast-track the adoption of minimum efficiency performance standards (MEPS), particularly in developing nations that do not currently have strong efficiency standards in place.

SE4ALL has three interrelated objectives:

- Ensuring universal access to modern energy services
- Doubling the global rate of improvement in energy efficiency
- Doubling the share of renewable energy in the global energy mix

All of these are to be realized by 2030, which is a tall order but still achievable with current technology.

ABB is in a unique position to help as a member of the Global Partnership Programme. The company is the world’s largest supplier of both electric motors and distribution transformers, two product areas targeted by SE4ALL, and ABB has maintained a longstanding presence on several major standards-making bodies. Geographically, India is of particular interest for the company as it is a large and developing market but currently lacks MEPS. “As countries like India become more sophisticated in their approach to sustainable growth, energy efficiency is a natural place to start,” says Assandri. “It has a built-in business case, and the benefits accrue to the society at large as well as the equipment owner.”



More power, smaller footprint

Indoor gas-insulated switchgear (GIS) substation to safely boost supply of electricity in central Chennai and strengthen power grid

Tamil Nadu Transmission Corporation Ltd (TANTRANSCO), the state-owned utility, engaged ABB India to build a new substation in the heart of Chennai. Tamil Nadu is among the most industrialized states in India and Chennai, its capital, is the fourth most populous metropolitan area of the country.

The compact substation solution to be deployed in the congested Raja Annamalai Puram area, in the city center, is designed to blend in with the surroundings, and a quick turnaround time will help to minimize impact to the surrounding areas during construction.

The 230 KV gas-insulated switchgear-based substation is expected to address the problem of power cuts in and around the area. It will also service areas far removed from its location, including Besant Nagar, Foreshore Estate, Cathedral Road, Teynampet and IIT-Madras. Currently, a 110

KV substation at R.A.Puram meets all the energy needs of these areas, which is not sufficient.

"ABB India is a proven reliable partner for delivering projects on time. This will be key in establishment of a substation in a congested city center so as to limit impact on regular life," said N Venu, Head Power Systems, ABB India. "Our experience and technologies will help provide safe power to a growing metropolis," he added. The project is scheduled to be completed in 2015.

As part of the turnkey contract, ABB will design, supply, install and commission the substation in the biggest industrial and commercial center in southern India. Key product supplies include nine bays of 230 kilovolt (kV) GIS, power transformers and 23 indoor switchgear units rated at 33 kV. The substations will also be equipped with IEC 61850 based open protection, automation and telecommunication systems as well as

ancillary systems.

GIS is a compact switchgear and reduces a substation's footprint to 50 percent of conventional AIS substations. These substations facilitate the efficient and reliable transmission and distribution of electricity with reduced environmental impact, serving utility, industry and commercial customers as well as sectors like railways, urban transportation and renewables.

ABB is the world's leading supplier of air-insulated, gas-insulated and hybrid substations with voltage levels up to 1,100 kV. These substations facilitate the efficient and reliable transmission and distribution of electricity with minimum environmental impact, serving utility, industry and commercial customers as well as sectors like railways, urban transportation and renewables.

Did you know?

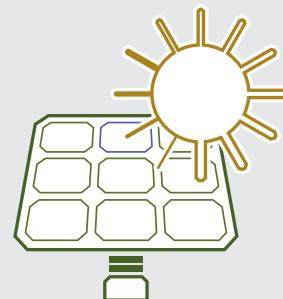
Refrigerators in the United States consume about the same amount of energy as **large power plants** produce each year.

25



If a person yelled for **8 years and 7 months** he or she would produce enough energy to **heat one cup of coffee**

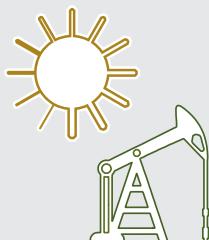
Germany accounted for nearly one-third of **global solar PV capacity** at the end of 2012



A hurricane releases between 50 trillion and **200 trillion watts** of heat energy. This is as much energy as a 10-megaton nuclear bomb exploding every 20 minutes

The sun provides as much energy in as the world consumes in one year

1 hour



The amount of sunshine in Texas in one month contains **more energy than all the oil and gas** ever produced in the state

Power of the Sun

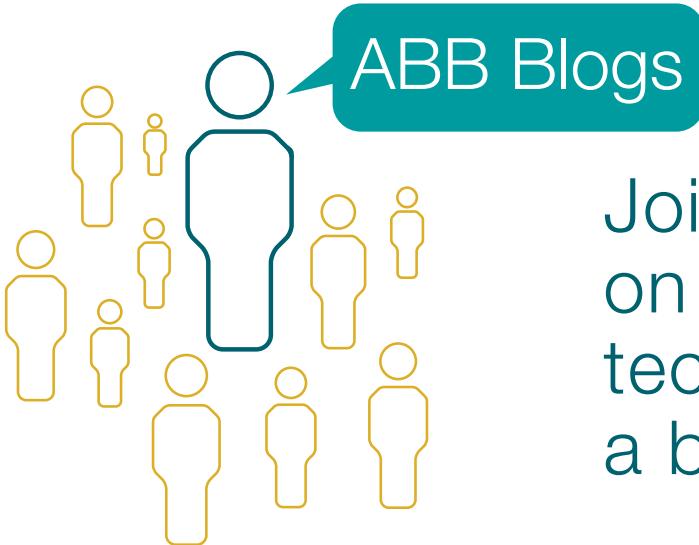
This revolutionary single-seater aircraft made of carbon fiber has a 72 meter wingspan (larger than that of the Boeing 747-8I) for a weight of just 2,300 Kg, equivalent to that of a car.

The 17,000 solar cells built into the wing supply four electric motors (17.5 CV each) with renewable energy.

ABB is a proud sponsor of this solar flight, Solar Impulse as a testimony to our belief in renewable energy and solar power.



Copyright: Solar Impulse

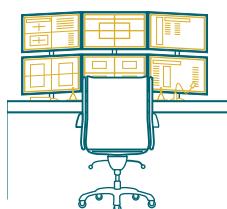


Join the conversation on the trends and technologies shaping a better world



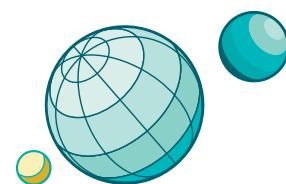
All in a day's work if you plan ahead and manage your assets properly

Who said that Asset Management is only for Fieldbus?



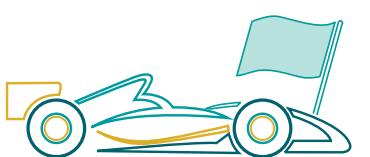
Collaborative engineering on an app store?

Could the concept of collaborative automation engineering platforms be as simple as an app store? With flexible engineering, the sky is the limit.



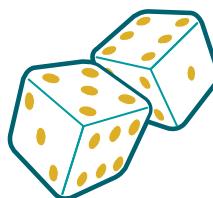
Space age renewable energy plans should not eclipse our work here on Earth

New and old routes of renewable energy



Ready, steady, go!

In increasingly more competitive power markets, service solutions are key to winning the race.



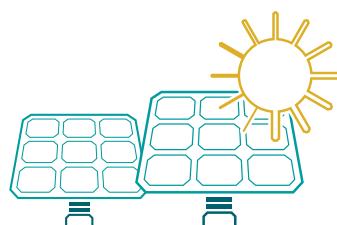
When gambling is not an option

Guessing is for gamblers, not plant operators. It is essential that the people in charge of a control system know exactly what to do.



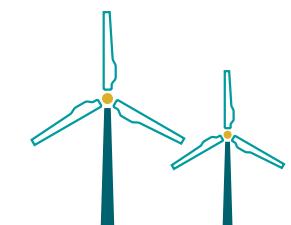
An energy-efficient menu for the power and water industries

Stay profitable with assets that perform.



Flexible solar power solutions are ideal for remote generation sites

A distinct advantage of solar power generation is its design flexibility.



How to integrate wind into a microgrid

The remote Outback regions have made Australia a great proving ground for some important microgrid technology.

You will find the blogs while browsing the conversations page
www.abb-conversations.com
under the power and renewable energy categories

Executive editor: Jyotsna Ravishankar

Editor-in-Chief: Sanaj Natarajan

Editorial & Production team:

Manashwi Banerjee, Nick Chambers, Prabhu Kumar, Peter Stierli, Renee Tengberg, Rakesh Shastri

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Preview 2|15

Power of the Sun

Unlimited, safe energy with zero emissions - that is Solar Power. ABB rallies strongly behind renewable energy and is particularly convinced about solar power.

ABB provides the most comprehensive portfolio of products, systems and solutions along the solar PV value chain that enable the generation, transmission and distribution of solar power for both on-grid and microgrid applications.

Learn about our successes with solar and our future ambitions in the India, Middle East and Africa region with regard to renewable energy in the next issue.



Improving uptime without costing the earth.



ABB provides products, systems and services that increase industrial productivity and energy efficiency for a wide range of picking, packing or palletizing applications. Our robots, drives and servo motors provide a high level of hygienic, flexible and reliable automation in these labour-intensive application areas. ABB's automation can really be the key to improving uptime, product quality and workplace safety, whilst reducing energy consumption and waste.

For more information visit www.abb.com/robotics

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