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.

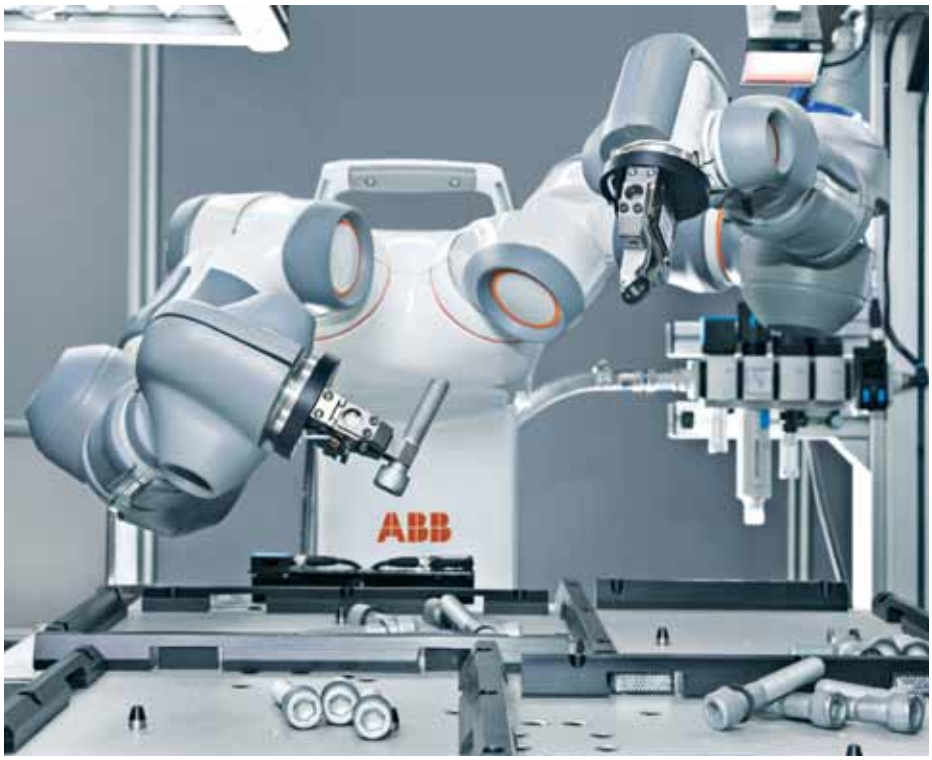
Load shedding during power interruptions is critical. Pulp and Paper, Steel, Aluminum, and Cruise Ship industries consume large quantities of energy. They need to manage electricity as a raw material cost through peak shaving and power consumption prediction. Such integration

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.

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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.