



Powering Industry 4.0 – Myth or Reality

Industry 4.0, Myth or Reality? Will it change the industrial power supplies landscape?

Many articles announcing the so called fourth industrial revolution (Industry 4.0) are published daily and the reasoning behind the concept to move from a highly automated industry to something virtual, often stimulates debate and interesting points of view.

From the first programmable logic controller (PLC), “Modicon 084” released in 1969 - considered as the milestone of the Third Industrial Revolution (Electronics and IT use to increase production) to the 21st Century vision that the industry will be based on Cyber-Physical Systems (CPS), Industry 4.0, the technology followed a path driven by process optimization, cost control and efficiency.

From the early days the power supply industry has been closely involved in developing power solutions following the same path though it becomes difficult for many power engineers to propel themselves into a new chapter of technology, which for many is perceived as “Marketing Fantasy.”

Industry 4.0 provides what some call a “smart factory”. Within the modular structured smart factories, cyber-physical systems monitor processes, creating virtual copies of the physical world enabling decentralized decisions. Over the Internet of Things, cyber-physical systems communicate and cooperate with each other and with humans in real time and via the Internet of Services, both internal and pan-organizational services are offered and used by participants of the chain.

Industry 4.0 sounds very complex but following Einstein's dictum: "the definition of genius is taking the complex and making it simple". A number of projects today are already integrating some of the fundamental bricks required by the industry to take the next step. However, as presented in the McKinsey Industry 4.0 Global Expert Survey 2015, the transition will not be quick and many companies will carefully weigh the benefits of introducing new technologies against possible risks to process reliability.

For power designers working on long term development plans, it is very important to work in close cooperation with the principle actors (i.e. car manufacturers) to prepare the future technology platforms that the new applications will require to meet global systems deployment. In this process it will be very important to conduct risk assessment and to integrate the specific conditions related to the Internet of Things components that could be integrated in a hostile environment. One example is the increased number of industrial applications requiring similar safety specifications to medical applications (i.e. higher isolation voltage) but also higher severity test of EMI and immunity to radio frequencies. These requirements are driven by the increased quantity of sensitive information exchanged from Machine to Machine requiring zero disturbance, wherever the equipment installed.

In the chain of machines and other equipment working in an Industry 4.0 environment, the demand for monitoring and control will significantly increase. This doesn't mean that all power supplies must be digital but that a large portion of power units will include communication interfaces and built-in intelligence such as self-diagnostic, power scaling to load condition. The power units will also be part of the Modular Industry Computing Architecture (MICA) which is something new for power designers not used to integrating communication to sensors and capture devices requiring variable voltages.

Myth or reality? Industry 4.0 is knocking at the door, opening new opportunities for the power industry to develop advanced power solutions, making the complex simple.

About Powerbox

Founded in 1974, with headquarters in Sweden and operations in 15 countries across four continents, Powerbox serves customers all around the globe. The company focuses on four major markets - industrial, medical, transportation/railway and defense - for which it designs and markets premium quality power conversion systems for demanding applications. Powerbox's mission is to use its expertise to increase customers' competitiveness by meeting all of their power needs. Every aspect of the company's business is focused on that goal, from the design of advanced components that go into products, through to high levels of customer service. Powerbox is recognized for technical innovations that reduce energy consumption and its ability to manage full product lifecycles while minimizing environmental impact.



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