



Smart solutions for smart machines

The emergence of Industry 4.0 is triggering significant transformation in manufacturing and other engineering and factory-floor industries. Schneider Electric, as a major supplier of automation solutions, is at the forefront of global efforts to automate and internet-enable businesses as they adapt for the fourth Industrial Revolution. We spoke with Rainer Beudert, Marketing Director for the system and software Machine Solutions activity about how the Schneider Electric portfolio is evolving to achieve this

What are the current market trends?

Manufacturers are under pressure to meet demand for ever-faster delivery of new products, coupled with shorter production lifecycles. To achieve this, organisations are adopting agile and flexible production plant systems and processes. Machines need to be more efficient and reliable in order to compete in the global market and cut costs.

These trends have been going on over the last years, right?

Yes, however there are many new technology-driven approaches that are helping organisations to meet these demands. We are seeing innovation frameworks emerge in industries worldwide. For example, the rise of Industry 4.0 in Europe, namely in Germany, the Industrial Internet Consortium (IIC) in America, along with the Made-In-China Initiative. The focus for these frameworks is to merge the operational technology (OT) with the information technology (IT) to provide new solutions for automating and networking industrial machines and systems.

What's the impact of these new approaches for Schneider and its customers?

This evolution creates various opportunities for us and for our customers: By using IIoT solutions, machines and processes can be continuously monitored and controlled – no matter where in the world they are located. In other words, machine data can now be captured, stored and analysed 24/7 thanks to IoT solutions and cloud computing. This data has the potential to deliver valuable insights and to generate business values for machine builders and users.

Is the collection of machine data the only aspect of IoT and cloud computing?

Data collection is just one part of a wider opportunity. For many years, automation business models have remained static. Today, there are many opportunities and alternatives being explored. A good example is equipment leasing models. Internet connectivity and remote management makes leasing of complex machines and pay-per-use viable. The option to lease devices from Schneider Electric, and have them remotely managed, is now more viable and attractive.

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Dr. Rainer Beudert

You have mentioned hardware devices – what about software?

Many software players are moving away from license-based models that rely on the fact that new functions will be attractive enough to motivate a customer to re-buy a platform.

There are many interesting alternative options like software-as-a-service (SaaS), which can be offered in many variants from subscription models to hybrid concepts. It might include “Freemium” parts - a set of free-to-use functions – as well as high-value services. It could be combined with pricing models that require regular payment or operate on a pay-per-use basis. That might be appealing if certain premium features are only used occasionally.

Can you give an example?

We have identified three main areas undergoing big shifts: The first one is virtualisation services. A prepared virtualisation service for our products can increase the value of our products for OEMs drastically by removing those impediments.

The second is Code Quality Management. It is difficult today for OEMs and their users to know if the code that has been handed over is robust, maintainable and performing well. It is even more difficult to measure whether code has improved over time. In IT development, there are several standards that are transferring to the Operational Technology (OT) world. A single item can be difficult to sell at a high price, so a service-based model can help to maximise value and offer an acceptable pricing model at the same time.

The third area is data analytics, coupled with condition and event management services. The most obvious application for analytics in industrial systems is for predictive maintenance. But data analytics can also support preventive maintenance or productivity and workflow optimisation. Not to mention constant condition monitoring and event triggering. Analytics is the base for end-to-end automated decisions, one of the factors that makes a machine smart.

What do you define as a Smart Machine?

We define the term “smart” as “having or showing a quick and effective intelligence” and being goal-oriented. A collection of smart, connected products can maximise efficiency through intuitive collaboration with users. They are self-aware, react autonomously and provide information about production, configuration, condition, quality and Overall Equipment Efficiency (OEE) to other machines. Data can also be pushed into the cloud. We provide services around maintenance, that enable the owner to drastically reduce life cycle costs.

How does this correspond with your offer today?

Already today Schneider Electric’s solution offer for automating individual machines is future proof, safe and cyber secure. It consists of a broad range of connected products, edge control concepts and SoMachine-based software solutions, including apps, analytics and services. Dedicated industries are also supported by Schneider Electric, making use of our deep know-how for industrial and commercial applications.

You mentioned Edge Control. What is that?

With edge control, Schneider Electric transferred a concept from the world of IT networking to its industrial product portfolio. The basic idea of edge computing is that data processing power sits at the edge of a network instead of holding that processing power in a cloud or a central data warehouse. This way, data does not have to travel large distances, reducing latency and improving quality of service (QoS). Potential bottlenecks as well as a single point of failure is removed and less computing has to be done at the core of the infrastructure. As the data is encrypted directly on the device, viruses, compromised data or hacker attacks can be impeded more effectively.

The same benefits apply to edge control. Data generated by different sensors is no longer transferred to one single controller that acts as a hub. Instead, different distributed controllers handle the computing load in a decentralised

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architecture. Only information that is critically relevant is consequently passed to a centralised processing resource.

Speaking of transferring data cloud based services – What role does OPC UA play ?

OPC UA is a key enabling technology, one of several solutions for supporting Industry 4.0. Think of our PacDrive system and our Modicon M241/251 PLCs. For direct IT and cloud connectivity we provide these controllers with an OPC UA Server, which plays a very important role in the IIoT story.

Do you have clients already using the advantages of Industry 4.0?

Entrade is a large machine builder in the energy sector. The company is producing and operating machines globally and looks for innovative methods to configure and monitor its plant and other equipment. We provide several tailored solutions to Entrade to achieve this goal. With our help, the customer is now able to integrate and collect data from its machines in a very short space of time via a OPC UA server, which is embedded in the PLCs of its machines. We offered Entrade a machine gateway that aggregates all the data from its machines and transfers it with a single OPC UA communication interface to the Schneider Electric cloud-based Digital Service Platform (DSP). On top of the DSP, several different digital services and applications can be implemented, based on the collected machine data. The customer is able to monitor and optimise the efficiency of its machines as well as store machine data in the cloud.



Dr. Rainer Beudert joined Schneider Electric in 2007 as Director of ELAU global internal and customer training. He's currently the Marketing Director for the system and software Machine Solutions activity in Schneider Electric's Industry business unit. Prior to joining Schneider Electric, he worked for 10 years at INAT in Nuremberg, Germany where he was responsible for training and services. He consulted on the topic of Industrial Ethernet networks for companies like Arcelormittal, Audi and BMW. He received a Dr. Rer. Nat. degree in Physical Chemistry from the University of Würzburg.