

The journey towards Industry 4.0

Ratingen, Germany, 18th of June 2017

Hartmut Pütz, President Factory Automation EMEA at Mitsubishi Electric Europe, talks about the digital transformation of industry. He focuses on the effects on manufacturing businesses, especially at a production level, and how customers will benefit from innovative Mitsubishi Electric solutions.

Manufacturing industry is currently undergoing a period of rapid change. In concrete terms this can be seen as the move from automated production to fully digitised manufacturing. New goals are continually being set, but the target is to use existing standards to achieve them.

The way things will develop depends largely on the requirements of end users, which have changed massively in recent years. End users increasingly expect more product variety and customisation, but at a similar price point.

An obvious example is the speed at which online configurators have influenced the car market. Vehicle manufacturers have long relied on options lists to make a profit from selling a passenger car. However, competition has increased and more technology has now become standard. That has resulted in the requirement for a larger range of personalisation options to be offered in order to entice buyers into choosing a certain model. For less complex end products, the customisation-on-demand process can happen even faster.

With the rise of online ordering, the link from a sale to a machine tool or a robot altering its work pattern is closer than ever. To satisfy this demand suppliers require the highest levels of flexibility from their

manufacturers throughout the supply chain. They have to react very quickly, changing production numbers for individual items on the fly. This is where the 'smart factory' starts to come into being.

As an automation solutions provider, Mitsubishi Electric is a partner to industry. We support our customers in the development of their business ventures with consultation on industrial automation and Information technology.

All our activities relating to the digital transformation of enterprises - creating the 'smart factory' – are part of our 'e-Factory' concept. This encompasses the e-Factory Alliance, a worldwide active network of cooperating companies. The network brings together manufacturers of industrial components as well as specialist system integrators and software providers. These partner companies collaborate at an individual level to offer flexible, optimised solutions.

A great example of the e-Factory Alliance working toward delivering proven solutions to Industry 4.0 challenges can be found at Mitsubishi HiTec Paper Europe GmbH in Bielefeld, Germany. There, a more holistic approach to predictive maintenance has been achieved by implementing a Smart Condition Monitoring solution developed in cooperation with FAG Schaeffler.

The technology allows a whole range of parameters from the coating machine and its ancillary parts to be monitored around the clock. That data is then used to analyse the condition of individual components as well as the health of the individual machine and of the wider plant. The information gained from the system includes maintenance recommendations. This enables intelligent decisions to be made in advance, based on real need, not simply routine. The solution has created a new working methodology, drastically reducing unplanned

downtime and the risk of subsequent damage. Overall, the result is vastly improved predictive maintenance, optimised asset lifecycle management and production, while reducing total operating costs.

When talking about Industry 4.0, the Internet of Things (IoT) is inevitably a key theme as well. They are related concepts with an essential relationship and form the basis for Industry 4.0. Recent estimates already put the number of devices that are connected through the IoT at about 5 billion, and this is likely to soar over the next few years. Combine that prediction with the amount of data that is being generated and processed by a more connected factory, and it is easy to see why companies' IT infrastructure needs to change.

We can appreciate, then, the attraction of cloud based data storage and processing services. They have the potential to deliver more secure, reliable, scalable and affordable data collection and distribution than on-site IT platforms. Businesses are increasingly using cloud services not simply to store large volumes of data, but also to perform analytics tasks. Processing the data means deriving trend information and presenting users with customised dashboards. The intelligence gained can be used to improve overall plant performance and asset management. Edge Computing is complementary to Cloud Computing, and businesses are increasingly finding that they need the capabilities of both. The cloud delivers the 'bigger picture' of the IoT, while Edge Computing brings the IoT to life by supporting applications that demand a real-time response.

Mitsubishi Electric has developed solutions that support both of these complementary IoT approaches. Our company offers simple and secure access to a range of different cloud services, like SAP Hana, Microsoft Azure and Amazon. But we also facilitate it for niche cloud applications and dedicated cloud-based analytics services using Edge Computing.

The results can be widely distributed intelligence, with remote devices generating lots of information. Those are linked over standard open protocols that can be seen as the key to forming a digital nervous system within businesses. The networked digital data is then combined into bidirectional systems to integrate data, people, processes and systems for better decision making.

Within the context of the Internet of Things; we have also been able to realise a project together with Intel®. The company is using an IoT gateway from Mitsubishi Electric to aggregate and securely input data into a big data analytics server.

For Intel®, this pilot is forecast to save millions of dollars annually and provide other significantly valuable business benefits.

Mitsubishi Electric, is supporting customers worldwide in their goal of developing their individual business models in terms of digitalization. Moreover we are contributing to the developments of innovative international organisations such as the German Government committee “Plattform Industrie 4.0”, the Industrial Internet Consortium (IIC) in the USA and the Robot Revolution Initiative (RRI) in Japan. Our e-Factory strategy has also been recognised by leading initiatives and organisations, such as the Best Practise Award (category: Industrial Internet of Things in Factory Automation) from Frost & Sullivan and the ‘Strategic Point of Light partners’ award issued by the Taiwanese government. In combination with the trust invested in us by our customers, these milestones show that we are already a good way towards the future of a digitized world.

Note:

See how Mitsubishi Electric is able to respond to today’s automation demands:

eu3a.mitsubishielectric.com/fa/en/solutions

Links to more information:

e-F@ctory:

- Mitsubishi HiTech Paper Europe GmbH - case study
https://eu3a.mitsubishielectric.com/fa/en/news/case_studies
- SCM Predictive Maintenance solution - news
<https://eu3a.mitsubishielectric.com/fa/en/news/press/controllers>
- Internet of Things (IoT) Delivers Business Value to Manufacturing - Intel® white paper/case study
<http://www.intel.in/content/dam/www/program/embedded/internet-of-things/blueprints/iot-business-value-manufacturing-blueprint.pdf>
- Mitsubishi Electric Europe – Factory Automation Cloud Services – webpage
<https://eu3a.mitsubishielectric.com/fa/en/solutions/capabilities/cloud>

Information on Mitsubishi Electric memberships at leading international organisations focusing on digital transformation process:

Germany:

- Member of Plattform Industrie 4.0 Working Group 1 (Reference architectures, standards and norms)
<http://www.plattform-i40.de/I40/Navigation/EN/Home/home.html>
- Mitsubishi Electric member areas: Electrical Automation, Robotics & Automation
<http://www.vdma.org/en/der-vdma>

USA:

- IIC - Industrial Internet Consortium
News of IIC approval for joint IoT testbed:
IIC PR - <http://www.iiconsortium.org/press-room/07-20-16.htm>

Japan:

- RRI – Robot Revolution Initiative
Membership:
https://www.jmfrri.gr.jp/english/outline/list_of_members.html

- Mr. Nomaguchi, senior advisor, Mitsubishi Electric Corporation acting as a Mr. Committee Chairperson:

<https://www.jmfrri.gr.jp/english/outline/establishment.html>

Mr. Masayuki Yamamoto, Group Senior Vice President, Factory Automation Systems, Mitsubishi Electric Corporation, is chairman of the "IoT-Driven Transformation in Manufacturing WG" committee:

<https://www.jmfrri.gr.jp/english/info/251.html>

Image Captions:



Picture 1: Hartmut Pütz, President Factory Automation EMEA at Mitsubishi Electric Europe B.V.

[Source: Mitsubishi Electric Europe B.V.]

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About Mitsubishi Electric

With over 95 years of experience in providing reliable, high-quality products, Mitsubishi Electric Corporation is a recognised world leader in the manufacture, marketing and sales of electrical and electronic equipment used in information processing and communications, space development and satellite communications, consumer electronics, industrial technology, as well as in products for the energy sector, transportation and building equipment.

With around 138,700 employees the company recorded consolidated group sales of Yen 4,238.6 billion (\$ 37.8 billion*) in the fiscal year that ended on March 31, 2017.

Our sales offices, research & development centres and manufacturing plants are located in over 30 countries.

Factory Automation – European Business Group

Mitsubishi Electric Europe B.V., Factory Automation - European Business Group (FA-EBG) has its European headquarters in Ratingen near Dusseldorf, Germany. It is a part of Mitsubishi Electric Europe B.V., a wholly owned subsidiary of Mitsubishi Electric Corporation, Japan.

The role of FA-EBG is to manage sales, service and support across its network of local branches and distributors throughout the EMEA region.

**Exchange rate 112 Yen = 1 US Dollars, last updated 31.03.2017 (Source: Tokyo Foreign Exchange Market)*

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