

Exclusive Interview Milestone Digitization/IIoT

## “Openness boosts our business”

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Siemens is further supplementing its process industry digitalization portfolio. Eckard Eberle, CEO Process Automation at Siemens Digital Industries, explains why openness and cross-sectoral standards continue to be essential to this and yet a one-stop-shop brings benefits.



*Eckard Eberle, CEO Process Automation at Siemens Digital Industries*

*(Source: Siemens )*

**PROCESS: What are the three most important milestones of digitalization in the process industry from your perspective, Mr. Eberle?**

Eckard Eberle: The first milestone was set at the Hanover Fair 2011, where the term Industry 4.0 was coined. The focus of the next stage was asset performance, together with cloud technologies; information was recorded and processed in the cloud. The third milestone relates to simulation. It has long been used in process technology, although primarily in designing a plant. Now simulation as part of plant operation is moving into the foreground. And I'll dare to take a look ahead: the next milestone will be the

broader application of Artificial Intelligence.

**PROCESS:** What impact has the first milestone, the “birth” of the term Industry 4.0, had on Siemens?

Eberle: Viewed retrospectively, a very significant one. Even when the concept of Industry 4.0 was launched, we were actively involved. We collaborated on the recommendations for action for the German government, and were represented from the start in the Industry 4.0 steering group. That is how we have driven digitalization forward. Conversely, this future project has influenced our strategy very strongly over the past decade. In that time, Siemens has developed numerous tools that support digitalization and also ensured strengthening from outside the company, via acquisitions. Thus, the third pillar, digitalization, came to be added to our established pillars of electrification and automation, and it is developing very strongly.

## FROM AUTOMATION SPECIALIST TO SOFTWARE GIANT



### Initial spark for the process industry

**PROCESS:** Was the Industry 4.0 project, as part of the German government’s high-tech strategy, also the initial spark for the process industry to devote itself to this subject?

Eberle: Initially, there was a lot of discussion about cyber-physical systems in discrete manufacturing. Many people failed to see at first that digitalization will also develop in other sectors of industry. But Siemens, as [sponsor of the Namur Annual General Meeting 2013](#), had already brought up the subject of integrated engineering back then, together with Namur representatives; the main focus was on consistency of plant and operational data as a requirement for Industry 4.0.

**PROCESS:** To that extent, was the process industry less hesitant over this than with other new technological themes?

Eberle: Absolutely. As in every industry, the particular application in which a benefit is produced with the aid of digitalization lies at the very heart. Frequently, the desire for flexibility is the driver, for instance in order to vary batch sizes quickly or to use existing plant to manufacture new products. In bio-production, the challenge often relates to improving qualities. And operators almost always want to increase productivity, which is generally very feasible using simulation. Recently, the options that digitalization offers for environmental and health protection and occupational safety have become the main focus.

**PROCESS: That sounds very promising. According to the Industry 4.0 Barometer from MHP and LMU Munich, though, many German companies are still only cautiously using Industry 4.0. Is the process industry doing things differently?**

Eberle: It varies a lot. We see companies that are going about the theme of digitalization very proactively, and in significant breadth. There are top-down projects encompassing the entire group. Others are coming at it “bottom up”, with many different use cases. Some opt for a digital approach right from the start, because only that can map what’s needed – in personalized medicine, for instance. It is a mixed picture, but the German process industry is in a good phase. In the European context, it is definitely not lagging behind.

**PROCESS: Does that apply more for hybrid industries, or also for big chemistry with continuous processes?**

Eberle: Projects are up and running in various areas. It’s true that pharmaceutical companies are already globally very far down the line in the use of many digitalization tools. Using simulation and soft sensor systems, many are achieving clear progress in optimizing their processes. Something similar is true of fine chemicals. Conversely, Industry 4.0 approaches are still less widespread in the food, beverages and tobacco industry. That could be due to structures, which are characterized by the acquisition of many smaller companies. Conventional big chemistry focuses very strongly on output and availability, i.e. on asset performance.

**PROCESS: Are American and Asian process companies ahead of the Europeans when it comes to digitalization?**

Eberle: The American markets don’t noticeably stand out when compared to the European markets. But many Asian customers, especially Chinese customers, are taking a comprehensive approach and are commissioning the full digital package for their greenfield plants: starting with discovering substances and plant simulation via FEED (Front End

Engineering Design) studies with consistent data models, through to virtual commissioning and simulation-supported operation. In Europe's brownfield structures, it is more difficult to have such a consistent approach.

**PROCESS: In the past, the chemical industry was allergic to one-shop-stop solutions. Is it possible to get around that at all, in view of the complexity involved in digitalization of a complete process chain?**

Eberle: The first thing to say is that we have nothing against a company opting for one-shop-stop. In Asia in particular, some are doing that. But in our Totally Integrated Automation Concept (TIA), we have been proclaiming the consistency and openness of our systems for 25 years. It's part of our DNA. Simatic PCS 7 is one of the most open control systems on the market. Together with Namur, we have jointly driven forward the development of MTPs (Module Type Packages). Thanks to MTPs, different systems from various manufacturers can work together smoothly in modular plants. All that has not hindered success; rather, it has boosted our business.

However, we will continue to pursue the strategy of mapping the full life-cycle and of having a consistent offer for vertical integration. If we develop or acquire new tools, as recently for instance Process Systems Enterprise (PSE) with its strength in process simulation, we pay strict regard to consistency. It gives our customers added value.

**How much of the digital twin is necessary?**

**PROCESS: The digital twin is seen as key to exploiting the potential of digitalization. Can certain benefits of Industry 4.0 also be achieved without it?**

Eberle: Yes, that is possible even without the large, fully-comprehensive digital twin. To explain that, we need to consider the term "digital twin". It's not an all or nothing term – the digital twin comes about gradually, from a combination of plant data, operational data and a corresponding model. This results in cloud-based applications to boost asset performance which use digital information on operating statuses plus information from the engineering system or from component data sheets. This permits statements to be made regarding the status of the equipment and when, for instance, maintenance should be undertaken. Things are taken a step further by applying simulation. And as best-in-class, it is possible to incorporate Artificial Intelligence as well.

**PROCESS: In which areas of application is digitalization in Germany's process industry especially far advanced, and where is there a need to catch up?**

Eberle: Our observation is that the process industry initially engaged very strongly with the core process. The focus was on vertical and horizontal integration – in other words, across the whole life-cycle, and also integration from the sensor to the management system. For three or four years now, more and more users have been foregrounding the supply chain as a subject. They aspire to mapping a seamless supply chain from delivery of the starting products to delivery of the products to the customer. That is also reflected in Namur's activities; Dr. Wilhelm Otten from Evonik, for instance, is strongly promoting this subject in his role as a Namur board member.

**PROCESS: In the chemical industry, there is generally a strict division between IT and automation departments. Does that result in barriers to implementing digitalization solutions?**

Eberle: IT and OT closer together is a very important aspect of digitalization. Only then does the necessary networking come about with the consistency required. This is also important for effective cyber-security. I believe it will grow together, particularly when we are discussing 5G. There are already companies who are mixing the staff from these departments together, in order to shape best networking and to establish mutual understanding between the entities.

**PROCESS: What is the impact of the new Simatic PCS neo control system, which you describe as having game-changer potential?**

Eberle: Since we released the system in the autumn for broader marketing, numerous customers have expressed interest in it. Some are already launching pilot plants. We are finding that the issues we have addressed are very much in tune with the times: for example, web-based multi-user use, which is making engineering easier precisely in this time of coronavirus. Native support of MTPs, and thus modularity, is particularly important for applications in fine chemistry and in the pharmaceutical industry. Process technology modules can be copied easily this way if plants need to be scaled.

**PROCESS: What are the next products Siemens will be offering to support digitalization in the process industry?**

Eberle: There are a whole range of products and themes which we would have liked to show at the Hanover Fair. Some of them are already running in trials, such as sensor systems for the left, pink area of the Namur pyramid, the Namur Open Architecture for data gathering.

In future, multi-sensors will gather a wide range of information in order to supply it to the cloud; for example air humidity, temperature, vibration, magnetic fields, etc. Moreover, simulation will carry more weight – the motto will be: more simulation, less trial and error. The 5G communications standard will also become more important over the next two to three years. In addition, the functionality of Simatic PCS neo will develop significantly over the coming years.

**PROCESS: When will Simatic PCS neo replace the previous system, Simatic PCS 7?**

Eberle: Even though Simatic PCS neo is very important for developing the business, Simatic PCS 7 will continue to run for a long time yet. Because we were very successful with it and still are, at the present time. Both control systems build on the same hardware base. It means users are free to choose to use Simatic PCS 7 or Simatic PCS neo for plant expansions, or at some point in the future to opt to switch from Simatic PCS 7 to Simatic PCS neo.

Mr. Eberle, thank you for taking the time to talk with us.

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