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Background information

Nuremberg, April 6, 2016

500 years of the German Purity Law

The digital world of tomorrow's brewery

How can we expect the brewery of the future to look? Will beer by-products be used to automatically produce fuel? Or will brewers soon be working exclusively in front of the computer screen? Over the next few years, issues such as the cloud, data security, diminishing batch sizes, simulation tests, coordination and documentation will continue to grow in significance in the world of beer brewing.

Fundamentally, the advance of digitalization is not yet as widespread in the brewery and beverage industry as in sectors such as automotive or aviation engineering, where processes are considerably more complex and the manufacturers more innovation driven.

By comparison, the brands and products which concern the food and beverage industry enjoy far more long-lived popularity. In the modern high-tech brewery, everything is digitally linked through interfaces to production control systems. Quality data is automatically captured and work sequences defined by modules. These allow the systems to document processes such as sampling to reliably determine whether the beer in the tank complies with quality requirements.

Computers are an integral part of today's world of brewing, and tomorrow use of the cloud is likely to become the norm: This will allow the IT infrastructure such as storage capacity, computing processes or software to be provided as a service over the Internet. Brewers will be able to process their data in the cloud, eliminating the need for either a server or software in the office. The cloud services are simply accessed as and when they are needed. Using *MindSphere: Siemens Cloud for Industry,* data from a whole range of locations can be captured, transferred and safely stored. Users themselves define which data they require in order to obtain the necessary overview. They can work with these figures and make them available to colleagues or other involved parties. "Three concepts exist: The general cloud, the

Siemens AG
Communications and Government Affairs

Wittelsbacherplatz 2
80333 Munich
Germany

private cloud and the private server. I firmly believe that this offers huge potential," says Gunther Walden, responsible for the Food&Beverage area at Siemens.

Tracking using radio waves, simulated testing

Another key aid to the brewery industry is RFID: Radio-frequency identification is the name given to a technology involving transmitter-receiver systems for the automatic identification and localization of objects using radio waves. There is no longer any need for physical contact with items in order to identify and assign them. An RFID system comprises a tag or label attached to an object which contains an identification code, and a reading device to scan the data. Brewers can also benefit from this technology, which opens up a whole raft of new possibilities: "This technology makes the entire production and supply chain visible, allowing material flows to be monitored. This means the operator will know precisely which bottle and which label is where at any given moment in time. The brewery is able to plan efficiently and precisely control its processes," explains Walden.

Walden does not envisage any limits to the scope of automation in breweries. The systems are ideal for any size of company and enable flexible adjustment. "There can be hardly any other industry which can be scaled down so far and enable such small batches of a single product to be manufactured as in the brewing of beer. What makes sense always depends on the individual operation. By going down the automation route, everything can be fully documented," Walden explains. Also already possible today is the use of simulations: Before deciding to convert to a different product or purchase new equipment, breweries can first test their capacity on a virtual basis. "Introducing automation will free up more time for master brewers to pay attention to brew beer and create new recipes," he predicts. With this extra creative time at their disposal, who knows what intriguing new beer products will appear in the years to come alongside the already popular exotic variations containing chili, coriander, lemon or ginger as well as new "bitter" beer types conforming to the German Purity Law, and where adventurous brewers will experiment next in their drive for innovation.

Thus Siemens supports breweries to become more flexible and achieve greater efficiency. This culminates in enhanced productivity. Given the particular importance of excluding any possible hazard in the food sector, optimum provision is also made

to ensure data security with facility to precisely set who is authorized to access the system. The extensive documentation of all work steps and in particular the sampling process allow manufacturers to provide solid evidence that their beer complies with the relevant regulations – entirely without the need to store reams of paperwork.

This background information and further material are available at www.siemens.com/press/500-years-reinheitsgebot

Contact for journalists:
Ines Giovannini
Phone: +49 911 895-7946; E-mail: ines.giovannini@siemens.com

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