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Beer made to measure – the optimization of traditional brewing through radar level measurement and Profibus PA

Since January 2007 the brands Bitburger, King Pilsener, Köstritzer, Licher and Wernesgrüner work together under the umbrella of the Bitburger Brewing Group. The most important guiding principles of the company are quality and efficiency. Indeed, these form the cornerstone of the company's long-term, continuous success on the market. Today the most modern process automation technology supports and optimizes its traditional beer brewing methods. Technology and process standards at all company locations create synergies and make implementation of the business goals easier.



These earmarks of the Germany-wide Bitburger Brewing Group had their origin in the Bitburger brewery. "Highest quality at all levels" – that has been since 1817 the aspiration of this family business, now managed by the seventh generation. With a production output of over 4 million hectoliters of beer annually, Bitburger is one of the largest national Pils brands. It is served in over 43,000 restaurants and bars throughout Germany, making it the most tapped Pils in German bars.

The propensity to innovation as well as the high quality standard of the company can be seen in the ultra-modern brewery that was opened in Bitburg-Süd in 1980. The raw materials silos as well as the brewing, fermenting and storage tanks built according to the newest developments in the field and equipped with state-of-the-art measurement and process control technology are proof of the consistent realization of the goal of high quality and efficiency.

Following this strategy, Bitburger started in 1996 to gradually change over certain areas of the new brewery from analogue 4 ... 20 mA signal transmission to digital measured value transmission by means of a Profibus PA fieldbus network. Decisive reasons for the retrofit were the lower wiring costs as well as the increased availability of diagnostic and servicing information as compared with

conventional analogue technology. Static as well as dynamic production processes can thus be considerably better controlled and monitored.

To guarantee the quality of the end product beer, the purity as well as availability of the raw materials must be given attention already at the beginning of the brewing process. This is facilitated by non-contact radar sensors from VEGA, which have been measuring filling levels in the 12 malt silos continuously and reliably since 2005.

The outstanding features of VEGAPULS 68 – very high dynamic range, hard and software optimized for bulk solid applications and an optional swivelling holder for the antenna – make it the ideal solution for demanding measurement applications like those in the 25-meter-high malt silos. Its intelligent, simple adjustment according to the plics® concept makes setup and commissioning a lot easier and gets the required measurement loop up and running fast.

The VEGAPULS 68 radar sensor puts into the hands of the master brewers in Bitburg a new measuring technique with many advantages. For example, where measurements previously had to be performed manually at certain times, a reliable continuous measurement, even under conditions of intense dust generation, can now be carried out.

Furthermore, digital measured value transmission via Profibus PA fieldbus allows the reading in of measurements from raw material silos directly into the control system-based inventory and consumption assessment. Exact and reliable measurements are particularly important here for coordinating deliveries from the different malt suppliers, making sure they are on time and based on actual consumption.

The measurement loop diagnosis carried out from the control room or the decentralized terminals is also helpful for anticipatory planning. Even if the classic on-site inspections cannot be replaced completely, the diagnostic possibilities of Profibus PA fieldbus do help save costs and make production more effective.

Measurement points with Profibus PA communication can be found in many other areas of the beer production, e.g. in the fermenting tanks, filtration systems, storage tanks as well as draff silos. The advantages of digital measured value transmission become especially evident here in the large number of mostly similar measurement points. The effective bus wiring and direct feeding of data into the control system on the one hand, and the continuous availability of measurements and diagnostic information on the other, make possible an effective, resource-conserving and waste-free beer production of the highest quality.

This implementation of VEGA measurement technology is an integral part of the future-oriented strategy at Bitburger and represents a merging of the goals of two very successful family businesses: uncompromisingly high product quality, reliability and trust in cooperation with customers as well as environment-friendly techniques and production processes. These are the guarantors of both VEGA's and Bitburger's success.

Holger Sack