

Brewed to Perfection

The König brewery optimises its production process with innovative Factor1 sensors

Only top quality ingredients are used to brew König Pilsner at the König brewery in Duisburg: choice hops, perfectly matured barley malt, pure water – and now the innovative Factor 1 sensors from Turck. The brewery has been able to enhance the operational safety, reduce down-times and significantly increase their productivity by the use of the new *uprox®+* sensor family. Owing to the most advanced manufacturing technologies, the new sensors come without a core and winding and thus open new vistas in terms of system planning, installation and operation.

"We could be happy if the air was as pure as the beer" Richard von Weizsäcker, the German Federal President, said in praise of one of the German's favourites, the so-called "liquid bread", an anecdotal synonym for beer. For over 800 years, beer brewing has been regulated by law in Germany. Its origins date back to 1154, when the first penalty was introduced for serving "bad" beer. In 1487, Albrecht IV, the Duke of Upper Bavaria, proclaimed an official regulation, imposing that every beer brewer had to administer the so-called brewer's oath to the ducal treasurer.

In 1516, the Bavarian Duke Wilhelm IV, enacted an order, today well known as the German Purity Law....."We especially wish that, from this point on and everywhere in the countryside as well as in the towns and marketplaces, nothing is to be added or to be used in beer other than barley, hops and water....".

Ever since it has been and remains to be the most important quality characteristic of German beer and is considered worldwide the oldest law on food products. For centuries, the "purity law" has been protecting the consumer against the side-effects of additives such as spices, fruits, toxic herbs and plants, which formerly were frequently a substitute for hops due to their intoxicating and preservative effects. A good beer, however, does not need any additional ingredients.

A successful concept

The "König" brewery in Duisburg adheres to these principles and has been living up to the maxim of the company founder Theodor König for over 140 years: "Simply concentrate on being better." With their premium product, the popular "König" pilsner, the brewery counts among the largest and most successful top breweries throughout Germany. The "König" brewery primarily concentrates on the production of a fresh and "hoppy"-flavoured beer, which was initially favoured by small yet exacting circle of connoisseurs.

"König" only uses selected choice ingredients for brewing their pils: first-grade hops from the best growing areas of the world, mellow and ripe barley and top quality water. The company also pursues highest standards in production and quality assurance and attaches great importance to internal research and design to continuously optimize the production process of one of the most advanced brewery systems in Europe.

Alongside the quality of a product, system availability plays a decisive role in highly automated brewing systems. "A single problem in the production chain can jeopardize the entire production process and cause a standstill. In order to prevent such costly downtimes, we have consistently opted for quality", comments Heinz Dieter Poscher, who has been working for more than three decades as manager of the electronics workshop of the "König" brewery, the critical point in system automation. For over 20 years, the company has been relying on components from TURCK.

The fine art of pipe elbow adapters

Pipe elbow adapters, which distribute and feed liquids, such as brewing water and wort – an intermediate brewing product – are a crucial point in production. "In the production process, it is often required to shift the pipe elbow from one position to the next. Due to frequent loosening and fixing of the screw connection, the seal suffers continuous damage so that the distance between sensor and pipe elbow varies", states Mr. Poscher to explain this key problematic of pipe adapters.

Position monitoring is a typical application of inductive sensors, which often have to be re-adjusted or supported flexibly due to the varying operating distances. This procedure no longer poses any problems: the simple, safe and cost-effective solution is called *uprox®+*, the new series from TURCK, permitting extremely high switching distances.

The new generation of the proven sensor family combines traditional and innovative technology for optimisation of applications in breweries and the food industry. The emitter and receiver coils are printed onto the circuit board using an extremely precise method. The combination of modern production techniques and a coil construction without a core and winding allows for a triple, record-breaking switching distance of up to 30 mm compared to conventional sensors with a ferrite core.



However, sensors with an extremely high operating distance are known for their complex mounting requirements, but with *uprox@+*, everything is different. Based on the novel multiple coil construction plus integrated pre-damping protection with self-compensation, only very small metal-free zones have to be observed during mounting. This minimises installation errors and enhances the freedom in planning and developing machines and systems. The recessed mounting option protects the sensor against mechanical damage. Reduction factors are no longer an issue: *uprox@+* sensors are capable of detecting materials such as iron, stainless steel, copper, aluminium and brass at the same high distance with the highest precision.

Specialists for food & beverages

Special features make the *uprox@+* sensor family interesting for the food industry: a special double lip sealing system prevents the ingress of cleaning agents between LCP front cap, threaded barrel and connector insert and effectively seals the sensor. The sensitive measuring core is securely protected by a robust stainless steel housing. Even aggressive detergents and disinfectants, whether alkaline or acid, can cause no harm to the sensor.

The sensors easily exceed the requirements of protection degree IP68 and IP69K and withstand cyclic cleaning procedures, placing great demands on the field devices employed in the food and beverage industry. The devices are cleaned and disinfected daily at high temperatures of +80 °C and more under high pressure with chemical cleaning agents.

The food and beverage series of the *uprox@+* sensors from TURCK have proven their capabilities under the strict test conditions of the independent Henkel Ecolab test lab. The resistance of the used materials against detergents and disinfectants prevents failures, while the withstand capability of the housing and the high level of EMC of the electronics ensure fail-safe operation in harsh industrial environments. The sensor family *uprox@+* masters standard applications just as well as customer-specific solutions and stands for highest operating distances, operational safety, extreme flexibility and efficient standardisation. Reason enough for the "König" brewery to equip all new installations with *uprox@+*.

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