



Ultrafast with Ultrasound

Speed and accuracy are not mutually exclusive, if the proper technology is employed. At the bottle transport system of the Fürst Bismarck Quelle in Aumühle, a Bero Sonar reflex sensor ensures a smooth process operation.

Up to 50,000 bottles per bottling machine come down the line every hour at the Fürst Bismarck Quelle – part of the group Blaue Quellen Mineral- und Heilbrunnen AG. To optimally utilize the capacity of the bottling plant, it is very important for the bottles to arrive with defined speeds at the filler and inspector. For this purpose, the company Elotec of Viernheim developed a control device that makes sure the bottles are supplied to the filling machine at the correct time. Elotec plans, constructs and manufactures complete bottle, crate and palette transport systems for the beverage industry. The basis of the pick-up control for the Fürst Bismarck Quelle is a proven Simatic PLC from Siemens. Elotec also counts on technology from Siemens for the detection of the bottles on the conveyor belt. Ultrasonic Bero sensors monitor the transport of the bottles and reliably report, if a gap is forming between the bottles. One Bero detects the bottles, a second Bero reports gaps in the bottle stream. If a gap is spotted between two bottles prior to the machine feed, this will be reported to the PLC, which then accelerates the conveyor belt by means of an inverter and motor. This ensures a gap-less filling and labeling of the bottles.



Up to 50,000 bottles per bottling line and hour are no problem for the Bero Sonar reflex sensor

Attractive Alternative to Photo Sensors

Instead of a light beam, the Bero Sonar sensor employs a continuous tone in the ultrasonic range. This tone is emitted by the transmitter in the direction of the receiver and – if interrupted – triggers a switching signal. A microprocessor in the receiver analyzes the acoustic signals and ensures – even under difficult environmental conditions – that the Bero delivers defined output signals. In contrast to the specialized clear-glass reflective photo sensors employed in the past, ultrasonic sensors also work when dirty or exposed to condensation water. With an IP 67 degree of protection, the devices are optimally suited for applications subject to rough conditions. The ultrasonic Bero is immune to vibration and foreign sound. Furthermore, the optical properties of the object to be detected – such as color or transparency – are completely irrelevant to the ultrasonic sensor. The effectiveness of the sonar sensor is neither affected by splashed water nor rising steam (e.g. when bottling hot juice).

The minimum width of the gap triggering an alarm can be adjusted continuously by changing the angle between the sonar sensor and the running direction of the test objects. Even very tightly spaced objects, for example beverage cans, are identified reliably.

Optimal Operation

Norbert Cambeis of Elotec is convinced by the application of the sonar sensor in the beverage industry: "Thanks to the ultrasonic technology, it is possible to quickly and reliably detect objects even under adverse conditions. Within the last couple of years, we have employed several hundred devices. The result is always the same: Install and forget!" Udo Fagin of the Fürst Bismarck Quelle can only confirm this: "The pick-up control of the company Elotec works to our utmost satisfaction. Thanks to this new control device, we were able to optimize the operation and lower the susceptibility of bottles separating to a minimum."

www.siemens.com/simatic-sensors/px