Convenient Coupling

In the sterilization machines of the Swiss company Hanag Steriltechnik AG, Turck's inductive couplers transfer power and switching signals contactlessly – the ID of the IO-Link sensor is also used for the reliable identification of each container

QUICK READ

The product portfolio of Swiss company Hanag Steriltechnik AG includes machinery for the treatment of caps and stoppers for the pharmaceutical industry. These are sterilized using different processes, which require the reliable identification of each container in the process. Where plug contacts were previously used for a long time, the company today uses a solution with contactless data and power transmission. This involves the use of an inductive coupler with the "application specific tag" of the IO-Link sensor to identify each container and ensure the correct position of the containers in transport trolleys at the transfer stations.

When pharmaceutical manufacturers fill their solutions for intravenous infusions, the last production stage involves the sterilization of the ampoules, caps and stoppers. This is often performed with the machines of Hanag Steriltechnik AG, a company based in Switzerland. The company has its headquarters in Oberwil and is one of the most important Swiss suppliers in the field of plant and vessel construction. It has gained an excellent reputation internationally, thanks to its stopper and cap processing machines. The company primarily focuses its activities in the field of sterilization applications. A brief look at Hanag's list of references reads like a who's who of European pharmaceutical manufacturers.

Sterilization process

The cap and stopper treatment process consists of the steps washing, sterilization, drying and cooling. The packaging material is filled in containers, which then run through the different process stations. The containers can be moved and turned in their trolley. The pharmaceutical manufacturer runs different programs for the different types of stoppers and caps. The customer therefore wanted the ability to identify containers at the individual stations. Hanag had previously solved this with a plug-in contact. This integrated a binary coding via which each container could be identified uniquely.

Eric Netzhammer, CEO of Hanag Steriltechnik AG, and his team wanted a contactless connection of the containers at the transfer stations. This saves the customer from having to connect the plugs. Together with the automation consultants from Turck's Swiss sales partners Bachofen, Netzhammer and his team compared different inductive systems for contactless signal and power transmission. "The Turck coupler system was identified to be the most suitable solution for us." Netzhammer says. "The temperature rise in particular is less than with similar products. Turck's NIC coupler is also provided with an IO-Link interface."

Identification via IO-Link

The IO-Link standard provides for a free text field, the "application specific tag" (AST), for each IO-Link device. This can also be used to identify individual devices. The customer can thus identify containers at the particular stations, without having to use an additional RFID system. In all three lifting stations, the controller queries via the AST whether the correct packaging material is loaded. The customer's S7200 controller does not enable the process until the content of the container corresponds with the formulation to be run.

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Eric Netzhammer | Hanag Steriltechnik AG

The BI6U-M12-IOL6X2 IO-Link sensor detects the correct position of the rotation unit via the switch lug

The stopper and cap processing machines of Swiss-based Hanag Steriltechnik AG are in demand worldwide

IO-Link switch prevents operating errors

When the containers are transferred, the trolley is docked with two guides at the lifting column. This ensures the correct positions of the trolley and the inductive coupler. As the container in the trolley can be rotated, however, it must be ensured that it is located in the correct position for lifting or reuse after the process. For this Hanag installed a switch lug that dampens Turck's inductive IO-Link sensor when the correct position is reached and thus triggers a signal.

After the container is identified, a check is also made whether the rotation unit of the trolley is correctly aligned for lifting the container or returning to the trolley. "With one customer, the lifting arm was even bent because the operator had not ensured the correct position. This happened even though this was a circuit that made the presence of the operator obligatory," Netzhammer reports. In other cases, it was possible for the container to tilt in the trolley if the rotation position was not correctly aligned. Today, the controller doesn't enable the lifting arm until this position is also correct.

Increased process safety

The safety of the process was further increased by the checking of the rotation position, and the identification task was implemented more simply with the contactless coupler. The fact that a simple switch can today also be used for identification tasks is one IO-Link capability that was not even considered when the smart sensor/actuator interface was developed. Today, Hanag no longer has to implement a separate identification solution via plug contacts or RFID.

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