PRESS RELEASE

Smart Sensor Solutions for smart factories

Waldkirch/Düsseldorf, May 2014 --- Hands-on Smart Sensor Solutions are one of the highlights that SICK is jointly presenting with Siemens at this year's Interpack. The two companies have equipped a packaging machine with IO-Link-enabled sensor and control technology, and optimized sensor consistency in the PLC. This will demonstrate how Smart Sensor Solutions can lead to considerably greater flexibility, reliability, availability, user-friendliness and efficiency – whilst optimizing the costs of the individual machine processes.

With a view to Industry 4.0, the packaging machine demonstrates how communication in modern machines can be achieved down to the lowest field level, solving the problem of the last meter, the "missing link" to the smart factory.

Linking sensor and controller intelligence

SICK has integrated almost two dozen standard sensors from its IO-Link range in the machine, which seals handles onto two different six-packs in five process steps. A PLC from Siemens, in which the company has integrated a time-stamp functionality for the first time (for real-time product tracking), is used on the controller side. In addition to standard functions such as sensor parameterization via the controller, condition monitoring, electronic documentation or sensor visualization, a wide range of advanced functions that can generate real added value in packaging machines have been implemented. The WL12G-3 photoelectric sensor, used for robust leading-edge detection of a six-pack on an assembly belt, decentrally debounces what it really sees – and not the switching signal. The debouncing times achieved are independent of cycle times, bus transfer times and input delays. An inductive sensor is used for monitoring high rotary speeds, i.e. to detect the speed of the conveyor belt motor. As an alternative to a central counter module, a photoelectric sensor from the W4-3 product family proves its worth as an optical pulse counter on the perforated disk. The UM18 ultrasonic sensor directly measures the height of the six-packs – doing away with complex conversion and interpretation of the analog signal in the controller. The DT35 distance sensor determines the profile of the six-packs

and proves effective as a technical and economical alternative to highly precise sensors with analog output and analog PLC input cards.

WSE4-3 photoelectric sensors are used for detecting the gap between two six-packs. The sensor very accurately determines the time between the six-packs and passes this on to the higher-ranking SIMATIC controller via the new IO-Link Master CM 4xIO Link using the decentralized SIMATIC ET 200SP peripheral system. A photoelectric sensor of the WL12G-3 product family takes on the task of triggering the machine application head for attaching handles to the six-packs. Whereby the sensor provides a production-dependent debouncing value (e.g. 3 ms). If a device replacement becomes necessary, the sensor is first identified. Then the application-specific parameters are loaded into the WL12-3 from the IO-Link Master. Wrongly identified sensors and incorrect settings are prevented by automatic parameterization by the IO-Link Master (using IO-Link Specification 1.1). Parallel to their automation functions, all these smart sensors monitor a number of electrical and mechanical parameters during running operation. They can thus uncover potential error states and signal them to the Siemens controller before they impair machine availability.

Smart Sensor Solutions dissolve the boundaries between automation levels

The integration of communication with sensors and actuators on the lowest field level provides a complete and consistent flow of information within the entire automation pyramid – the boundaries between the levels become blurred or disappear; the classic levels model becomes irrelevant. At the same time, the resultant automation network represents an important prerequisite for Industry 4.0: the seamless consistency of data and information from the controller directly to the sensors.

Thus the future belongs to the philosophy and technology of Smart Sensor Solutions, as jointly presented by Siemens and SICK at Interpack 2014.