



Use of sensors in packaging technology

Advantages of optoelectronic sensors against a background of intense cost pressures

For some years increasing pricing and cost pressures have been making themselves felt in the automation industry. Designers have to respond to this as early as in the development phase of new equipment, as well as when they are modifying existing systems, if they are to be able to count on remaining competitive. In this connection, reliable sensor technology that is also cost-effective has an important part to play. In view of the flexible possibilities of use that it offers, and the increasing intelligence of the modern sensor, optoelectronic sensors are often the solution chosen by the designer.

The productivity of a plant complex is heavily dependent on the sensor technology used. When faced with a task involving electrosensitive detection or identification, the choice of designers today is more and more frequently falling on optoelectronic sensors, such as optical distance sensors, light barriers, light grids or laser scanners. Quite apart from the product properties, expert knowledge of the application and technical support from the sensor supplier are significant points both for the mechanical engineer and for the user of the system.

Optosensor technology in milk production

Milchwerke Berchtesgadener Land Chiemgau eG [Chiemgau Berchtesgaden Dairy Products] is one of the companies that benefits from the flexibility of optoelectric sensor technology. At the company's Piding works, 250 employees process some 168 million kilos of raw milk annually to make quality dairy products. The company's turnover in 2004 came to 113 million euros. Following on bottled milk production (1990), Production Section II (milk cartons) was put into operation in the spring of 1998, and an ultra-modern and fully automated high-bay warehouse was opened at the same time. This logistics centre accommodates 4000 refrigerated pallet slots. In October 2003 a second high-bay warehouse, with 6000 non-refrigerated pallet slots, was completed.

After the automated loading of the europallets with dairy products, the load is fixed in place with a transparent foil, applied by a fully automated foil wrapping unit. Following on the wrapping it is necessary to have a reliable system for the detection of any foil sections, known as "flags", with a thickness of no more than ca. 7 µm. In addition, further optoelectronic sensors are active in the immediate vicinity. Light grids of the VARIO product line, supplied by Leuze lumiflex GmbH & Co. KG, were used here.

Decisive considerations for the choice of these sensors were their imperviousness to external sources of light and the possibility of adjusting the sensitivity of the sensors. The latter is required when it comes to detecting the presence of "flags". The calibration that is needed here is automatic, and can be carried out within seconds without the help of any other accessories. To achieve this, when the installation is complete and the system is switched on for the first time, a charge of +24V is supplied to an input channel of the receiver for the space of about one second. The individual strength of the various infra-red signals is determined through this calibration procedure, and is then permanently stored in an EEPROM of the receiver's electronic system.





Final checking of the installation position of the light grid (picture by Leuze lumiflex)

As already indicated, the quality and reliability of the sensors are among their most important properties. Threefold quality assurance checks, and the wide range of installation options, are also points in their favour. This example shows that even in a situation of mounting cost pressures optoelectronic sensor technology can be the ideal solution.



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