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## Hygienic, flexible and tamper-proof Solenoid interlocks in filling and packaging machines protect employees

**At OPTIMA packaging group GmbH, a family business with headquarters in Schwäbisch Hall, Germany, and soon to have a 100-year history, the 1,800 employees worldwide develop and produce manufacturing, filling and packaging machines for foodstuffs, cosmetics, chemical and pharmaceutical products. The machines from Optima are internationally in demand: The company's export share is over 80 percent. The Optima Consumer business division has developed a new machine designed especially for use with foodstuffs and chemicals. Schmersal has provided the safety technology for it, including the new AZM 300 solenoid interlock with emergency release.**

The new Optima MPS (Multi Packaging System) is a highly complex system with a total length of approximately 50 meters which, due to its modular design, can be used for a broad range of filling and packaging functions, and can easily be expanded for future tasks. As a result, the system is optimally oriented towards the different requirements of the customers of Optima Consumer around the world and in particular toward the globally operating food manufacturers, which market their products in a broad range of climate zones.

In the current individually adapted version of a filling and sealing machine, which will be delivered to a manufacturer at the beginning of 2015, especially powdery foodstuffs (e.g. soup concentrates) or chemical products (e.g. scouring and cleaning agents) are dosed after being weighed out exactly, preserved, filled and packaged. Here the precise screw feeder should be mentioned, it is supplemented with a calibratable, dynamic tare/gross weighing technology, which exactly measures the current filling quantity so that redosing can be carried out if necessary.

### Personal protection for accessible machine areas

Quantities between 400 and 800 grams can be filled in the filling and sealing machine with an output of 180 packages per minute. Five robots are integrated in the machine

which are used for handling the various closures of the packages, i.e. for screwing closed, sealing or assembling - in some cases also for the addition of spoons.

„Some machine areas are accessible, and therefore personal protection was very important to us,“ explained Andreas Seitz, responsible for project management at Optima. „Schmersal was able to provide us with a safety-related solution in which the AZM 300 with an emergency release is used.“ The emergency release enables people, who were accidentally trapped in the danger zone of a machine or system (e.g. during cleaning or maintenance work), to quickly leave the area. With the AZM 300, it is designed as a highly visible red lever mounted on the inside of the safety gate and can be operated intuitively in case of danger without a knowledge of its function.

### Increased hygienic safety

The AZM 300 is also an especially hygienic concept for solenoid interlocks - a decisive advantage for the food processing industry. „The AZM 300 is equipped with an SD bus connection, i.e. sensors can be connected in series and deliver their data to the main controller via a Profinet gateway. This enables us to save a lot of cable, reduce potential nests of dirt and therefore increase the hygienic safety,“ said Siegfried Moser, Electrical Engineer at Optima. The filling and

sealing machine is equipped with a number of safety gates and protection flaps intended to prevent soiling and at the same time enable service and maintenance work. These can be secured with the AZM 300 up to Performance Level PL e according to DIN EN ISO 13849-1. As the safety gates and flaps have various sizes, the flexibly adjustable latching force of the AZM 300 is another advantage of this interlocking type. The AZM 300's special characteristics include a new patented operating principle with a rotating shaft and



**The new Optima MPS (Multi Packaging System) is equipped with the solenoid interlock AZM 300 to provide personal protection especially for the accessible areas of the machine. The emergency release enables people, who were accidentally trapped in the danger zone to quickly leave the area.**

a Maltese cross. With it the safety gate is pulled into the end position when closing and is held closed virtually clearance-free.

#### **Standard provides for evaluation of incentives for tampering**

The AZM 300 is groundbreaking with regard to the tampering protection, as protection devices are repeatedly tampered with in practice in many companies. This fact takes the standard DIN EN ISO 14119 valid as of May 2015 into account. It provides for an evaluation of the incentives for tampering – with the objective of recognizing and reducing or eliminating these incentives.

The AZM 300 satisfies this standard, as it is equipped with tampering protection with high coding levels, and optionally with universal, teachable or individual coding. This is possible, as the interlock is equipped with safety-related, upgraded RFID technology. As a result, the user can choose between three different coding versions: In the basic version the sensor accepts every suitable target. A second version only accepts the target it was taught about when it was first switched on. Finally, a third version is available in which the teaching process can be repeated any number of times.



**On the feeding machine of the Optima MPS, the MZM 100 from Schmersal was used to secure rotatable safety guards.**

#### **Insensitive to vibrations**

On the feeding machine of the Optima MPS, the MZM 100 from Schmersal was used to secure rotatable safety guards.

The locking force of this solenoid interlock is generated by an electromagnetic rather than a mechanical locking system. Hence a hygiene-friendlier design is possible than with an electromechanical interlock. In addition the MZM 100, which Schmersal developed in close cooperation with packaging industry users, is less sensitive to safety guard off-sets, vibrations and bounce.

Images:

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