

## Application Report

### The charm of AS-i

With the protective sensors from Leuze electronic, STREMA also uses the savings potential of AS-interface for the safety technology of its stretch machines.



At STREMA Maschinenbau GmbH in Sulzbach-Rosenberg – one of the most renowned manufacturers of stretch packaging systems – the AS-interface bus system has been standard since 1999. And, ever since there have been safety-oriented components such as the protective sensors of the MLD series from Leuze electronic with the AS-i Safety interface, STREMA has also used AS-i Safety at Work to efficiently meet the high safety requirements on the highest Performance Level in a network.

Klaus Lösch, director of electrical design at STREMA, explains the importance of using bus systems in the stretch packaging systems from STREMA® (box 1), particularly with the ever increasing functionality: *"As the number of actuators and sensors grows, so too does the need to simply, reliably and economically network them."* Depending on the design and scope of a stretch machine (photo 1), up to 80 switching standard sensors such as light scanners and retro-reflective photoelectric sensors from Leuze electronic are installed, including HRT 96, HRT 46B, HRT 3B or PRK 25B, among others.

When selecting a suitable bus system, Lösch opted for AS-interface early on. In addition to a careful cost analysis, this was due primarily to the constructive design of the stretch systems of which there are two types: with so-called turntable machines, the pallets to be packaged are rotated next to a fixed stretch head. With rotary arm machines, on the other hand, one or two stretch heads are rotated on an arm around a pallet. In both cases, slip rings are used. These transmit media such as power, data and air to the machine rotor. Here, AS-i has advantages, explains Lösch: *"When communicating via slip rings, the bus systems such as PROFIBUS or PROFINET, which transmit information as voltage pulses, cause carbon deposits to form on the slip-ring paths in spite of silver-plated slip-ring tracks and receivers made of silver graphite. These require maintenance and can cause malfunctions. With AS-i, on the other hand, the bit sequences are sent in the form of current pulses. The constant current flow keeps the slip rings clean."* AS-i thereby ensures a high transmission reliability in all stretch packaging machines. In addition to this, the AS-i bus, which transmits information as current pulses, is generally less sensitive to electromagnetic interference, such as that emitted by frequency-controlled drives and their supply lines.

Lösch was particularly impressed by the terminal-box-free design of the I/O level and the simple mounting by means of the so-called clamping technology. This is based on the use of the mostly yellow AS-i cable, a polarity reversal protected ribbon cable with two conductors. During mounting, the piercing needles of the device to be connected penetrate into the conductor of the cable, thereby ensuring reliable contact. *"It couldn't be easier to connect sensors, actuators or modules,"* finds Lösch, who also uses the technology to help operators of STREMA stretch machines change, expand or replace components at any position without tools. Lösch says: *"Exactly that is the charm of AS-i as an efficient and economical cabling system for the lower level of industrial communication."*

### **Standard and safety in a network**

Safety requirements have grown as well with the increasing functionality and capability of the stretch systems. A fully automatic rotary arm machine of the A 5000 series (photo 1) packs up to 150 pallets per hour with two stretch heads. Here, the Performance Level in accordance with the valid machinery directive is PL e, i.e., the highest level. *"Now that safety-oriented components such as the protective sensors of the MLD series from Leuze electronic are available with the AS-i Safety interface, we can use the existing AS-i network for safety technology as well,"* Lösch is pleased to add.

Because a big advantage of the AS-i solution is the fact that safety-related components with AS-i Safety at Work can be easily integrated in an AS-i network. Standard components and safety components then operate in parallel on the same cable. Certified by TÜV and BIA and approved up to Performance Level PL e acc. to EN ISO 13849, all advantages of the AS-i network can also be fully utilized for safety solutions.

The multiple light beam safety devices of the MLD series with integrated AS-i Safety interface are connected directly to the AS-i bus with no additional coupling modules. In addition to the simple adaption on the AS-i cable, thanks to the clamping technology, the M12 connection technology also ensures quick mounting. Device replacement can even be performed by means of Plug & Play with no programming. Simply connect and the device is ready for operation – that's what Lösch means when he refers to the charm of AS-i and AS-i Safety.

## **Photos and captions**



**Photo 1.** The A 5000 series from STREMA is among the most powerful stretch systems. It functions with a wide range of Leuze electronic sensors and packages up to 150 pallets per hour.



**Photo 2.** Ready-for-mounting MLD multiple light beam safety devices from Leuze electronic with integrated AS-i interface.

**((In box 1:))**

### **STREMA Maschinenbau GmbH**

For more than 30 years, the company from Sulzbach-Rosenberg has been developing and manufacturing stretch packaging machines and systems which cleverly wrap pallet loads with foil in such a way that load safety is ensured during travel. The product portfolio ranges from the simple but very robust pallet stretch wrapping machine in which the film carriages are operated by hand and the turntable is switched on and off by means of a foot switch to the fully automatic system with electronically controlled and continuously adjustable power stretch system. With enormous innovative strength, the industry's technological leader positions its machines as benchmarks in all performance classes.

**((end of box 1))**

#### **Press inquiries**

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**((Box 2:))**

**MLD with integrated AS-i interface for access safeguarding**



The MLD/AS-i safety sensors can be integrated immediately into the AS-interface network, i.e., without additional coupler modules and hence cost-effectively. Especially when it comes to muting, the direct AS-i connection allows very convenient solutions for users who place an emphasis on economy. In cooperation with the Leuze electronic Safety Monitor ASM-m, the MLD multiple light beam safety devices permit the easy construction of access guarding with muting based on AS-i Safety at Work. The ASM-m safety monitor then controls the muting sequence, whereby the muting indicator integrated in the MLD is also controlled via AS-interface. **((end of box 2))**