

Application Report

Sensors in a salt warehouse

Salinen Austria AG is Austria's largest producer of salt. The company has put a new high-bay warehouse into operation which, due to the conditions present, is made of a somewhat unusual building material: wood. As the general contractor, the Voralberg (Austria) branch of LTW Intralogistics GmbH supervised the project and used sensors from Leuze electronic for this extraordinary project.

With the expansion of production capacity to more than one million tons, it was necessary for Salinen Austria AG to construct a new high-bay warehouse at the production facility in Ebensee (Austria). *"In addition, the construction of an automatic, single-level distribution system reduces transport costs by up to 40%,"* explains the responsible logistics director of Salinen Austria AG. The entire logistics infrastructure was realized by LTW Intralogistics: *"As the general contractor, LTW supplied multiple complete systems, consisting of high-bay storage devices, conveyor systems, control technology and software,"* reports Ralf Becker from the marketing department of LTW Intralogistics in Wolfurt, home to the Austrian headquarters of the company.

Leuze electronic sensors are essential

Sensor technology from Leuze electronic, such as the BPS 34 barcode positioning systems, DDLS 200 optical data transmission systems, HRT 96 light scanners or ROBUST Multiple Light Beam Safety Devices used in Ebensee, have, for years, played an important role in the performance of LTW projects. *"They provide us with the necessary process availability for fully automatic operation,"* confirms LTW, where, in the context of the system constructed for Salinen Austria AG, the largely corrosion-resistant device versions are particularly valued. These are also the reasons for the wooden construction of the warehouse at Salinen Austria: the special challenge is the salt, which would necessitate extensive corrosion-protection measures on the steel typically used to construct high-bay warehouses. Wood was, therefore, the better choice here.

Even without any special treatment, wood is largely resistant to direct contact with salt and to the high level of salt present in the air in the warehouse (Figure 1). Even metal screw connections were eliminated, opting instead for traditional carpentry dovetail

joints. Everything that could be made of wood, was. This includes ladders, provided for accessing the high-bay storage devices for maintenance work, or the stands for the control panels. Many other system parts, such as the high-bay storage devices, were hot-dip galvanized and then coated in three layers. A total of six high-bay storage devices with a height of approximately 23 m, with travel speeds of up to 4 m/s and lifting speeds of up to 1.5 m/s, ensure a rapid flow of goods. Each of the high-bay storage devices moves up to 92 pallets per hour.

Precise positioning with barcodes

The positioning of the high-bay storage devices in the high-bay warehouse and of the side-tracking skates in the pre-zone occurs with BPS 34 barcode positioning systems, each of which consists of two easy-to-handle components: a read head and the barcode tape. With a high level of functional reliability and minimal maintenance, the BPS from Leuze electronic are predestined for use in such demanding applications. The plastic code tape, on which the absolute distances are encoded, is a key contributing factor here (Figure 2). The code is nearly indestructible and insensitive to UV light and many industrial environmental influences, such as various oils and chemicals, humidity, etc. For simple mounting, the tape, produced by Leuze's Austrian partner, Schmachtl GmbH of Linz, is self-adhesive and affixed to V4A stainless steel. It can easily be attached to the floor with plastic holders.

With the reader system, a laser scans the position information with a reproducibility of ± 1 millimeter. The positioning system transmits the respective, calculated position value to the control every 2 milliseconds. One unique feature here is that the read head always reads multiple codes on the code tape simultaneously (Figure 3). Thus, individual soiled or damaged codes do not affect the measurement system, which operates using absolute values, thereby ensuring reliable position detection.

Optical data transmission without interference

All data between the high-bay storage devices, as well as the side-tracking skates, and the control is exchanged with DDLS 200 optical data transmission systems. They facilitate the contact- and wear-free optical communication without interference with a transmission rate of up to 2 Mbit/s over distances of up to 500 meters (Figure 4).

The device versions used here are designed for aisle lengths of up to 120 meters. Each consists of a pair of two transmitter and receiver units, which transmit and receive the data on different frequencies via a pulsed, invisible, infrared laser beam. Here, the laser

beam of the transmitter is precisely tuned to the frequency of the opposing receiver. This enables bidirectional communication and prevents mutual interference or reflections.

In addition to the device performance, LTW Intralogistics is particularly pleased with the simple commissioning. The patented SHA (**S**ingle **H**and **A**djustment) process for one-man adjustment allows a single person to precisely align the data light beam.

Salinen Austria AG also uses other products from Leuze electronic in the area of space occupancy detection within the scope of double-deep storage in the high-bay warehouse. For example, reflection light scanners with background suppression of the 96 series are used. The laser light scanners have a large detection range. They operate according to the principle of light propagation time measurement and facilitate use under extreme conditions with respect to light and gloss. Furthermore, they offer good black/white behavior over the entire adjustment range and a switching behavior that is independent of the direction of movement.

For side-tracking skates, Multiple Light Beam Safety Devices of the ROBUST series round out the range of Leuze electronic sensors used at the facility. With an optical distance of 500 millimeters, these two-beam, type 2 safety sensors guarantee the necessary personnel protection in the spirit of safety at work.



Figures and captions



Figure 1. Wood is an unusual building material for a high-bay warehouse. For the Salinen Austria AG salt warehouse, however, it is ideal.

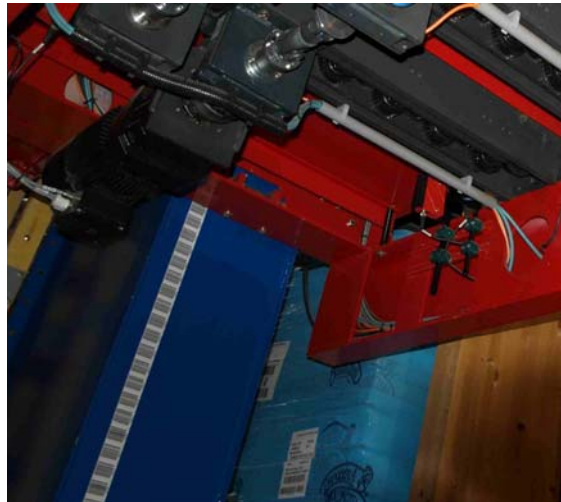


Figure 2. Absolute distances are encoded on the plastic tape of the BPS 34. Shown here is the tape affixed to the vertical axis of a high-bay storage device.



Figure 3. The read head of the BPS 34 always reads multiple codes on the code tape simultaneously (source: LTW Intralogistics GmbH)



Figure 4. DDLS 200 optical data transmission systems on high-bay storage devices facilitate contact- and wear-free optical communication.

Press inquiries

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