STOPA WMS 4.0 supports economical use of materials

By investing in a STOPA COMPACT II sheet metal storage system for aluminium sheets, the steel wholesaler Eisen Schmitt has considerably speeded up production at its St. Ingbert plant and so optimised its processes. The automatic storage system is equipped with the STOPA WMS 4.0 warehouse management system, which communicates with the higher-level ERP system and with the sawing systems to be supplied.

Alois Schmitt GmbH & Co. KG (Eisen Schmitt) was founded in 1930 at its Karlsruhe location and has more than 15,000 items in its product range, including a wide range of steels and tubes, non-ferrous metals and plastics. It stocks and processes aluminium sheets in St. Ingbert. The automatic STOPA COMPACT II sheet metal storage system provides the basis for space-saving and economical storage, with over 369 storage spaces.

To ensure efficient communication between the storage management software STOPA WMS 4.0, the ERP system of the operator, and the waste optimisation software of the sawing systems, STOPA Anlagenbau GmbH in Achern-Gamshurst, a company offering versatile customised solutions, has developed interfaces. Thomas Vilsmeier (Dipl.-Betriebswirt), who is on the management board of Eisen Schmitt, unfolds a drawing to illustrate the waste optimisation processes. "Because the data of the transport jobs generated by the WMS is automatically sent to the saws via the interfaces, there are no manual inputs and the error rate is reduced."

Shorter cycle times

Deliveries are recorded at Incoming Goods and are booked in the ERP system, which transfers the information to STOPA WMS 4.0. The WMS, which manages floor spaces in addition to the sheet metal storage system, creates storage orders and provides empty pallets using its search function. The operator of the storage system loads the raw material at the Incoming Goods station onto the load carrier selected by the WMS.

The STOPA WMS 4.0 of the automatic storage system communicates with the higher-level ERP system and with the sawing systems to be supplied

This is done using the precise coordinates into which the pallet is divided, as specified by the software. The operator then releases the load carrier to store the materials. The WMS transfers the data of the transport order to the inventory and assigns it to the relevant pallet. If the capacity of one of the pallets, which have a usable surface area of max. 1550 x 3050 millimetres, is insufficient to hold the assigned quantity for storage, the employee orders additional empty pallets and allocates partial quantities manually.

Customer orders are assigned to one of the saws, which cut components in a size range from approx. 40 x 20 up to 3000 x1500 millimetres. The WMS transfers the specifications received from the ERP system to the data format of the waste optimisation software and saves them in the incoming goods directory. In addition, this file contains a list of all stocks with the corresponding materials.

Solution Highlights

- Shorter production cycles.
- Marked process optimisation.
- High process reliability.
- Minimised error rates.
- Optimal communication channels.
- Economical storage.

metres wide. The software ensures that parts are nested closely together, maximising the use of space. The WMS specifies the required number of pallets for removing goods from storage, depending on the quantity of cut sheets ordered. A higher priority is given to load carriers with leftover sheets, in order to reduce their stocks. While the WMS initiates the removal orders, the waste optimisation software transmits the cutting data to the selected saw. The operator takes the material from the scissor lift table using a ceiling crane. As there are often several pieces of remaining material on a pallet, it identifies the sheet to be removed using a barcode label which is applied after each saw cut. In addition to material specifications and dimensions, the label contains the batch number and plain text.

As a result of the decision to divide the pallets into fields, the WMS is informed where individual cut sheets are located on the load carriers

Tapio Sutter, St. Ingbert's branch manager for Eisen Schmitt, stops at a sawing system during an inspection tour. "A primary objective of our investment was to reduce production cycle times. Frictionless communication between the systems has helped us to optimise our processes considerably."

Before nesting, the waste optimisation software assigns the orders to the inventory of the STOPA COMPACT II, which is approx. 22 metres long, 11 metres high and 5.7

The leftover sheets resulting at the sawing systems which are, without exception, rectangular in shape, are placed back in storage by Eisen Schmitt. The waste optimisation software creates files from their quantity and sizes, which

the WMS reports to the ERP system and uses to create storage orders. If leftover sheets need to be stacked on a pallet before storage, which is possible up to a loading height of max. 165 millimetres, the employee selects the load carriers based on a suggestion list created by the WMS. The employee should aim for homogeneous storage wherever possible to prevent different materials being mixed together. Sutter indicates the coordinates on a pallet: "As a result of the decision to divide the pallets into fields, the WMS knows exactly where individual cut sheets are located on the load carriers."

Additional space due to pit

The STOPA COMPACT II is controlled by a real-time soft PLC and came into operation in March 2018. The sheet metal storage system works around the clock with an annual handling capacity of approx. 450 tons. Previously, the company, which as a wholesaler supplies some 200 customers in Germany and neighbouring countries, relied on shelves and lift trucks. Vilsmeier lets his gaze wander between the floor and ceiling of the hall: "If STOPA hadn't offered to build the storage system in a three-metre deep pit, to expand the available space in the factory building, we would have had to make the building higher."

Thomas Vilsmeier, member of the management board of Eisen Schmitt (left), and Tapio Sutter, St. Ingbert branch manager at Eisen Schmitt (right)

At Eisen Schmitt, the automatic storage system is equipped with two scissor lift tables. One of them is used purely for outgoing goods, the other as an incoming / outgoing goods station. The manufacturer has fitted this with a pneumatic carriage locking system, a pallet locking system and insertable stops for a coordinates bracket, so that supplied aluminium sheets can be precisely positioned and secured to prevent them sliding.

Due to the more compact design of its twin-mast storage and retrieval unit (SRU), the STOPA COMPACT II has two additional storage spaces per shelf block compared with the predecessor series. As the system at Eisen Schmitt consists of ten blocks each made up of two rows, the full-range supplier has an additional 20 spaces and so a considerably increased storage capacity. In addition, the storage and retrieval unit means increased safety, as it automatically monitors the storage spaces and their loads below and above the selected storage spaces, avoiding potential collisions.

The solution also has the benefit of individually adjustable acceleration values for the storage and retrieval unit, which can be used to prevent slippage of the material, as well as intelligent energy management. This is based on the use of two light drive motors instead of one heavy one, and the resulting reduction in the total weight. There is also a DC intermediate circuit, which helps utilise the generative brake energy of one drive by making the system available to another drive in the form of motor energy.

Investment goals reached

Vilsmeier is relaxed as he observes the storage processes. "The storage concept that we've chosen offers high performance and process reliability. We also decided we wanted to work with STOPA as the company is known as a top manufacturer of sheet metal storage systems. This was confirmed to us as we viewed various reference plants."

Sutter nods in agreement. "Our investment goals have been reached. We wanted to achieve minimal error rates for the storage and retrieval of goods as well as shorter and safer production processes. In addition, we're also profiting from more efficient use of materials, as there is less waste."

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