STOPA Tower Storage System at the centre of sheet metal processing

By investing in a STOPA TOWER Eco Tower Storage System, Winkhaus, a German company which makes building fittings, has improved reliability when handling metal sheets, and so increased its efficiency. Other advantages include, for example, space-saving storage options, the ability to access blank sheets quickly, reduced material damage and a more orderly system.

Uwe Birwe, a qualified engineer who heads Industrial Engineering at Aug. Winkhaus GmbH & Co. KG in Telgte, Germany, is standing in front of a tower storage system that's six and a half metres tall, four metres long and three metres wide: "We process only metal panels of medium format to cover our product range. So we don't need a storage system for large-format sheets, and we wouldn't have considered it anyway in view of our tight space situation." Just the installation of the compact tower, which had to fit into the available space with millimetre accuracy, was a challenge in itself. The STOPA TOWER Eco, designed by STOPA Anlagenbau GmbH in Achern-Gamshurst, meets all the expectations that Winkhaus, as a leading supplier of top-quality window technology, door locking systems and access management, had placed in its investment.

Since Winkhaus processes sheets weighing some 160 tonnes every year, its investment in this storage system is a step with an eye on the future

Optimum loading density

Birwe paces out the small area taken up by the system: "We benefit from the high degree of space utilization, from minimized damage to materials and from rapid access to blank sheets. On top of that comes a markedly reduced search effort, based on better order, and a short-term return on investment."

The most important thing is, as Birwe stresses, the reliability the STOPA TOWER Eco stands for. One factor in this is that the panels can be stored in a defined way and also reliably inserted and withdrawn. All the sheet metal grades used, for example stainless steel, alumin-ium or high-strength steels in thicknesses from a half to eight millimetres, are buffered in the tower. Thus storing the sheets upright can be dispensed with.

The family-owned company, established in 1854, is replacing with this system a floor stacking method and a manually operated drawer shelving system in which sheets were placed at a height of up to two metres. Birwe says that now the space requirement has been halved and the employees are under less physical strain.

The tower storage system, which operates six days a week in three shifts, in a reliable process offering almost 100 percent availability, was commissioned early in December 2018.

Birwe points at the shelf tower, fitted with longitudinal connections and diagonal bracing in the frame plus a push-through preventer on the rear side: “We decided on fixed-position storage and on a fixed vertical spacing of 60 millimetres. As this solution matches the quantities of the metal sheets we order, we get an optimum loading density.” If the need arises for a vertical spacing of 200 millimetres, for example to stock taller items or pallets, the shelf tower can be retrospectively equipped with doubled loading height.

Ergonomic and safe procedures

Forklift trucks supply the STOPA TOWER Eco with the delivered sheet metal stacks, and set them down on the fixed plungers of the taking-in platform. Before that, Alex Gutjahr, who operates the storage system, enters the number of a bay at the central system terminal to request an empty system pallet from it. The control unit then makes the selected pallet move automatically out of its storage location and onto the stationary lifting beam of the tower. The beam then lowers the load carrier between the plungers of the platform, so that the panels can be picked up as soon as the forklift truck has put them down. During the following insertion, a photoelectric barrier checks that the maximum loading height is maintained. Gutjahr himself also benefits from this solution: “The clearly structured control panel simplifies interation with the storage system.”

The operator makes the system pallet exit the tower and then lifts the metal panels ergonomically using the crane

Highlights of the solution

- high degree of safety when handling metal sheets
- high degree of space utilization
- rapid access to blank sheets
- considerably reduced search effort
- minimized material damage
- short-term return on investment

From the sheet metal store, the company (which employs about 2,200 people worldwide) supplies two TRUMPF punch laser machines, of the models TruMatic 6000 and 7000. The operator initiates removals by entering the bay number of the pallet for interim storage and pressing the Enable button until the removal position has been reached. The requested sheets are re-moved from the pallet, which rests on the low-wear and low-maintenance lifting beam, using a crane. The beam, provided with a push/pull device and with functions that can be monitored to ensure reliable operation, attains speeds per minute of eight metres when lifting and four metres when pulling.

For optimum distribution of the sheet metal grades inside the storage tower that fits in with day-to-day needs, 40 shelf bays and system pallets are available. The load carriers are designed for payloads of up to 1200 kilos. STOPA has also fitted them with limiter plates and with a self-supporting frame structure provided with side members and

sliding rails.

If an addition to stocks is due, the operator is by necessity compelled to select for the new material a load carrier which already holds metal sheets. First the operator makes the system pallet exit the tower, and then lifts the already present panels ergonomically using the crane. The newly delivered material is then placed onto the pallet and the older panels are stacked on top of them.

To return load carriers to their bays, the operator once again presses the Enable button. In addition to blank sheets, Winkhaus also stores leftover sheets. To ensure that the beam, which STOPA has provided with an absolute and load-dependent digital travel measurement system for its height positioning, can go to the two bottom shelf bays too, the pedestal in the empty state in front of it can be moved.

The STOPA TOWER Eco is equipped with a compact controller or a programmable logic controller (PLC), including LCD display and touchscreen interface. If an error occurs, it is displayed as a text message. The warehouse management software runs on the SAP system of the company, which mainly supplies customers in western Europe and in Poland.

Uwe Birwe, a qualified engineer and Head of Industrial Engineering at Aug. Winkhaus GmbH & Co. KG, Telgte, Germany

Customers include building owners, door and window makers, locksmiths, construction element/fitting dealers and architects.

“The online service offered by STOPA, enabling an order list with up to ten movement orders to be automatically pro-cessed, isn’t used by us,” says Birwe. “Our orders are too small-scale for that. In most cases we need just one panel.”

A decision with an eye on the future

Since around 160 tonnes of the some 30,000 tonnes of steel annually processed by Winkhaus are metal sheets, investment in this storage system can be regarded as a step with an eye on the future. Birwe indicates a stack of trade journals: “We’ve ana-lysed the market and gained a lot of infor-mation about the sys-tems of other manufac-turers. The STOPA storage tower fits in with what we envisaged in terms of height, compactness, ease of maintenance and price/performance ratio. Another positive is that the medium format of 1250 x 2500 millimetres at STOPA is standard, unlike at alternative suppliers.” Apart from that, the sheet metal storage system permits, with its modular concept, an inexpensive start to the automatic stocking of flat materials.

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