A generation change in sheet-metal storage

The company mks Metallbau Schreiber GmbH in Wolfschlugen has moved up to a new generation by investing in a STOPA COMPACT automatic storage system. STOPA Anlagenbau GmbH more than doubled the number of storage locations, but it increased the system's area by only about 50 percent and kept the height the same. This efficient use of space was made possible by closer spacing of the shelf dividers, a reduced lower dead area and an optimised design of the storage and retrieval unit. In addition, the STOPA COMPACT now works with multiple loading heights. The new system has 199 storage locations and a state-of-the-art control unit. The unit ensures inventory reliability, efficient organisation, fast workflows and high availability. Thanks to its modular design the storage system can also be expanded at a later time.

Weighing for better inventory reliability

When sheet metal stacks are delivered, the plungers of the STOPA unpacking table are adjusted to match the wooden pallets of the freight forwarder. Then the stacks are unloaded. A forklift truck picks up each stack and takes it to Station 1 of the storage system, where it is placed on a scissor lift table. Insertable stops on the table form a corner coordinate system for precise positioning of the sheets. The important material attributes are entered and confirmed at the control panel. Then, with the help of the plungers, the scissor lift table lowers the stack to a system pallet and travels to the take-up position for the storage and retrieval unit.

The STOPA COMPACT automatic storage system at mks consists of ten blocks arranged in double rows. It is slightly over 21 metres long and about five and a half metres wide and high. It handles loading heights of 90 and 275 millimetres. To meet the customer's needs, STOPA designed the load carriers so that unequally distributed loads can be balanced with small sheets.

A weighing unit integrated in the lifting beam automatically determines the weights of the pallets and their loads when they are stored and retrieved. Before leftover sheets are returned to storage, the operator records their sizes in order to maintain inventory reliability. This information flows to the warehouse management system, which continuously monitors the stocks and ensures specified minimum stock levels.

The storage and retrieval unit places the load carriers dynamically (randomly) in the nearest free shelf. When it moves between shelf towers a digital travel measuring system ensures exact longitudinal positioning. An additional absolute, load-independent digital travel measuring system permits precise vertical positioning without having to move to a reference point. To prevent collisions during storage operations, the storage and retrieval unit automatically monitors the permissible loading height at the storage locations above and below the selected position. The storage and retrieval unit achieves speeds of up to 100 metres per minute when travelling, 23 when lifting and 20 when pulling or pushing.

At Station 2 the system supplies sheets to a TRUMPF TruLaser 3030 cutting system that is connected via an interface and is automatically accessed by a transport cart. To retrieve a sheet from storage it is suffi-

The scissor lift table lifts the stack on its plungers and lowers it onto a system pallet

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The Trumpf laser cutting system is automatically connected to the sheet metal storage system via a transport cart and a loading unit

cient to enter the number of the required pallet or apply search criteria such as thickness, width, length, grade, surface finish or article number of the material. The control unit then provides a list of all load carriers that match these criteria.

High level of data security

A real-time soft PLC, integrated in an industrial PC, controls the components of the storage system, communicates with the warehouse management computer and displays the state of the system. For work scheduling it accesses the warehouse management system, from which it calls up items from stock. If there is a hard disk failure, the data can be retrieved from the RAID system (Redundant Array of Independent Disks). Warehouse operations can continue and the availability of the entire system is assured. If a fault occurs, STOPA can use PC Anywhere remote maintenance software to access the control unit via modem, analyse the fault and rectify it from its own location.

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