Storage space is valuable. In order to make the best use of it, a fully automated bar or sheet metal storage system must be rapid in its operation and customized to the user’s requirements. Kasto Maschinenfabrik GmbH & Co. KG provides maximum benefit to its customers by migrating to the newest generation of drives for gantry cranes in the company’s standardized bar storage system. The Sinamics S120 drive system has proven to be the best solution.

Modular design saves effort, space, and money

The drive system has a modular design and consists of Smart Line or Active Line Modules, a control unit, and separate power units for one or two axes (single and double motor modules). The Drive-Cliq digital system bus ensures the fast connection of the drive.

An efficient honeycomb storage system (Unigrip C series) with Sinamics S120 at Kasto
components. The modules can be combined with each other according to the relevant requirements – optimized for maximum efficiency and cost-effectiveness. The new solution also saves space in the control cabinet.

The plant manufacturer based in Achern, Germany, used the new drive system in honeycomb storage systems from the Unigrip/Unicompact series for the first time. In this type of storage system, two opposing honeycomb structures of up to 30 m height are served on the front side. The gantry crane is equipped with a chassis each on the left and on the right, a lifting device operated in the center with articulated shafts and chains, and two tensile axes to move cassettes on the crossbeam. In total, there are five controlled drive axes. The two chassis drives are positioned individually. As they are operated with a joint controlling module, they run perfectly in sync.

The modular drive system can be precisely customized to the application and saves space in the control cabinet.

**Integrated engineering**

Other advantages of the solution are the integrated drive engineering and end-to-end data storage in a joint project with the higher-level Simatic S7-400 application. For this purpose, Kasto has created a basic project with the five possible axes and uses a script to import the project-specific motor data. The warehouse manufacturer uses Simogear geared motors in the storage systems, thus obtaining a consistent drivetrain. This combination also enables continuous telediagnostics by the manufacturer. The lifecycle integration contributes to maximum availability, efficiency, and productivity.

**Improved cycle time**

When loads need to be moved, speed will always be an important factor. In warehousing, speed, or rather handling turnover, is measured in cycles or double cycles – that is, the possible number of defined storage placements and retrievals per hour. One approach to improving cycle time is to optimize the movements of the gantry crane over a longer period of time or a larger quantity of orders. The company from Germany offers a cleverly thought-out storage management system for this. Another approach can be found in optimizing the movement cycles themselves. “In order to do this, we used all the capabilities of the new drive systems. We were able to further reduce nonproductive times and thus decrease the cycle time of our storage system by about 8%,” explains Joachim Huber, electrical engineer at Kasto.

**Saving energy during active operation**

The new drive system also has a regenerative feedback capability. This not only saves space in the control cabinet but also reduces engineering and wiring effort and eliminates the need for an additional cooling system. The power from the infeed / regenerative feedback unit of the Sinamics system can be adjusted to the drive unit, enabling a cost- and energy-efficient design. In addition, a significant amount of energy is also saved during active operation. When the brakes are activated, the power units exchange the generated power among themselves through an intermediate circuit, meaning that significantly less power from the energy grid is required. Surplus energy is fed back into the grid.

**Tried and tested under real-life conditions**

To date, Kasto has delivered approximately 30 storage systems with Sinamics drives to customers around the globe. Without exception, customers’ experiences have been positive. Reduced engineering, hardware, and wiring effort and faster commissioning of gantry cranes have reduced costs by about 15%. The operators profit especially from the energy efficiency and the shorter cycle times.

“**We have used all the capabilities of the new drive system. We were able to further reduce nonproductive times and thus decrease the cycle times of our storage system by about 8 percent.”**

Joachim Huber, Electrical Engineer, Kasto