

High duty packaging application utilises low maintenance solution offering high reliability

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INDUSTRY	PRODUCT	COUNTRY	PROCESS
Pharmaceutical	GFX Hepco Guidance System for Beckhoff XTS Transport System	Spain	Sorting

The search for new challenges, the attention to detail and a constant desire for innovation define Packfeeder's DNA. For its new innovation, the Pickfeeder Twin 200 unscrambler system, linear motion expert HepcoMotion was challenged to achieve a cycle of 200 containers per minute, whilst also ensuring high reliability and low maintenance.

With over 40 years of experience in the packaging sector, Packfeeder specialises in the design and manufacture of positioning and sorting systems for plastic containers and bottles. Located in Barcelona, it serves leading international brands and industrial groups in sectors as diverse as the pharmaceutical industry, cosmetics and personal care among others.

Packfeeder unscramblers are adaptable to a multitude of bottle sizes, geometries and speeds, making them one of the most complete ranges in the market. These patented systems are unique in the market thanks to their simple and intuitive design, which allows users to transform the most complex tasks into extremely simple procedures. Its simplicity and ease of use allows a rapid change of format without tools or adjustments. With the added advantage of being the most compact systems in its segment with the best packaging ratio per minute/m², the Packfeeder solution is a benchmark in its sector.

After the success achieved with its first version of the Pickfeeder system at 160 handlings per minute, Packfeeder needed to increase the machine's positioning cycles and thus address the high production and greater flexibility demanded by the market.

"Innovation as a reason of being requires technological partners that share our vision. In this strategic project for Packfeeder, the experience of HepcoMotion, Beckhoff and Delta robots, and the proven quality of their products, has provided us with the confidence with which we can address this industrial challenge." says Ferrán Martínez, CEO of Packfeeder. The technical specification of the application required a load of 0.5 kg for the weight of the product, plus the special design clamp and its relative position with respect to moving for the different sections of the circuit. The total perimeter of the circuit is 3.5m, including the straight sections for 5 x Beckhoff motors, plus 2 x 180° curves. The circuit is mounted at 45° to overcome the forces of gravity in the return of the movers. With a cycle time of 2.4 seconds in an anti-clockwise direction, the system needs to work 16 hours a day, 7 days a week with a guaranteed life of 2 years. .

Given the high kinematics of the application, with speeds of 3m/s, accelerations of up to 30m/s², as well as the 45° mounting orientation, the application is demanding and Packfeeder required HepcoMotion to design and manufacture a new circuit with reduced weight movers and low friction, without compromising the load capacity, rigidity and precision of the system.

“To reduce the weight of the movers it was necessary to design and manufacture a lightened aluminium body without compromising its rigidity and special bearings that provide sufficient load capacity to withstand the demanding requirements of the application.” Steve Rendall, R&D Director of HepcoMotion.

As experts in linear movement, HepcoMotion worked together with Beckhoff to develop a new version of its 1-Trak system to work with the Beckhoff XTS eXtended Transport System. This option meets the high-cycle needs of XTS applications where the requirements of long-term motion profiles and durability are particularly demanding.

HepcoMotion’s GFX guidance system for Beckhoff’s XTS Transport System provides a good load capacity with precision movement, ideal for processes with high speeds and accelerations. Its low maintenance, circuit comprising straight and circular arc sections and a clothoid curved transition gives a gentler motion for the movers and allows the machine to run faster and more smoothly than would be possible for a ‘running track’ oval shape. The high-performance load-bearing bearings mounted on the rigid bodies of the movers, along with the magnetic blocks and the encoder vane, ensure good positional accuracy and allow working on curves, optimizing the transport system.

The Beckhoff XTS eXtended Transport System uses linear servo motor technology to drive independently controlled “movers” around the circuit. The system offers a solution for complex systems, with a high speed movement of up to 4 m/s, without compromising on positional accuracy. With its modular architecture it allows the dimensions of the machine to be reduced. Thanks to the total freedom of movement and the high dynamism of the movers, it allows the movers to be synchronized and grouped, giving the system the ideal flexibility for continuous processes. The automatic format change allows the equipment to be adapted to the different needs of each product effortlessly, reducing downtime and increasing machine efficiency. A transport solution that perfectly combines high dynamics and precision.

Thanks to the capabilities of its components, the Pickfeeder series of robotized sorting and unscrambling plastic bottles has been conceived as a modular series configurable for one or more robots, compatible with a wide range of applications. The combination of Delta robots with HepcoMotion’s GFX Guidance System and the Beckhoff XTS allows the most versatile automatic format change machine in the market, optimizing the performance of the intelligent systems and guaranteeing the best soft transfer in the world.

Packfeeder has a wide range of robotic systems for feeding containers of different dimensions, characteristics and materials, with adjustable speed according to productive needs. Packfeeder’s robotic bottle sorters can work efficiently with a wide range of containers, from short dimensions of 3–4 ml to large of 1L or more, in a wide range of speeds that can reach 500 u/min.

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