

PACKAGING - AUTOMATION

LIQUID DETERGENT PACKAGING

Space efficient, low maintenance pouch system - simply fit and forget.

When South Korean automation manufacturer New Hanil Engineering was commissioned to develop a machine to fully automate the production of liquid detergent packaging, it was essential to build a space-saving, low maintenance system that would provide the high throughput required. The machine produces spout pouches, one of the fastest growing packaging formats that offer a flexible, cost-effective alternative to plastic bottles. At the core of the machine, New Hanil required a precise and reliable carousel system to guide and transfer the spout packs around the system between the different processes.

Having worked together on a number of occasions, New Hanil turned to linear motion expert HepcoMotion to specify the guidance system. HepcoMotion specializes in high quality linear solutions and automation components and, celebrating its fifty-year anniversary this year, has gained a reputation for its high-end, low maintenance products. For this application, an oval shaped DTS belt driven track system was specified. A complete integrated package with all transmission and mounting components provided, means huge savings are made in both design and build time.

CHALLENGE

LIMITED SPACE

One of the key challenges New Hanil faced was the limited space available; the system needed to be compact and space-saving. The system also needed to accommodate seven different processes; loading the pouch, cutting the edges, capping, sealing three sides and then releasing the finished pack to be filled with the final product. Space was at a premium to fit seven different processes on the system within a small footprint.

HepcoMotion's oval shaped DTS is ideally suited as it effectively reduces the footprint by 50%, by turning back around on itself. The curved rings sections are used as a return, guiding the carriages back to the straight section where the

COMPACT
DESIGN

HIGH SPEED



LONG LIFE



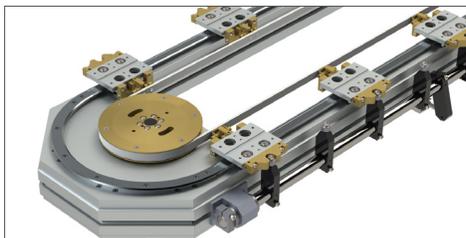
CURVILINEAR

processing work is done at the seven stations. Equipment is located both inside and outside the track shape, again, saving valuable production space and creating a compact, space-saving production cell. Completing seven tasks within the track system is highly space efficient due to the compact working footprint.

The oval shaped track system also allows the input and output sections to be located close together, making one-person operation possible. Conveniently, one person can reach both the input station where the raw material is loaded and the output station where the finished pouches are released, saving costly labor.



Rectangular DTS providing space for internal process machinery and scanning



Oval DTS providing compact multi-stage indexing



Vee guide wheel technology provides long-lasting motion, even in extreme applications

SOLUTION

RIGIDITY AND PRECISION

A 4.12 meter track system is utilized with 8 carriages, moving at 440mm/second. For this application, an accuracy of +/- 1mm is required, although the DTS provides accuracy of 0.05mm for applications needing greater precision.

The system rigidity offered by the DTS is a core benefit for New Hanil, particularly with the 4kg moving payload. At each of the processing areas (loading, cutting the edges, capping, sealing and releasing), a number of other forces apply to the system in different directions which the DTS is capable of coping with. Hepco's DTS is based on Hepco's proven and precise V guide technology, which rigidly guides the movers around the track. This ensures accurate alignment and resistance to deflection to avoid inconsistent pouches.

CHALLENGE SOLVED

LOW MAINTENANCE FOR LASTING RESULTS

The packaging industry is notoriously demanding and highly competitive, requiring high-quality parts in order to keep machines running smoothly day after day. Packaging applications need to stay on schedule and produce high product throughput with utmost reliability in order to be profitable. HepcoMotion's DTS track system routinely functions in high speed, high duty applications with little more attention than lubrication and occasional cleaning. Downtime costs are therefore reduced and productivity is maximized.

A big advantage of Hepco's V guide system is that they have long re-lubrication intervals. Saving valuable downtime and cost, Hepco's lubricators can achieve up to 500km before needing re-lubricating, compared to every 100-150km with ball rails. The system only needs lubricating every 3 months and these long re-lubrication intervals work well for New Hanil who were tasked with designing a low maintenance system. Hepco's lubricators are used to apply a constant film of oil to the working surfaces of the ring slide without imposing undue friction.

A low maintenance solution means less manpower, less downtime which equates to a significant cost saving. Conveniently, when a Hepco V system shows sign of wear, the process is simple and does not impinge too much on production time. The eccentric adjustment facility of the V bearings can be used to quickly and simply remove any play that has occurred. Moreover, when the V bearings reach the end of their calculated life, they can be replaced individually, and not as an entire set, saving both time and money. A key point to note is that a V guide system will not fail catastrophically meaning excessive downtime and a complete system change will be avoided.

The system has been in operation, working trouble free for four years. The performance and small space taken up by the system, along with virtually no maintenance has provided an optimal solution that runs seamlessly within the packaging line.