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Automated Motion Playbook

FOOD PROCESSING & PACKAGING INDUSTRY EDITION

BISHOP-WISECARVER®

LoPro Linear Actuators

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Bishop-Wisecarver's LoPro® Linear Actuator is an actuated linear motion system based upon DualVee guide technology for smooth and quiet motion over long lengths.

LoPro actuators are a tough, cost effective , low friction, low profile modular solution built to withstand a wide range of of operating environments.

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LoPro Handles Corrosive Environments Like a Pro!

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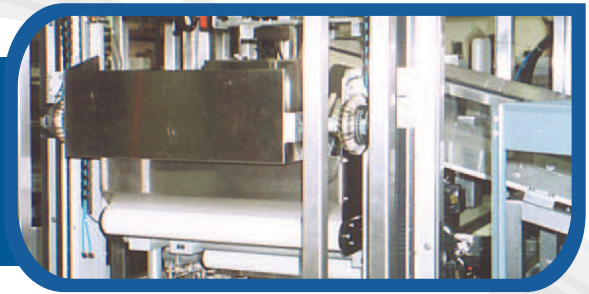
Challenge

An equipment designer needed to find an effective and compact method to raise, lower, and guide a "bucket" full of product from one conveyor line to another.



- Eight (8) size W2SSX wheels and bushings
- Two (2) M2ATPC-SS x 1550 mm track plates above per "system"

Application Description

The machine runs production continuously, shuttling product from one conveyor to additional conveyors above. The bucket is raised and lowered through a synchronized toothed belt system attached to linear bearing wheel plates on either side of the machine.

Solution

The designer used pre-mounted linear guide LoPro track plates, mounted in a parallel configuration on either side of the machine frame coupled to four-wheel carriages of their own design. The custom designed carriages were made to do triple duty: to provide a platform for the DualVee wheels and an anchor point for the toothed belt while also supporting the rotary actuators which rotate the "bucket".

Hepco PDU2 Profile Driven Unit Acutator

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The PDU2 profile driven unit actuator is a small belt driven system that, relative to it's compact size, has considerable load capacities. PDU2 is a modular actuator meaning that it's ideal for quick easy gantry configuration. PDU2 is the ultimate product for circular motion.

PDU2 is the ideal solution for demanding single axis systems and multi-axis applications.

Additive Layer Manufacturing for Chocoholics!

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Challenge

Dr. Liang Hao, a professor at Exeter University challenged his engineering students with a masters project. Since current methods of manufacturing custom designed chocolates use an inflexible and expensive mold, he encouraged them to push the boundaries of additive layer manufacturing (ALM) technologies by working with a highly commercial and appealing material...chocolate. ChocALM is the result of that challenge.

Application Description

ChocALM can produce a 3D object of any shape in chocolate from a computer design. The machine software breaks down a 3D computer image into layers, applies coordinates for deposition and maps the necessary path. The 3-axis Cartesian coordinate system is connected to a temperature controlled chamber that holds the chocolate. The tempered chocolate is squired through a nozzle over the path of a layer. Then the z-axis surface, on which the chocolate is depositited, is lowered to make space for the next layer. This layer-by-layer process forms the unique 3D design.

Solution: Five HepcoMotion PDU2 belt driven units (1x-axis, 2 y-axes and 2 z-axes) provide the linear movement for ChocALM. Its zero backlash allowed a guaranteed tolerance in the deposition system of 0.6mm. The motor mounting and keyed shaft also made it possible to attach suitably sized stepper motors. Even though the machine is still in the development stages, it has been designed so that food grade materials and components, such as the PDU2 units, can easily be incorporated for commercial use. Future development include two nozzles for concurrent deposition and active coolign to speed the build process.

HepcoMotion GV3 Linear Guidance and Transmission

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The GV3 linear guidance system provides a wide array of precision linear guide components utilizing guide wheel and roller wheel technology. Slides are available in three different precision grades, ranging from completely ground surfaces to as-drawn quality, to fit performance and economic needs.

Lubed-for-life guide wheels come in twin bearings, double row bearings, and compact slim line bearings. GV3 can be used as a simple guide or a self-actuated rack or belt driven system.

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Food Industry Pick, Place and Packaging Environment Ideal for Guide Wheel Technology

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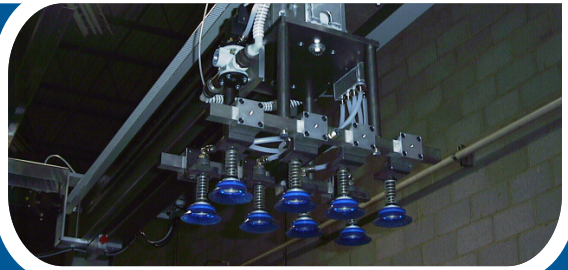
Challenge

Flexicell, a company which designs and manufactures robotic material handling for the food, beverage, pharmaceutical, healthcare, and durable goods industries needed linear guides that could withstand the elements in a food production environment. They also needed to accommodate a variety of lengths , speed and load requirements.



Application Description

Case packing, tray loading, palleting cells and various other types of loading and unloading systems, driven by two servo motors. Used to top load cases, trays, cartons and other containers, the system would also serve as a collator, pattern maker and/or used to load products into other packaging machines.

Solution

The customer was interested from the beginning in guide wheel technology based on its excellent performance record over the years in harsh environments. Speed, up to 40 cycles per minute/100" per second and loads up to 75 pounds were also handled well with guide wheel technology.