

AN ENERGY EFFICIENT SOLUTION TO PACKING MACHINE DESIGN

Festo's online sizing tools and pneumatics expertise has enabled Cerulean's new tube packer to achieve energy efficiency improvements in excess of 90%, saving 4.5 million litres of compressed air per year

When packaging machinery specialist Cerulean decided to redesign its highly successful FPS-1 tube packer, high energy efficiency and reduced TCO were key design requirements. Cerulean worked with Festo to identify where CAPEX and OPEX savings were achievable during the tube packing process. Optimising the design and performance of the new FPS120s resulted in energy efficiency improvements in excess of 90%, saving 4.5 million litres of compressed air per year.

Nathan Colbert, key account manager at Festo, commented: "The opportunity to work together on a completely new machine, from concept to proof of design, was an ideal opportunity to apply our powerful online sizing tools and use our pneumatics expertise to help Cerulean produce the optimal tube packer design."

HYGIENIC PACKING

The Cerulean FPS120s tube packing machine is designed for hygienic packing at speeds of up to 120 tubes per minute and incorporates the latest control and display technology. A user-friendly colour touch screen enables the user to control set up and packing options, and store all settings in a library for quick change over and later use. The touch screen supports multiple languages and can be configured for local operator preferences. Changing tube or carton size typically takes less than 15 minutes.

Shaun Toms, portfolio manager at Cerulean,

said: "Festo's diagnostic tools and analytical skills were key to achieving the most energy efficient design."

The imperative to deliver significant improvements in TCO led Festo and Cerulean to conduct a comprehensive review of every element of the machine – from component selection to running costs at designated outputs. Festo online tools were invaluable here.

Festo's Pneumatic Simulation Tool allows users to input the desired application parameters, such as number of cycles/minute requirement, tube diameter/length, positioning time, etc. It then identifies the optimum pneumatic cylinders, flow controls, valves and settings based on energy consumption, to deliver the most efficient options. The Pneumatic Sizing Tool can then be applied to refine the system design. This tool addresses aspects such as positioning time and CO₂ emissions.

"Over-specification is a common mistake in pneumatic systems," explained Colbert. "Festo's online assessment tools make it quicker and easier for designers to identify the best components for their application and refine their design, delivering both CAPEX and OPEX savings."

These initial design assessments showed that Cerulean could achieve immediate savings using standard products from Festo's core range, including VUVG-LK valves, DSNU cylinders and the MS Air Prep. Further efficiency savings were

achievable by reducing tube lengths and diameters, which decreases dead volumes and cycle times.

ENERGY EFFICIENCY

Cerulean invited Festo to undertake an energy efficiency survey on an original FPS-1 tube packer and compare the results with an equivalent survey of the prototype FPS120s.

Festo deployed its mobile measuring device, which enables quick and easy measurement of the actual flow and pressure values, and enables users to compare these against historical data or to view actual figures when implementing changes, such as inlet pressure. The survey for each machine was recorded over the same duration and a consideration was made with regard to machine cycles. Both machines were pressure regulated to around 4-5 bar after the measuring device.

The results proved that the FPS120s tube packer would offer significant TCO improvements over the old FPS-1 model, including a 48% improvement on maximum air consumption and an impressive 92% improvement on average air consumption. Assuming continuous 24/7 operation over 365 days with no downtime, Cerulean further calculated that the FPS120s could deliver a saving of 4.5 million litres of compressed air per year.

"In today's economic climate, manufacturers like us have a growing responsibility to become more efficient in order to compete in the highly competitive marketplace. This entails a programme of continuous improvement and innovation," commented Toms. "We wanted our next generation tube packer to address our customers' pain points around energy consumption and total cost of ownership. Festo's automation expertise was invaluable in helping us attain this goal."



PUMPS FOR PHARMACEUTICAL MANUFACTURING



Wanner International is to supply a range of 75 Hydra-Cell chemical process pumps to one of the world's largest pharmaceutical manufacturers. The company chose the Hydra-Cell Flow Chemistry and High Pressure Liquid Chromatography (HPLC) pumps because of their advanced mechanical and hydraulic design, with little ancillary equipment required, their high accuracy, and the technical support available.

The pumps will be installed in a new production line for transfer, blending and injection of saline solutions, alcohols and other salts, within an ATEX Zone 2 environment. They will deliver flow rates from 1-14,000 l/hr at a discharge pressure of 30 Bar [435 PSI].

Critical for Flow Chemistry and HPLC applications, the Hydra-Cell pumps deliver an extremely low pulse flow, without the need for pulsation dampeners, and with a predictable and controllable flow rate for a consistent process.

Paul Davis, Wanner International's managing director, commented: "When you are manufacturing lifesaving and life enhancing drugs, you can't let anything get in the way. These pumps are a perfect fit for this application. They will maximise the production line's efficiency and productivity, safely and reliably – and reduce costs."

Wanner International

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