ACHIEVING CAPEX AND OPEX SAVINGS

Cerulean and Festo have worked together to redesign the FPS-1 tube packer, improving energy efficiency and TCO

Food processors and packers are under increasing pressure to find cost and energy efficiencies. So, when packaging machinery specialist Cerulean decided to redesign its highly successful FPS-1 tube packer, high energy efficiency and reduced total cost of ownership (TCO) were key design requirements.

Cerulean worked with its long-term automation partner Festo to identify where CAPEX and OPEX savings could be achieved during the tube packing process. Together, they were able to optimise the design and performance of the new FPS120s to achieve energy efficiency improvements in excess of 90 percent, saving 4.5 million litres of compressed air per year.

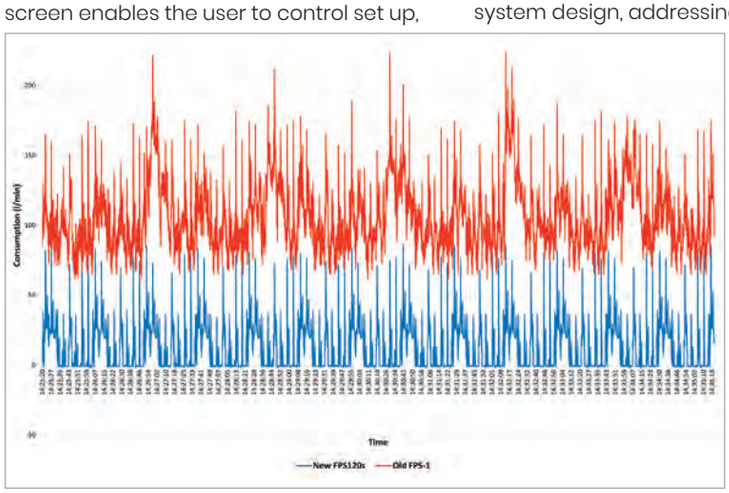
Nathan Colbert, Key Account Manager at Festo, explained: "The new tube packing machine presented an ideal opportunity to apply our powerful online sizing tools and energy audit services. Our consultative approach enabled us to understand Cerulean's goals and what capabilities the new packing machine needed to deliver. We then used our pneumatics expertise to help Cerulean produce the optimal tube packer design."

The new 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, 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, allowing the FPS120s to meet the flexible requirements of a modern tube making facility.

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

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

Festo's Pneumatic Simulation Tool allows users to input the desired application parameters, such as number of cycles/minute, tube diameter/length and positioning time, and then identifies the optimum pneumatic cylinders, flow controls, valves and settings based on energy consumption to deliver the most efficient options. Their Pneumatic Sizing Tool refines the system design, addressing aspects such as positioning time and CO_2 emissions.



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 to decrease dead volumes and cycle times.

To further inform the development process, Cerulean invited Festo to undertake an energy efficiency survey on an original FPS-1 tube packer and compare the results with the prototype FPS120s.

The surveys used Festo's mobile measuring device, which enables quick and easy measurement of flow and pressure values. Users can compare the values against historical data or use actual figures when implementing changes such as inlet pressure. The flow measurement data can be used to measure and identify deviations from the ideal state, including unexpected flow rate, pressure fluctuations and pressure losses. Each test result 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: it delivers a 48% improvement on maximum air consumption, and an impressive 92% improvement on average air consumption. Cerulean have calculated a saving of 4.5 million litres of compressed air per year based on the machine running 24 hours a day, 7 days a week, 365 days a year (but not allowing for any downtime).

Shaun Toms, Portfolio Manager at Cerulean, said: "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."

The FPS120s tube packer is available now for immediate order.

Festo
www.festo.co.uk
Cerulean
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