

Sullair RSVS vacuum pump reduces power costs \$26,500 a year for Kentucky plastics manufacturer

Hopple Plastics is known nationwide for its innovative packaging and materials handling designs, which range from featherweight blister-packs to heavy-duty dunnage trays. Essential to the thermoforming process that produces them is the capability to produce a consistently high vacuum. To upgrade this capability, the company recently installed a new vacuum system that is itself an innovative design: the Sullair Series 20 rotary screw vacuum system (RSVS).

Until last February, Hopple Plastics had been using a combination of reciprocating and rotary vane vacuum pumps requiring more than 150 hp to provide the necessary vacuum for thermoforming operations at its Florence, Kentucky facility.

By consolidating its pump operations into a single rotary screw vacuum system requiring less than 50 bhp at design vacuum level the company not only accomplished its primary goal of cutting maintenance costs; it also drastically reduced power costs while increasing volume capacity, and significantly improved quality control.

Reduced maintenance costs

Hopple Plastics produces thermoformed products for the packaging materials handling and display industries, industrial manufacturers, food container suppliers pharmaceutical companies and hospitals. Customers include Proctor & Gamble, Kenner Toys, Huffy Bicycles and American Greetings. To meet the demand for its products the plant operates three shifts a day, five days a week.

Creating everything from a cushion to keep microchip pins from bending to a shipping tray that handles giant compressors, Hopple produces custom designs on 20 major thermoforming lines, each of which has vacuum process requirements. The high cost of keeping multiple vacuum pumps operational was the original reason for Hopple Plastics' decision to consolidate its vacuum producing operations.

According to plant engineer Carl Vollmar, maintaining four main pumps in the compressor room and thirty smaller individual pumps at work stations throughout the plant was a full-time job. "At least two pumps were always in some stage of repair," he said. "One man worked on pump maintenance alone. Now, with the Sullair system in place, he's been freed up to go back into the production area."



Hopple Plastics, Florence, Kentucky, manufactures thermoformed products for the packaging, materials handling and display industries, industrial manufacturers, food container suppliers, pharmaceutical companies and hospitals.



This Sullair Series 20 rotary screw vacuum system is expected to save Hopple Plastics \$26,500 a year in vacuum systems power costs. Discussing the installation with Plant Engineer Carl Vollmar is Rick Lee, a representative of the equipment distributor, HRC Compressor Engineering.

Significant power savings

The company was also interested in another big bonus that the new Sullair unit provided: significant power savings. "One of the advantages of the rotary screw is that it requires much less brake horse power at operating vacuum than other types of vacuum pumps," said Rick Lee, a representative for HRC Compressor Engineering, the equipment distributor. Based on current operating conditions, Hopple Plastics can expect to save \$26,500 a year in vacuum systems power costs. This represents a 74% annual cost reduction for vacuum system operation which adds up to a machine payback period of just eight months.

Higher vacuum level

The thermoforming process involves placing a heated sheet of plastic from 5 mils to 350 mils thick over a forming area ranging from 50 to 75 inches. Depending upon the material, up to 50,000 pieces per hour are produced at the plant.

The level of vacuum available directly affects the quality of product, and Vollmar believes that the RSVS system has contributed to enhanced product at Hopple Plastics. In contrast to the vacuum level of 18 inches Hg provided by the company's former 34 pumps, the new Sullair unit has a capacity of 780 acfm and provides a vacuum level of 26 inches Hg.

"Suction pulls the plastic onto the mold, and with higher vacuum, you get sharper definition," Vollmar said. "Product quality is better. And there are fewer rejects- so overall quality control is improved."

Reduced oil carryover

In a Sullair RSVS system, the oil cleanup system is built into the package. The air spirals in the tank, and due to centrifugal action, large droplets of oil fall to the bottom of the tank. The finer oil mist is collected by the coalescing separator in the unit. By reducing oil carryover, the RSVS helps Hopple meet stringent EPA regulations and also contributes to a cleaner environment for plant personnel.

Sullair dependability

The rotary screw unit in the RSVS is basically the same as that in the Sullair rotary screw compressor. Sullair pioneered the development and application of this technology. In Sullair rotary screw design, there are only two major moving parts: the rotors, which roll, rather than slide. For all practical purposes, a Sullair rotary screw mechanism has no wearing parts. The key is simplicity. The result is dependability.

Firsthand knowledge of Sullair dependability influenced Vollmar's decision to purchase the RSVS. In addition to this new system, other Sullair equipment in the plant includes four Series 25 rotary screw air compressors and two PSII refrigerated air dryers. One of the compressors is 12 years old, runs 120 hours a week and has never required air end repair or exchange. "Past experience is what steered me to Sullair," said Vollmar about his choice of the RSVS.

"Knowing that we can get 75,000 hours out of an air end makes me feel that I've made the right decision."



Machine operator removes a thermoformed shipping container for rectangular automobile headlights from a rotary vacuum press.



This 12-year-old, 100 hp Series 25 air compressor at Hopple Plastics has run far more than 75,000 hours and continues to operate with its original air end.

