CASE STUDY
GLASS INDUSTRY

Rapid payback for world's largest glass bottle manufacturer with new Hibon vacuum system

The world's largest glass bottle manufacturer has installed a new VP20 centralised vacuum system from Ingersoll Rand, Hibon, which is set to pay for itself in energy savings alone in less than five years.

Supplied via a fully comprehensive five-year leasing and maintenance arrangement, the solution comprises two dry vacuum blower packages with vacuum flow of 3600m³/h. These provide round-the-clock vacuum to support the bottle forming production process at one of the company's 80 global production sites; a 24-hour facility that produces 280,000 tonnes of glass each year.

Hibon was approached by the company to assess the performance of its existing, oil-sealed rotary vane pump vacuum installation. While the system had offered reliable performance, it was ageing and no longer able to offer the required energy efficiency and durability required to support 24/7 productivity.

Overview

Customer
The world's largest glass bottle manufacturer

Location
France

Application
Centralised vacuum system for bottle forming

Solution
Ingersoll Rand Hibon VP20 & 22 vacuum pumps

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Jean Philippe Foissy,
Vacuum and Pressure Manager, EMEA

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The initial trial

Following an initial visit, the Hibon technical sales team assessed that the installation was likely to require significant maintenance and upgrade to remain operational and therefore recommended the initial trial of one VP20 unit, to enable the company to assess its performance.

During this trial period, two of the existing vacuum pumps failed and, had it not been for the trial Hibon unit, production would have been compromised severely. As a result, the customer chose to replace two of the vacuum pumps with the Hibon VP22 solution.

A comprehensive solution

With the two new vacuum pumps installed, the customer continued to look for additional efficiency improvements from its vacuum system that would help improve overall production speed, reduce energy consumption and improve the surface quality of the finished glass bottles.

Key to the specification of the new solution was to determine the precise level of vacuum that was required to support the bottle forming process, while helping to lower energy consumption.

The Hibon team calculated that the application was producing a higher vacuum level than was actually necessary for the process, resulting in larger, more energy-intensive machines being used. By adjusting the vacuum level to meet the real plant demand and therefore decreasing the absolute volume flow as a result, the power requirements could be reduced significantly.

As a result, the customer chose two further VP22 units from Hibon, able to run from 2500 m3/h to 4000 m3/h at full speed at 110 kW – a 20% performance improvement on other solutions considered.

Oil-free

The intelligent, VP vacuum package has contact-free rotors and is oil and water-free, meaning all parts in contact with the gas are dry, avoiding any likelihood of contamination in the process.

The unit uses only mechanical cooling and the oil-free technology requires less power to maintain a constant flow and vacuum level.

The system leased to the customer was designed, developed and assembled as a package including a large inlet filter with demister and a variable frequency drive for the 110-kW motor. The package was integrated by the customer with automation to match volume flow to plant demand.

Jean Philippe Foissy, Hibon Vacuum and Pressure Manager, EMEA concludes:

“With the production facility running 24 hours a day, its demand for quality, dependable vacuum is significant. Our aim was to not only improve the energy performance of the complete system, but to also make the vacuum level as stable as possible.

Thanks to the intelligent design and frequency convertor, we are able to continually regulate the motor speed to help stabilise the vacuum level to meet changes in production demand.

We were able to demonstrate that more vacuum was being generated than the process actually required and, the customer will shortly benefit from the reduced energy costs and increased reliability once the integration works are completed.”