ROTARY VANE VACUUM PUMP SYSTEM PROVIDES BETTER QUALITY PACKAGES WITH LONGER SHELF LIFE

A Midwest packaging company, that packages bacon, replaced their oil recirculating, water cooled vacuum pumps with Busch rotary vane, air-cooled vacuum pumps. As a result, the packaging company was able to reduce their maintenance costs by one half, provide a better quality package and improve their work environment.

The packaging plant originally had 12 water-cooled vacuum pumps, which provided vacuum to their eight packaging machines. These pumps were getting old and beginning to cause problems. They leaked oil and overheated; there was excessive oil vapor exhaust; and parts for the pumps were becoming obsolete. Furthermore, the pumps were located in a power room, 130 feet away from the packaging machines. This can cause a pressure drop in the piping, resulting in inadequate vacuum levels, which can affect the quality of the package. Because of high oil usage, low vacuum levels and very high maintenance, the company decided to find a new solution.

Recently they had bought some packaging equipment at auction, which contained some Busch R5 0630 oil recirculating vacuum pumps. These pumps are air cooled, reach an end vacuum of .5 Torr, are quiet, and use less oil. Based on these advantages, they purchased seven Busch R5 0630 rotary vane vacuum pumps to replace the 12 original pumps. For even more efficiency, they decided to go one step further and design a vacuum system. The system consists of the seven vacuum pumps, an electrical panel, and PVC piping, leading from the seven pumps to the eight packaging machines. The seventh pump is designated as a header pump and serves as a backup pump when another one is down for servicing, maintenance, etc. They chose Schedule 80 PVC piping because it is very light and easy to work with. It does not bend, stays level and does not corrode like steel. They also have PVC valves with O-rings to provide a more effective seal for better vacuum.

Vacuum pumps in glass enclosure

R5 Series vacuum pump

What makes this vacuum system unique, however, is its location and enclosure. It is located on a 9'wide x 60' long mezzanine, complete with stairs and glass enclosure. The enclosure will be part of a catwalk, which is currently under construction, that will stretch throughout the entire plant. The glass enclosure is climate controlled with two exhausts to the outside at the end and two inlets in the middle, which keeps the room ventilated. It never gets hotter than 80°-90°, which is a better environment for the pumps and the crew who maintain the system. By keeping the pumps above, the pumps remain dry when the room below is hosed down. In addition, it frees up space and the noise has been greatly reduced. Stainless steel trays are placed underneath each pump to avoid contamination with the packaging process. The glass enclosure keeps everything looking clean and makes it easy to monitor the pumps. The Busch pumps are checked three times a day; the oil is checked and cleaned every 500 hours and the filters are changed once a week. They also do static checks on the piping, which has gauges for easy monitoring and troubleshooting.

Employees at work with the mezzanine above

With the Busch vacuum pumps, the company has been able to improve their packages by pulling a deeper vacuum of 28-29" Hg, compared to 24-25" Hg, which is what they were getting with their water cooled pumps. A better vacuum reduces the residual in the package to less than .6%. The pumps have also cut their maintenance costs significantly. Since installation of the system in the spring of 2000, they have had no problems. The plant engineer said, "If you start with a reliable vacuum pump and properly maintain it, you will increase your production and produce a better quality product."

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