Metallurgical High Vacuum

Exceeding the customer's expectations is always the goal for this remanufacturer of vacuum process equipment.

By Tim Byrd

Giving an old idea new life is one of the great things about manufacturing. Geoff Humberstone, founder of Metallurgical High Vacuum, took a look at the filtration process used in vacuum furnace pumps, and, together with the rest of his company, gave it a tune-up.

"In the past," said Humberstone, "vacuum furnace pumps had a separate filtration system, where the user would plug the filtration system into the pump to circulate the oil and clean it. We constructed a built-in oil pump, integrated within the vacuum pump to eliminate particulate and acid elements. The vacuum pump is completely reworked, allowing full pressure lube to the critical hinge-bar/tang interface. The result is better lubrication internally than with a standard pump, and it's filtered, so you can get 40 to 50,000 hours before you have to do any major rebuilding."

A remanufacturer of vacuum process equipment, the company was founded in Holland, Michigan, in 1981 by Geoff Humberstone as a consulting business, selling engineering expertise to the high-vacuum industry. The business was expanded in 1985 to provide in-depth service, design, and engineering on a wide range of high-vacuum equipment, including re-building of vacuum, booster, and diffusion pumps and blowers.

Originally a Stokes factory-authorized rebuilder, Humberstone and co. decided to buy a few machines and start making their own parts. Eventually, the company was able to design the complete pump, with enough machining capabilities to machine the necessary parts in house.

"We're one of the few rebuilders who can do all the machining on the premises," says Humberstone. "It makes a difference in delivery, and you get a higher quality product because you have more control."

The company also makes brand new vacuum pumps from scratch.

"We're the only ones making those in the United States, using castings bought in Ohio and Indiana," said Humberstone. "The market is good—people want to keep rebuilding—and there are many machines coming in from offshore. But we have built-in filtration on our pumps that they don't have. We can get much longer life. The user may pay more in the beginning, but it pays off in the end."

One variant of this system is when a customer brings in a pump for rebuilding. Metallurgical High Vacuum can add the pressure filtration package to the pump. The company has an excellent eight-year track record with that process, with close to 30 pumps running on machines rebuilt using this filtration package.

"A couple of customers have got eight or nine pumps, all with our filtration system, and they're all getting longer life. We've also just come out with a sensor package that you can add to

that pump to remotely look at all the pump operating parameters (is the pump running, oil temperature, oil level). You can access a small PLC on the pump from your plant Ethernet system. If it's plugged into the Ethernet IP network in your facility, you can access it from a smartphone."

The professional staff, which includes metallurgists, engineers, and factory trained machinists and technicians, is able to remanufacture most brands and models of vacuum equipment, including reverse engineering and manufacturing of many hard-to-get components to keep your equipment in service longer and help keep costs under control.

For the pump rebuilding, the company uses professional mechanics from automotive dealerships. "They seem to be the best qualified for the kind of things we do," said Humberstone. "It takes one to two years to train them. In addition we have three CNC and two full-time manual machinists to make/modify pump parts and a full-time welder who re-tubes diffusion pumps using silicon- bronze filler with a MIG process."

To accommodate all this growth, the company was relocated to a new 5000-ft^2 plant in Douglas, Michigan in 1985. With a fast growing reputation for high quality work and creative problem solving, the company soon outgrew this facility, and now occupies a fully climate-controlled 16,000-ft^2 plant, built in 1996, on a 17-acre site near Fennville, Michigan. This new plant features an 80 x 200-ft open bay with a 30-ft ceiling height and two 10-ton overhead cranes with access to the entire building. A 30 x 60-ft building was added to the campus in 1998 to warehouse cores and fixtures. As this growth continued, a new, modern, 2,400-ft^2 business office and engineering center was completed in 2006, equipped with the latest 3-D CAD system. Another 30 x 60 building was added in 2013 for additional core storage.

Other products and services include vacuum piping and manifolds, flexible connectors, vacuum valves, custom oil filtration systems, helium leak testing, and field repair. Rental pumps and blowers are also available.

FOR MORE INFORMATION: To contact Metallurgical High Vacuum, visit www.methivac.com or call 877-787-9880.