Written by Rick Carter, Executive Editor
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This Illinois-based manufacturer has built a global niche by producing custom-fitted bearing isolators, 24-hour turnaround and top-tier customer service.

When it comes to discrete manufacturing, few are more genuinely discrete than Inpro/Seal Co., the Rock Island, IL-based manufacturer of bearing isolators. The company is so discrete it literally often makes only one part at a time. That's one unique part, not one of a batch. And, no, Inpro/Seal is not two guys with a lathe and some metal stock operating out of a garage. Inpro/Seal is 80 employees working comfortably in a 12-year-old, 84,000-sq.-ft. air-conditioned facility turning out more than 400,000 bearing isolators annually, and generating roughly $30 million in annual sales. The company, recently acquired by Waukesha Bearings Corp., a Dover company (see Sidebar), has been at it since 1965. Today, it claims to have 4 million isolators installed in rotating equipment around the world.

Assembler Carol Ponce puts together an Inpro/Seal bearing isolator, one of 300 she’s likely to complete on a typical work day.

What's the catch? This too, hinges on that word "unique." The bearing isolator began as a pump retrofit part with a unique purpose. Essentially a bearing protection device, it was designed by company founder Dave Orlowski to extend the life of pump bearings by sealing out the elements that destroy them—
water, particulates and other undesirables
—and sealing in lubrication. Early versions lasted 20 years, quickly saving thousands of dollars in bearing maintenance and replacement costs. New ones, now standard equipment on

hundreds of pump and motor models built in the U.S. and around the world, can last virtually forever, as can those retrofitted to older equipment.

Success for this novel product wasn't instant. A big challenge was (and is) the fact that production of its many variants cannot be 100% standardized. Often, one size fits just one—*not all* .

"We are very much an engineer-to-order and customer-service-based company," says Neil Hoehle, director of sales and engineering. "We look at applications to see what the best possible solution is for that application, and provide it to the customer in the same time frame or less that he could order something out of a parts catalog from somebody else." This literally means, for example, that an order received by noon or even later on any day can often be in the customer's hands the following morning. Seeing that this valuable service can be offered successfully—*and repeatedly*—has been an ongoing mission for Inpro/Seal and its employees.

Hoehle (pronounced "Hailey") started with Inpro/Seal 28 years ago. He notes that while much has changed in bearing isolators in this time—*the product's recognition, along with its uses and designs* —the lack of standardization remains. Even today, most of the company's 75,000 skus (some 50,000) are made only in quantities of one or two, about 30% of which are not stock items. Numbers like these suggest a few things: that Inpro/Seal charges a premium for its products; that its products are of the highest quality; and third, that the customer service Hoehle referenced is untouchable. As it turns out, all three are essentially true, with particular emphasis on service.

"Quite often, we were dealing with companies that had equipment down for repair or emergencies and needed very quick turnaround," says Hoehle of the company's formative years. "That was a great opportunity for us to allow the engineer-to-order function and quick response to come together. When companies need us the most," he says, "we try to be there." This modestly stated mission translates to not only the same-day-shipment promise for many of its products, but on-site installation assistance for big jobs or companies in dire straits, whether in Illinois, Houston or the Pacific Rim.

The quick turnaround

While an Inpro/Seal bearing isolator is not overly complex, it nonetheless requires machining, mostly in bronze, on one of the company's 27 CNC machines (25 lathes, two mills) or 10 manual lathes, followed by final assembly, inspection and shipping. For never-before-made parts, accurate on-site measurements are required, usually taken by the customer, which are

transmitted to the Rock Island facility. They are then translated into either a new CNC program or a blueprint given to a machinist who will make the part manually.

Today, Inpro/Seal can turn orders around in 24 hours or less for 80% of its annual output. Some are delivered from stock the company builds and holds for contract customers; the rest are newly made when the order arrives. Significantly, when new parts are needed, the manufacturing process that once took an average of two hours per unit now takes about 15 minutes. Practically everything else in the process takes longer, including waiting for Fed-Ex pick-up.

But quick does not mean easy. "This is something we've worked at for years," says Hoehle. "It wasn't like we sat down and wrote a plan and there was a magic bullet. It takes continuous cooperation and communication through distribution channels, regional managers, inside customer support, engineering, manufacturing and the manufacturing engineers. Now we've gotten pretty good at it," he says, "but it's really more of an art than a science." One advantage, he adds, is that because Inpro/Seal only makes bearing isolators and a small selection of related products, "we can focus all of our resources on that."

The way team members deliver on the company's 24-hour- turnaround promise is really the "art" that Hoehle talks about. For parts that are routinely measured in tolerances of thousandths of an inch, it's critical that everyone involved be on the same page. Some companies might need rigid production directives to do that, but Inpro/Seal found another way. "We are integrated through practice, not through policy," says Hoehle, explaining that his operation is built on valued experience and worker autonomy—*not top-down orders or even regular meetings*. "We have irregular regular meetings," Hoehle quips, admitting that many would deem such a strategy untenable.

"For us to have quick response," Hoehle adds, "people must be allowed to operate in a fairly broad zone of freedom. They can't be waiting for a memo or a decision or having to check with somebody else. At the same time, you want them to know what they need to do to satisfy the customer, so we define kind of loosely where the gutters are, if you think of it as a bowling alley."

Each bearing isolator is, of course, not completely unique. Common design features exist that allow for a degree of uniformity in production as well as the use of standard work orders that cover much of the production process. Also, modern technology now enables a large portion of

the engineering groundwork—*compiling standard design information, translating it to CNC programs and storing it for later access* —to be completed ahead of time.

"One thing that really helped us achieve 24-hour turnaround is when we started using standardized 3D modeling templates," says engineering manager Mike Becker. "Basically, we have a seal that can vary in different sizes, but instead of drawing it from scratch every time, we created programs where we enter the dimensions, and the program builds a to-scale print automatically from that. I wrote programs for the majority of the models we use, so instead of taking two hours to do a part from scratch," he says, "we now do it in less than 15 minutes." Becker adds that having completed engineering drawings for 80% of the company's output means that "we probably have between 1500 and 2000 parametric programs built into our engineering system."

Becker and his five-member staff stay involved up front to keep the engineering process on track and moving forward. They oversee all incoming orders, which involves confirmation of measurements, making engineering revisions, handling machining and programming issues, and sometimes, simply talking to customers. "Customers can get me on the phone directly," he says, "and these calls often help get things done quicker."

About Waukesha BearingsFounded in 1946, Waukesha Bearings joined Dover in 1977. The company is a leading designer and manufacturer of hydrodynamic bearings and magnetic bearing systems for high-performing turbomachinery in oil and gas, power-generation, marine and industrial markets. Typical applications include gas-, steam- and hydro-turbines, centrifugal gas compressors, gearboxes, pumps and motors. Headquartered in Pewaukee, WI, Waukesha has facilities in the U.S., UK, Mexico, Russia, India and Japan, and localized sales representation around the world. The acquisition of Inpro/Seal in December 2009 added an adjacent product to Waukesha's custom-engineered bearing solutions for the oil and gas and power-gen markets. The companies share a real commitment to providing innovative solutions and superior service to their customers. As the originator of bearing isolator technology, Inpro/Seal brand has a strong history, especially in North America. The addition of Waukesha's global footprint provides significant opportunities for growth internationally, allowing Inpro/Seal to better serve a global customer base with customized bearing- and system- protection products.

The human touch

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