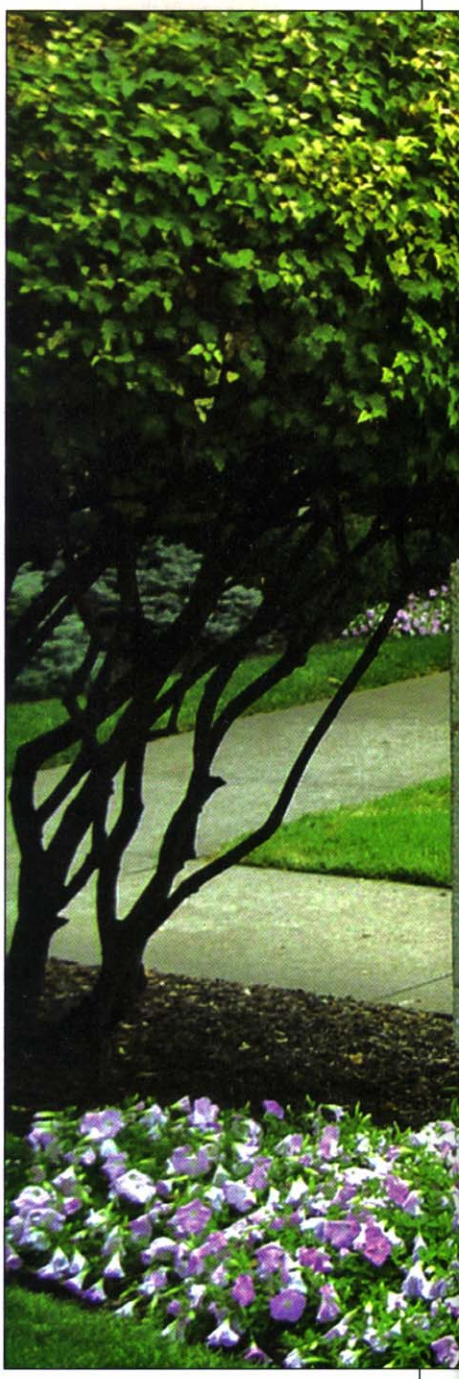
Forever Is A Long Time



Three decades and counting, these Midwest operations continue to save maintenance $$$ through state-of-the-art bearing protection.

By Jane Alexander, Editor

Grain Processing Corporation (GPC), headquartered in Muscatine, IA, was founded in 1943. Still privately owned, today it is a leading manufacturer and worldwide marketer of corn-based products. Its state-of-the-art plant sites in Muscatine and Washington, IN turn out a number of things, including: ethyl alcohol and various ingredients for food, personal care, pharmaceutical, industrial and animal feed products, as well as superabsorbent polymers and pet-related needs. These products touch the lives of millions—but it takes lots of reliable process equipment to meet the demand. Ensuring reliability hasn't always been as easy as it is today.

A historical perspective

Back in the 1970s, GPC began experiencing a high pump failure rate. The cause? Bearing failure from water contamination due to frequent hose-downs. For help, the company turned to Inpro/Seal, of Rock Island, IL.

Inpro had been working to develop labyrinth seals based on API specifications, but had found such a design, as it existed, ineffective in preventing contamination from water spray. Months had passed in the development process, during which 12 or so modifications of various designs were tried. Each failed to prevent water contamination and all were rejected. The Inpro engineers didn't give up, though. They kept at it and finally brought out a design incorporating an extensive interface between rotor and stator. Test results were encouraging, so the design was honed and modified many times over into

what was to become known as the Inpro/Seal Bearing Isolator.

That original bearing isolator design consisted of two main parts: a stator and rotor, press-fitted into a bearing housing of rotating equipment. Through a combination of centrifugal force and gravity drain, lubrication was kept in and contaminants kept out of the bearings. Since the rotor and stator didn't touch, there would be no friction and no wear.

GPC personnel were intrigued by the potential this new device held for their operations. The company ultimately agreed to a six-month pilot program in which one bearing isolator was installed on a single pump. What a trial period this was! Direct parts savings from this one pump alone exceeded $27,000.

Fast-forward to now

Inpro's bearing isolators were by no means a flash in the pan. These products are still found throughout GPC's plants–on some 3,000 installed pumps, including the one shown in Fig. 2. More important is the fact that maintenance on this sizable pump population has been reduced to only a few units per week.

Fig. 1. Grain Processing Corporation counts on the reliability of its process equipment to help meet the demand for its products.

"I don't know what you call these things or how they work, but we want two of 'em on every pump!"

Today, at GPC, if a pump or power frame needs to be updated or repaired, it's sent to the repair shop. In any case, the unit also is expected to be retrofitted with the most up-to-date Inpro/Seal bearing isolator technology available (see Sidebar). In addition, the company specifies that all new pumps, regardless of brand, are to be equipped with the latest Inpro design installed by the OEM. That's because, over the past few decades, GPC has continued to realize the benefits of this technology through reduced maintenance costs and maximized uptime. There are other savings, too. Use of bearing isolators, with their absolute lube retention capabilities and elimination of contamination concerns relative to the bearing housing, also has allowed GPC to utilize more economical synthetic lubricants on its equipment.

As an example of the benefits GPC has seen over the years, take the case of several pumps that came into the repair shop. The bearing isolators on these units had been in service 24 hours a day, seven days a week since being installed more than 20 years prior. The pumps had been removed from their power frames to allow upgrading to Inpro's latest VBXX-D design. Interestingly, the old bearing isolators (as shown in Fig. 3) were still found to be operating flawlessly—*in fact, the pumps they protected are what had worn out!*

Just put 'em on

As "marriages" go, the GPC/Inpro model appears to be an especially strong one. Looking back at his company's 34-year relationship with GPC, Dave Orlowski, president and founder of Inpro/Seal, maintains that both parties are just as important to each other today as they were in 1972, when it all began.

"I'll never forget what someone at Grain Processing said to me back when we first started working with them," Orlowski smiles. "It was something along the lines of, *'I don't know what you call these things or how they work, but we want two of 'em on every pump!'*"

But pumps were just the first step. Over time, GPC also has been standardizing on high-efficiency IEEE - 841 electric motors that incorporate Inpro bearing protection.

Fig. 2. One of the 3,000 installed pumps that keep GPC's operations up and running

Fig. 3. Despite 20 years of 24/7 service, these Inpro/Seal bearing isolators were found to be working flawlessly–even though the pumps they protected had worn out.

According to Dave Crosley, GPC maintenance supervisor, "Our use of bearing isolators has been so successful that about four years ago, when we started investing in IEEE-841 motors, we made sure that the each and every premium efficiency motor we purchased was protected by Inpro/Seal. The end result for us is improved motor reliability, efficiency and performance and the elimination of the major cause of motor failure–bearing contamination."

On occasion, GPC also has ordered bearing isolators on its NEMA Premium motors. *(Such protection is not yet standard with these motors.)*

Crosley further notes that GPC has begun to install Inpro's Air Mizer™-PS, a shaft sealing system on the cooler feeders used in its feed house.

For more information, circle 2 or visit www.MT-freeinfo.com

Next-Generation Bearing Isolators

Based on its successful VBX series, Inpro/Seal's VBXX-D combines extensive R & D, laboratory trials and field-testing with direct end-user feedback. The end result is a bearing isolator with upgraded design features, advantages and benefits that provide levels of protection previously unavailable in any kind of bearing protection device.

Enhancements and improvements include: the best possible design of "wrap around" rotor-stator interface for contamination exclusion, the next generation in design for oil retention with a tried and proven vapor blocking O-ring.

First introduced as a premium upgrade, the VBXX-D has become Inpro/Seal's standard model. Before its introduction, when rotating equipment was cycled on or off, the heating and cooling of the bearing enclosure drew contamination from the outside environment into contact with the bearings. The VBXX-D, with its patented Internal Vapor Blocking Ring, provides a barrier to this contamination.

By maintaining pump bearings under optimal operating conditions, rotating equipment has proven to last five - ten times longer than previous. Operating and maintenance costs are significantly decreased, while productivity and reliability are significantly increased.

Protected bearings have proven to run 150,000 hours (17+ years) eliminating the need for unneeded and expensive, repeated maintenance and repair. Documented cases show that a plant can easily double the mean-time-between-failure (MTBF) of rotating equipment and thereby reduce maintenance costs by at least half, and then enjoy an extremely high Return On Investment (ROI).

For more information on these products and the types of industries and applications where they could offer value, visit www.inpro-seal.com