

*Same-day, not some-day shipping, and overnight deliveries played a key role.*

# Putting Hurricane-Ravaged Operations Back In Business

**A**s storms go, last year's Hurricane Ike was a particularly nasty one. On September 5th, 2008, Ike was a Category 4, packing winds of up to 145 miles per hour and carrying the potential to cause the highest storm surge in history. Thankfully, by the time he made his final landfall at Baytown, TX, in the early morning hours of September 13, he had dropped to a Category 2. Still, over the course of his long, deadly rampage—which is said to have resulted in 112 confirmed deaths and 34 missing in the United States—Ike left almost 30-billion dollars of destruction in his wake. Today, this hurricane ranks as the third costliest ever to have hit the U.S. Recovering from it has not been easy for anybody or any company with the misfortune to have been in this monster's path. That includes some of the Texas Gulf Coast's prized process industries, where, true to form, Ike showed very little mercy.

Jane Alexander, Editor-In-Chief  
with  
Rick LaBove, Inpro/Seal Company

Around the Texas “Golden Triangle” region of Beaumont, Port Arthur and Orange, Ike’s storm surge caused at least six petrochemical plants and two refineries to completely shut down. Before they could start up again, significant repairs had to be made and most machinery rebuilt—*practically every piece of rotating equipment in these facilities was ruined.*

## A massive challenge

The maintenance teams at these eight sites faced a particularly daunting challenge in getting their operations back up and running as quickly as possible: They had to deal with thousands of pumps, motors, drives, gearboxes and steam turbines that had been submerged in salt water for a period of 12-24 hours. With that amount of saltwater exposure, not much was salvageable.

Lost production due to their unscheduled shutdowns would clearly cost these plants vast amounts of money and—in the case of the refinery operations—help lead to stiff price increases for consumers. That couldn’t be tolerated for very long. Thus, managers of these eight shut-down facilities, working closely with maintenance teams brought in from operations across North America,



**Rick LaBove, Inpro/Seal (Left), with Stewart Shoefstall, Flowserve (Right)**

decided that the best way to get their equipment up and running was to completely rebuild everything with new parts—which would give the equipment the same specifications as new. If something could not be rebuilt, it would be replaced with a totally new item.

With its ability to repair, rebuild and/or replace as a single-source supplier, Flowserve Solutions Division (FSD) was retained to help return these sites to operation. FSD immediately began sending in personnel

## The Inpro/Seal – Flowserve Alliance

In 2004, Flowserve’s Flow Solutions Division entered into an alliance agreement to become a select distributor and begin marketing Inpro/Seal bearing isolators. This ongoing alliance was created to provide customers of both companies with the benefits of collective strengths and resources, including products and superior service. Today, the alliance continues to offer end users effective, reliable solutions that improve reliability and reduce total costs.

Privately held Inpro/Seal produces and markets a single product, the bearing isolator, of which there are 65 variations. A recognized leader in bearing isolator technology, the company has an installed base of well over four million units around the globe. Today it continues to invest heavily in the future with additional equipment to meet a projected quantity of 100,000 units per month. The Inpro/Seal facility in Rock Island, IL is the largest of its kind devoted exclusively to the engineering, research, testing, marketing, support and manufacture of bearing isolators. All production is conducted under stringent ISO 9001 certification.

In order to maintain the same-day shipping capability referenced in this article—a *no-extra-cost*

*option*—Inpro/Seal maintains a data bank of over 60,000 designs. Specially engineered, these designs contain drawings for every make, model, size and shape of every type of rotating equipment used in industry. In the rare event that it would not have a required design, the company’s highly sophisticated computer-aided equipment, combined with extensive process know-how allows them to develop what’s needed within hours.

With operations in 56 countries, publicly held Flowserve (headquartered in Dallas, TX) is one of the world’s leading providers of fluid motion and control products and services, including engineered and industrial pumps, seals and valves and a full range of related flow-management services.

As both companies have a strong presence in chemical and refining industries, their alliance agreement allows Flowserve to enhance its ability to improve the reliability of rotating equipment and expand its reach by offering other rotating equipment accessories. This gives end users more opportunities to increase the mean-time-between-repair (MTBR) and decrease the total life-cycle cost of their rotating equipment.

## Off-the-shelf products could not be used. Each device was to be produced as a custom order for a specific piece of machinery.

and shipping out damaged machinery to repair facilities across North America for cleaning, sandblasting, painting and replacing all internal parts with brand new as detailed—*whatever it took*.

Interestingly, at this point, the damaged facilities decided that as long as the equipment had to be taken apart, it would be a good time to install bearing isolators in units that didn't already have them. So, when it came to repairing, rebuilding or replacing their pumps, motors and steam turbines, no matter what sealing method was previously used (lip, contact, face, dual face), it was specified that they be replaced with bearing isolators. If bearing isolators had previously been installed on the equipment, they were to be replaced with new ones. If any of this equipment was to be replaced in full, bearing isolators were to be included.

Even under normal circumstances, responding to the demand for thousands of in-stock bearing isolators in such a short period of time would not be easy for a supplier. However, the urgency and scope of these particular Gulf Coast projects would make fulfillment far more difficult. That's because off-the-shelf products could not be used. Each device was to be produced as a custom order for a specific piece of machinery. When the plants and refineries checked into it, they found that Inpro/Seal was the only company in the world that would be able to manufacture and deliver the necessary quantity of these special-order bearing isolators in the specified timeframe. And it did—*overnight, by providing same-day shipping in almost all instances*.

### The value of overnight delivery

To understand the situation in Texas, some background information on bearing isolators is in order. Thirty years

ago, in his quest to find a positive, permanent means to protect bearings while enhancing and extending the service life of rotating equipment, David Orlowski developed the world's first bearing isolator—a *unique, compound labyrinth seal comprised of a unitized rotor and stator that do not contact each other*. He patented the device in 1977, the same year he founded Inpro/Seal, coining the term "bearing isolator" in the process.

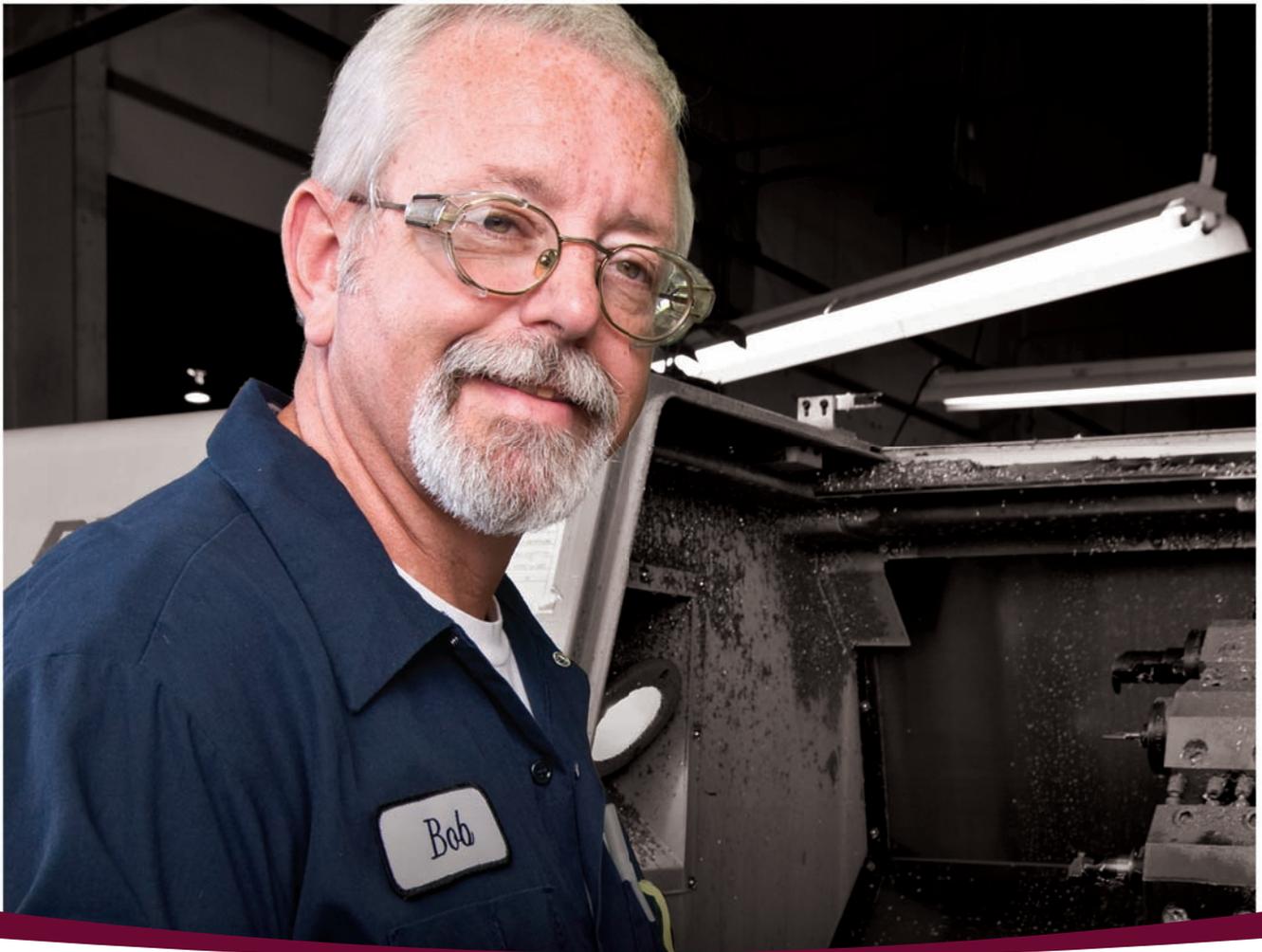
Prior to the advent of the bearing isolator, bearing protection was limited to contacting seals such as lip and face seals that carried (and still do) short, unpredictable service lives—*often as few as 1000 hours*. With their 100% failure rate, two things end users truly could count on were catastrophic equipment failure and downtime.

From day one, Inpro/Seal realized the importance of fast delivery. As he had operated a successful pump repair business before inventing the bearing isolator, Orlowski knew that when it came to vital parts, very few plants could wait until "tomorrow." That's especially true if you're a shut-down process plant—*and your downtime costs run as high as \$87,000 per hour*.

Evidently, Inpro/Seal's commitment to quality products and fast delivery has helped make a difference down in the Texas Golden Triangle. As of January 1, the eight hurricane-ravaged petrochemical and refinery operations described in this article were back online. **MT**

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