

Service Solutions

Refinery Solves Vintage Pump Replacement Application with "Drop-In" Replacement Pump

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PRO Services™ Project Engineers work with customers and PRO Services Centers to solve our customers pumping problems by analyzing pumping systems and providing turnkey solutions that make commercial sense.

Problem:

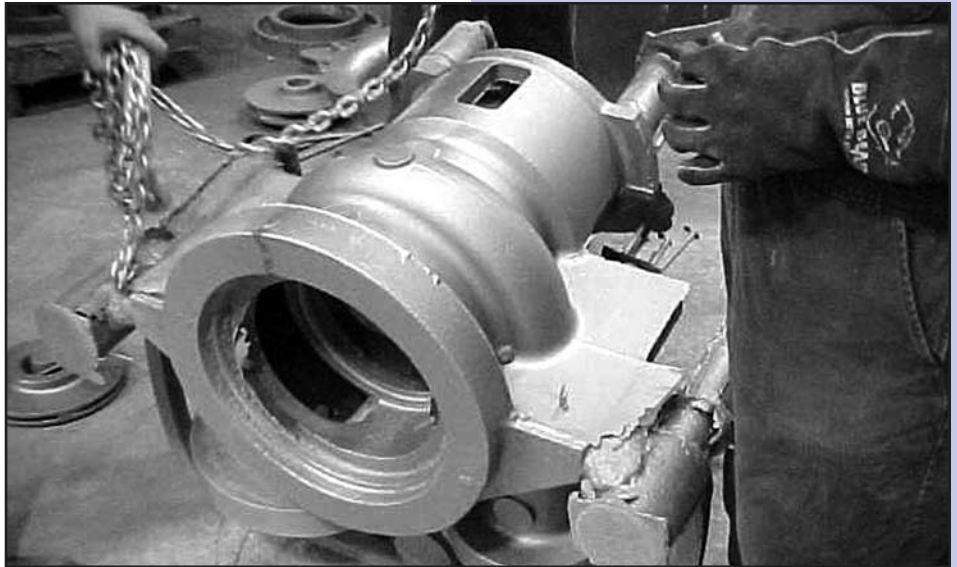
A central states refinery was experiencing excessive reliability and maintenance costs on two 6x8-10 Double Suction Between Bearing Fractionator Reflux pumps due to them mainly being worn out after 35 years of difficult service in non-current API metallurgy. The pumps hydraulic requirements had not changed with 950 GPM at 366 TDH. The OEM had retired the castings already, eliminating in kind parts, so the customer was ready to replace the pumps complete with current API designs. However, the cost of replacing the foundation and piping was substantial and these aspects of the installation were both in good shape. Hence, they were interested in looking into the option of a complete "drop-in" replacement pump.

Due Diligence:

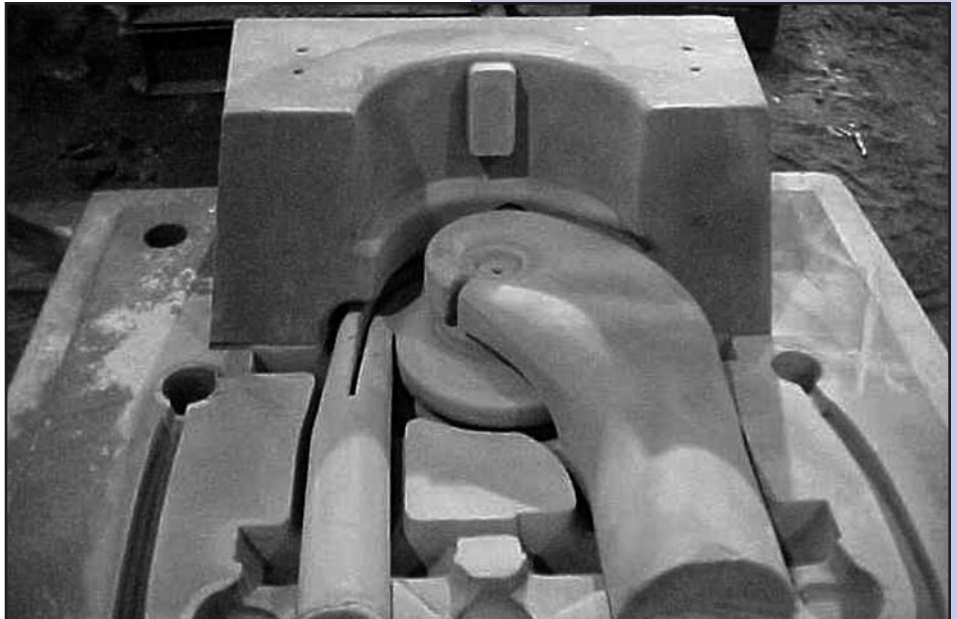
To properly address this pump replacement we had to first review the exact hydraulic requirements of the pumping system as it currently existed. The review showed no significant hydraulic changes so sizing was consistent with what was there. The drop in replacement pump option saved the customer significant expense in both time and money. By providing a replacement pump there would be only a couple of days down time on each pump and the reliability of an API 8th Edition pump vs. a 5th Edition pump was significant relative to the seal life expectations.

Solution:

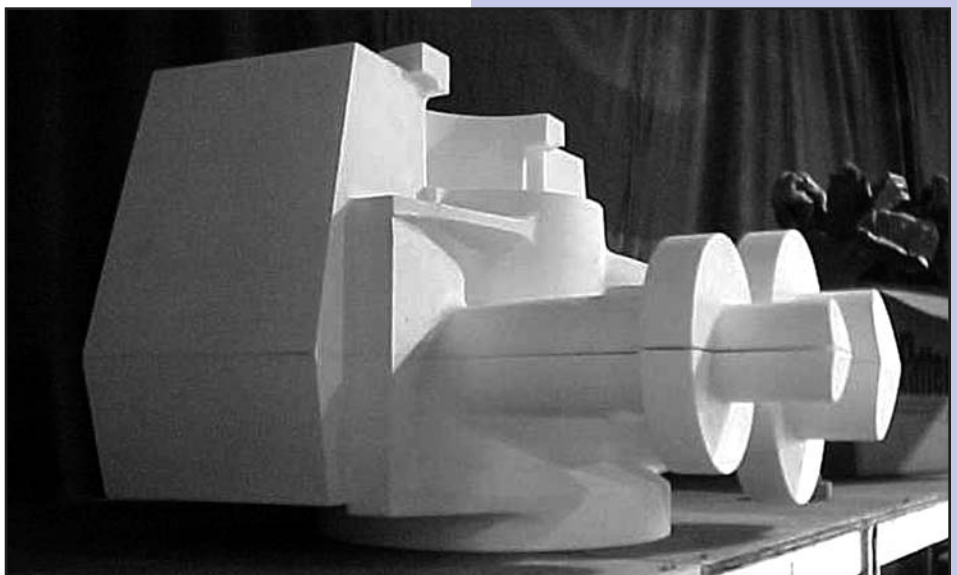
PRO Services Engineering staff went to the field and dimensioned all parameters of the pump. The outline drawing shows dimensions of the flanges vs. the anchor bolts and overall lengths which is required for construction. To develop new case patterns and castings the engineer must know the location of the casing feet and bolt holes relative to the suction and discharge flanges. This was accomplished using special laser coordinate measuring devices. With this information and utilizing standard Goulds API 3620 between bearing hydraulics, the engineer



Casting Completed



Sand Casting Preparation



Lost Foam Pattern Production

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was able to design the external features of the pump to fit the existing base and piping while still utilizing proven hydraulics.

Once designed, all components except the case were standard from inventory. The case would require a pattern for this special application. To reduce cost and leadtime PRO Services utilized our Lost Pattern Foam Process. With

the advancement of CNC machining and three dimensional modeling PRO Services "ProCast" division was able to produce single-use patterns in days with foam vs. weeks for wood type patterns with this process. Sand castings were made from these foam patterns. Then utilizing our foundry we poured the finished product.

Commercially this allowed the customer to spend about 45 cents on the dollar versus the total replacement of the pump with a new unit. The 45 cents included the removal of the pump

by our personnel, the pump, reinstallation of the pump by our personnel and all software associated with the job. The complete process took less than 14 weeks from order to shipment.

To see a complete presentation on this process of Complete Drop In Replacement Pumps or to explore a drop in pump replacement opportunity on another pump, please contact your local PRO Services Center or Service Representative. ■

VBSS²

Green Belts are increasing the impact of VBSS exponentially.

After completing VBSS Green Belt training, Diane Wolske, Don Roszak and the Customer Support unit of ITT A-C Pump in Pewaukee, Wisconsin, took a hard look at the Customer Support job and decided to put their new skills to work on a seemingly simple improvement. Instead of mailing product specifications to suppliers, they suggested using a scanner so that the drawings could be e-mailed. As a result, ITT A-C Pump is getting supplier quotes in one day, rather than four or five days.

According to Nori Morimoto, the new head of ITT Industries VBSS effort, this work is a perfect example of an effective Green Belt project.

"Green Belts shouldn't be trying to solve world hunger," he says. "They should be thinking 'What do I do every day, every month, that can be improved so that we're more efficient and customers are more satisfied.'"

ITT Industrial Products Group's Custom Pump Operation in Pewaukee, Wisconsin serves as a microcosm of ITT's growing Green Belt effort. The Custom Pump Operation manufactures large engineered pumps under the ITT A-C Pump brand for service in the water, wastewater, power and industrial markets. Because the Pewaukee plant is so small – with only 27 employees – there is no VBSS Black Belt or champion on site. But nearly every employee has earned Green Belt certification.

The 22-module online training course takes a significant time investment – anywhere from 30 to 80 hours – so Don Roszak, General Manager for ITT A-C Pump, set up classroom-style sessions for employees.

"Some people haven't taken a test in 40 years, and when you look at all the modules, it can



seem intimidating," says Roszak. "To alleviate some of the anxiety, we kept people together in these classroom settings. It helped them feel as if they were in it together and built enthusiasm for the training."

A-C Custom Pump employees finished all 22 modules in an average of 90 days, and then began looking for ways to improve their job functions using their newly acquired VBSS skills. Today, the company is getting quotes to customers quicker, delivering products faster and doing less time-consuming design drawings.

"We've got 20 Green Belts and 20 projects that are making a real difference to our company," says Roszak.

And it won't end there. Administrative Assistant Barbara Westerdale says that "Green Belt training gave us the tools to solve problems. It's snowballing, each project success leads to more ideas and more energy. I had never heard of the DMAIC (define, measure, analyze, improve, control) process before. Now, it's how our team approaches problems. We don't just guess what's happening and try to fix things through

trial and error; we get to the root of a problem, collect and analyze pertinent data, and come up with improvements that make a difference. It's an attitude of continuous improvement to increase customer satisfaction and grow our business." ■

Moving Towards 10,000

Through 2003, nearly 2,000 ITT Industries employees had earned their Green Belt certification, including 90 in Goulds Industrial Products Group. From 2004 through 2007, the company will train 2000 more Green Belts each year, with the goal of 10,000 Green Belts by the end of 2007.



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Congratulations!

Send your comments or suggestions to:

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