ITT

Reliability, Energy, and Maintenance Solutions

CASE STUDY

ENGINEERING SUPPORT

R&D Engineers Use Experience, Ingenuity to Customize Pumps for Special Needs

Gas-separation plant captures energy out of thin air with re-engineered 3196 pump

Pumps are the machines that make many industrial processes go, but sometimes users find challenges or opportunities for which their pumps are not designed. In some cases, the right custom engineering can turn existing pumps into engines that generate process improvements or cost-savings.

One example is a large chemical and gas company serving customers worldwide with a unique offering of atmospheric gases, specialty gases, performance materials, process gases, and other services. Distilling gases for commercial use is unlike most traditional manufacturing processes, making this customer a likely candidate for a custom engineering solution.

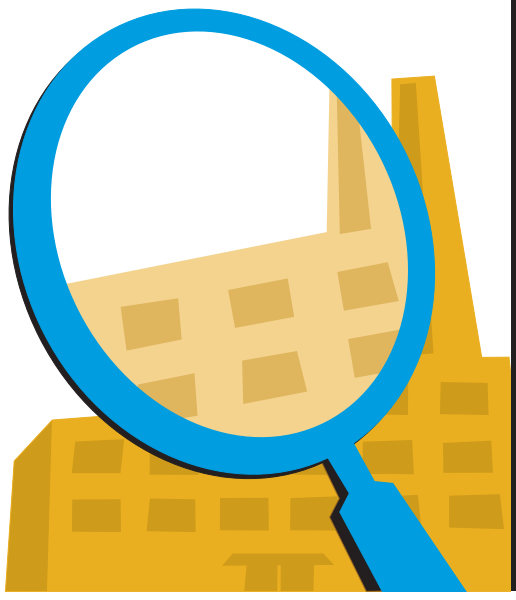
CUSTOMER PROBLEM: How to Capture Wasted Water Energy

Separating ambient air into nitrogen, oxygen and argon is one of the bread-and-butter processes at this customer's plant in eastern Texas. The company isolates each gas through cryogenic distillation—where compressed air is liquefied and distilled so that the different weights of atoms allow the elements to be separated.

As part of the process, a main compressor sends air into a chamber where it is water-cooled at a pressure of 70 pounds per square inch gauge (psig). A pressure control valve then releases the used water to about 15 psig. The suddenly depressurized water produces energy that until recently was wasted. Seeking a way to turn this energy into savings, company engineers turned to the ITT Goulds Engineering Support Group.

ITT SOLUTION: Customize Pumps to Meet Unusual Requirements

The vast majority of ITT Goulds pumps are manufactured and sold as standard products, usable by many organizations in industries around the world. Sometimes, however, customers encounter situations that call for pumps that don't exist. These challenges go to the ITT Goulds Pumps Engineering Support Group, led by Gene Sabini.



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When Sabini and his team aren't performing their primary duties in product research and development, they solve pump-engineering challenges posed by customers. These "live orders" – adapting a new pump to meet a particular customer need – leverage more than 150 years of Goulds pump design experience, and help to inform future product innovations.

After careful study of the customer's situation, the Engineering Support team arrived at an elegant solution. They recommended using an ITT Goulds 3196 pump—the industry's most popular—to be refitted so it would function as a hydro-turbine. "The solution we worked out for this customer enabled them to save money by using a standard product that we re-engineered to fit their application," Sabini said. "They made their investment back in less than two years."

Sabini explained that the re-fitted pump/turbine was efficient and much more economical than a reaction-type turbine. The solution is a true green-energy source, providing extra power back to the plant. Originally estimated to supply 63 kw, the refitted pump consistently delivers 70 kw.

This pump-turned-hydro-turbine is not a unique application, said Sabini, but it demonstrates the flexibility of ITT Goulds Pumps products, as well as the Engineering Support Group's ability to design and deliver custom solutions that help customers operate more efficiently.

THE BOTTOM LINE:

When there's no pump built for a specific process requirement, sometimes engineering a custom pump or re-engineering existing pumps is the only answer. The ITT Goulds Engineering Support Group provided this large chemical and gas company with:

- A cost-effective solution that used a re-fitted Goulds 3196 pump instead of an expensive turbine
- A new source of green energy that previously was waste energy
- A recouped investment in less than two years
- Savings of approximately $24,000 per year in energy costs