



## Colfax Delivers Multifaceted Solution to Venezuelan Facility

### Challenge:

Moving heavy, sand-laden crude oil through its pipelines had always been a tough challenge for a large oil producer located in Venezuela. Because of high levels of basic sediment and water (BSW) in the crude oil, the company's mainline transfer pumps would gradually lose capacity and require rebuilding every three to four months. These frequent, major repairs resulted in costly downtime, and the company tasked its reliability engineers with finding a solution.

### Solution:

The company knew that meeting today's petroleum demands required transporting more challenging crude oil, and it needed a new source of pumps for this difficult application. But it also understood that a sound solution demanded more than merely the right equipment; it required engineering expertise, comprehensive testing capabilities and a strong local support network. Exactly the combination of strengths that Colfax's engineers could provide.

### Results:

Colfax replaced a competitor's twin-screw pumps with new Warren® twin-screw units, which have proven to last up to six times longer than the former models – averaging from 18 to 24 months between repairs in the harsh operating conditions. That performance has helped cut downtime dramatically and provided an equally significant increase in bottom-line results. In the first five years of operation, spare-parts savings exceeded \$2 million – and that's without calculating the cost of maintenance labor and lost flow.





## Pumping New Levels of Productivity – and Profits

As a major crude oil producer, the customer faced the difficult task of moving a blend of heavy Boscan crude oil, which has 30 percent water, 30 percent gas and significant amounts of sand, into its pipelines at its Venezuela facility. The company's pumps were operating under conditions that included 415 pounds per square inch (psi), 3,500 to 18,000 centipoises (cP) and a flow rate of 1,400 gallons per minute (gpm). And the five pumps at this station combined to move more than 180,000 barrels per day (BPD), with 25 percent gas content, through the facility.

## Strong Local Ties for a Solid Solution

Because of its strong local support and technical expertise, Colfax was chosen to develop a more effective solution. Specifically Colfax was awarded the opportunity to meet the customer's challenges because of the combined engineering expertise of its Warren, Imo® and Houttuin™ product lines. That expertise included an average of 25 years of experience in positive displacement pumps by application and field-service engineers. It also included real-world application and design-analysis experience.

Working through its local representative, Colfax was able to gather crucial information and insight into the plant's operations. The customer's project engineer was then brought in to work with Colfax engineers, to assess production and testing capabilities. In fact, the design, quality and testing specifications were all jointly developed before the order was ever submitted.

## The Right Pump for the Job

The pump that Colfax selected was a Warren GTS-H268 model, whose components were designed specifically with the challenges presented by the application, to ensure optimal performance and service life. The pump included hard internal coatings, double angular roller bearings, mechanical seal lubrication and a lube oil-level switch. It was also designed with a replaceable cartridge, which allowed for quick repair and minimal downtime.

"Colfax manufactures a wide variety of pumps. We recommended the Warren GTS-H268 option, because we knew that the customer needed

less downtime for its pipeline," said Mark Korzec, director of Colfax twin-screw product sales. "Each installation has different requirements, and our goal at Colfax is to tailor the right solution to the customer's need."

## Colfax Thinks Outside the Pump

Selecting the right pump for the application was merely one step of the comprehensive Colfax solution. While the pump's performance was certainly vital to the customer's application, it was the array of readily available support and service programs that made the installation so successful.

Having a local sales team ensured that technical services and troubleshooting help were always close by. Plus, because the Colfax team was always thinking beyond mere equipment, the customer was provided with a turnkey solution that included everything from project management and training programs to the actual skids, drivers, sensors, controls, lube systems and American Petroleum Institute (API) seal plans that the application called for.

Additionally the Colfax network of engineers and field technicians supported the customer with follow-up calls and frequent checkups, to ensure that customer expectations were met.



*The new Colfax pumps have cut downtime dramatically and provided an equally significant increase in bottom-line results.*



## Tests, Tests and More Tests

Colfax's support didn't end once the pumps were shipped. In fact, as soon as the order was entered, Colfax called in third-party inspections, to ensure compliance to the customer's requirements. As part of that effort, a special test stand was created specifically for this project, and a project engineer observed several days of testing at field operating conditions.

Testing of the new pump solution was conducted in accordance with API 676 and Hydraulic Institute standards. Per the customer's requirements, a series of special tests was completed, including string tests and hydrostatic, performance, vibration, noise and NPSH examinations. In addition, studies were held on a variety of test viscosities, such as water, fuel oils and lube oils, as well as for high-temperature and shear sensitivity.

## The Results Keep Flowing.

The new pumps installed at the Venezuela plant have been performing up to two full years without major maintenance breakdowns.

That compares favorably to the as-little-as-three-month periods for which the old pumps operated. Today the Colfax solution enables the customer to pump more than 180,000 BPD from the flow station. Just as important, the solution has reduced pump-related downtime by approximately 75 percent and significantly cut field labor costs.

## About Colfax Corporation

Colfax Corporation is a world leader in the development, engineering, manufacturing, distribution, service and support of pumping and fluid-handling systems. Specializing in positive displacement and centrifugal technologies, its products support a wide range of industries, from power generation and oil & gas to commercial and Navy marine to a broad range of industrial applications. Through its Allweiler®, Fairmount Automation, Houttuin, Imo, Lubrication Systems Company, Portland Valve, Tushaco®, Warren and Zenith® products, Colfax delivers pumping solutions in the most demanding applications. Colfax Corporation has its headquarters in Richmond, Virginia, USA.

## About Colfax Oil & Gas Solutions

Recognized as a global leader in fluid-handling solutions for the oil & gas industry, Colfax has served virtually every oil company – global firms and regional operators alike – for over 90 years, in the oil fields of the world. Colfax brings particular critical expertise to crude oil transport in production-facility, pipeline, tank-farm and refinery applications, surrounding customers in true partnership, with design, manufacture, installation, testing and support services. Rotary positive displacement pumps from Colfax brands Allweiler, Houttuin, Imo, Imo AB, Tushaco and Warren deliver not only unsurpassed reliability, based on the pump technology's robust design and special internal metallurgy, but operational efficiencies, flexibility and environmental responsibility as well. Along with eliminating the need for the regimented maintenance and overhaul programs required for reciprocal pumps, these benefits enable Colfax to provide significant savings – frequently in the millions of dollars – for customers over the life cycle of the pump.



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