

Bolivia Pipeline Compressor & Pumping Stations

In Bolivia, Capstone MicroTurbines® are pushing the country's rich natural-gas resources to market faster, thus advancing Bolivia's energy exports to nearby countries and boosting the country's economic-development funds.

Bolivia has the second-largest natural-gas reserves in South America after Venezuela. The Bolivian government recently nationalized its gas fields and pipelines, buying out private ownership to maximize state revenues. Today, Yacimientos Petrolíferos Fiscales Bolivianos (YPFB) is the state-owned petrol company of Bolivia.

When YPFB's gas- and liquids-transporter subsidiary – YPFB Transporte SA – needed to boost gas and liquid hydrocarbon pipeline delivery performance on its 6,000 kilometers of pipelines, officials turned to Capstone Turbine Corporation for an electric-power solution.

More than 20 compressor stations push natural gas and petroleum products through YPFB Transporte's pipeline network. Bolivia depends on the pipelines to supply major cities and to generate income from export sales to Brazil and Argentina. Today, 11 Capstone C65 natural-gas fueled microturbines provide electricity at many of the compressor stations that pump the natural gas through the pipelines.

In many areas of South America, unmanned pumping stations are in remote locations and require a reliable, low-maintenance onsite electricity source fueled by the raw natural gas pumped through the pipelines to ensure round-the-clock operation.

YPFB Transporte had witnessed the successful implementation of Capstone natural-gas microturbines in the jungle and mountains on the neighboring Gasyrg Pipeline, which exports natural gas from Bolivian gas fields to markets in Brazil.



At a glance

Location

Pipeline compressor & pumping stations across Bolivia

Commissioned

First units installed in 2006

Fuel

Raw natural gas from pipelines

Technologies

- 11 Capstone C65 natural-gas microturbines that power compressors at pumping stations.

Results

- The Capstone microturbines cost about 40% less than what it costs to maintain traditional generators on the pipeline.
- The pipeline runs more efficiently with Capstone microturbine generators, which are more reliable, require less downtime for maintenance, use less natural gas, and produce substantially fewer carbon emissions than traditional generators.
- The microturbines have experienced excellent reliability during 15,000 hours of operation, making the delivery of gas services more reliable to customers.
- The Capstone microturbines will pay for themselves in about 5 years.



Edgardo Oscar Vescovo, who oversees Capstone's Latin American operation, said, "About 40 Capstone microturbines power Brazilian pipeline pumping stations. The number of microturbines used on pipelines across South America definitely is growing."

After travelling to Capstone's California headquarters and factory in 2006, YPFB Transporte officials decided to purchase two natural-gas fueled Capstone microturbines to replace traditional generators and increase the efficiency and up-time of their pumping stations.

Capstone staff in California provided in-depth training so YPFB Transporte employees could install and maintain the microturbine systems themselves.

In 2006, YPFB Transporte installed the two C65 microturbines near the cities of Samaipata and Chilijchi. Since then, they have added nine more microturbines that produce electricity to run massive compressors that speed products through the pipelines.

YPFB Transporte spokesperson Pablo Escalante said, "Reduced maintenance on the Capstone microturbines is very important because our compressor plants are usually far from cities. The microturbines reduce interruption in the service we provide, which makes our service more trustworthy. In addition, we save time and money by not needing to maintain the units all the time."

He added that the microturbines are expected to pay for themselves in approximately five years.

Using raw natural gas to power the Capstone microturbines raises the efficiency and dependability of delivery. By replacing traditional generators with clean-burning Capstone microturbines that run on the gas flowing through the pipelines, YPFB Transporte has a very cost-effective solution that lowers exhaust emissions and is easier to maintain.

Escalante estimates, "Maintaining microturbines costs about 40 percent less than a normal generator." He added that YPFB Transporte takes international air-quality norms seriously, including the reduction in carbon emissions and resulting smaller carbon footprint.

Capstone microturbines use a patented air-bearing, drive-shaft technology that eliminates the need for expensive lubricants and the required downtime maintenance of traditional generators. This simplifies tasks for workers at each pipeline station, since they don't have to inventory and dispose of lubricants or be trained on more maintenance procedures.

The Capstone C65s have run continuously for over 15,000 hours with impressive reliability. The result is increased productivity with significantly reduced downtime for maintenance or repairs, which boosts product-maximizing revenues every quarter.

When asked about plans to use more Capstone microturbines on this and other YPFB Transporte pipelines in Bolivia, Escalante said "We're thinking about replacing our normal generators with more Capstone microturbines in the future." ■



Eleven Capstone C65 natural-gas microturbines power compressors at this Bolivian pumping station.