High in South America's Andes Mountains, GE's Waukesha* 275GL*+ gas engines make the grade

275GL+ engines power NGL pumps for Peruvian natural gas industry

The Andes Mountains, the world's longest continental range, are the highest elevation outside of Asia. Producing more power while operating at an altitude of 5,500 ft. (1,700 m), the Waukesha 275GL+ has been selected for the critical mission of pumping NGLs from the region's largest reserve.

Location

Convencion Province, Cusco, Peru

Engine

GE's Waukesha 275GL+

Story

Based on the Waukesha reputation for reliability and the ability of the 275GL+ to provide more power at higher altitudes, the engine was selected to drive pumps that will facilitate the availability of natural gas liquids (NGLs) from remote mountainous regions to the area's more densely populated cities.

"We are thrilled with the operation: We ran through the engine's operating range and have tested both emergency and standard shutdowns. We are very pleased with the results." – Jesus Santeliz, TgP Expansion Project Coordinator

imagination at work

Situation

To meet an increasing regional and global demand for natural gas, TgP (Transportadora de Gas del Peru SA) is expanding its reach deep in the jungles of Peru. A consortium of local and international stakeholders, TgP has been charged by the Peruvian government with responsibility for the design, construction and transportation of both natural gas and natural gas liquids (NGLs). This project calls for a pumping station at an elevation of more than 5,500 feet (1,700 m) to move NGLs across the jungles and through the central Andes Mountains in Peru.

"After a careful economic analysis, our desire to standardize our fleet with Waukesha, and the engine performance, led us to choose the 12V 275GL+ for this pump-drive application. The brand is known for being reliable and that has always been our experience. We are bringing natural gas and NGLs across hundreds of miles from some of the most remote, least-inhabited places in South America, from a very high mountain range to major cities where most of our population resides, so we can't afford to have engines in place that may result in significant downtime," said Jesus Santeliz, expansion project coordinator for TgP. "The altitude here is key as well, and the 275GL+ is the only engine that can provide the power we need under these conditions."

TgP has partnered with Petroaceros for more than a decade and relies on the relationship for engineering, service and parts expertise in the compression and transportation of natural gas. A privately held company, Petroaceros is a full-line distributor in the oil and gas sector, and has distributed Waukesha gas engines since 1984. "To date we have delivered for 27 Waukesha engines
to TgP, and have orders for one additional pump driver, two VHPs for power generation, as well as three more for power generation for a compression station in another location," said Miguel Peralta, business manager for Petroaceros. "This project is a great application of Waukesha engines. The 12V 275GL+ units are running
at 5,500 ft. (1,700 m). TgP also has Waukesha VHPs running up to 13,410 ft. (4,087 m)—the highest elevation we know—while meeting our expectations for reliability and performance. Other engines just don't run here."

Located in Convencion Province, Cusco (nearly 700 miles from Lima), **TgP is completing a new pumping station (PS2A)** with the installation of several Waukesha 275GL+ engines. The carrying capacity of its pipeline transportation system for both NG and NGLs will meet future global demands of both resources. The **planned pipeline (red)** is in addition to the current South Loop, with NG being transported to Lurin and NGLs arriving at a plant in Loberia to the west.

GE's Waukesha 12V 275GL+ engines drive pumps to transport NGLs from the jungles of Peru. The engine is shown here in a packaging facility in Mendoza, Argentina, ready for a string test.

Solutions

The new NGL pumping station consists of an initial stage of three main pumps, all of which are driven by Waukesha 12V 275GL+ from GE's Gas Engines. Initially, two will be in operation with the third on standby duty. As future needs warrant, an additional unit will be added. At maximum capacity, the three engines will pump a combined 594,000 gallons of NGLs per hour (2250 m3/h) through 14" (0.36 m) pipe. This flow rate would fill an Olympic-sized swimming pool in about 90 minutes.

"There really is no other engine in this power range that can handle the high altitude and meet our region's demands from an emissions standpoint," said Peralta. "Our region has been identified as one of 34 'hot spots' globally because of the diversity of terrain. The Waukesha 275GL+ is eco-friendly from an environmental perspective."

"We are thrilled with the operation: We ran through the engine's operating range and have tested both emergency and standard shutdowns. We are very pleased with the results," added Santeliz. "The 275GL+ was as straight- forward as the VHPs that we have used successfully for many years."

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