Beineu-Bozoi-Shymkent Gas Pipeline

Oil & Gas

The Challenge

Running over 900 miles (1,475 kilometers) along its main line, the Beineu-Bozoi-Shymkent gas pipeline is one of the Republic of Kazakhstan's most important resources for energy security. It provides gas fuel to the southern regions of the Republic as well as exports to China via a route that runs through Mangystau, Aktobe, Kyzylorda and South Kazakhstan regions.

Leadership for the Beineu-Bozoi-Shymkent pipeline was in search of a progressive solution that would provide better energy reliability and security. They partnered with Synergy Astana, LLP, Capstone Green Energy's distributor in Kazakhstan and Uzbekistan, to design and install an on-site power system that could provide power along the pipeline. They chose Capstone microturbines for the system due to their ultra-reliability, low maintenance needs, and overall environmental friendliness.

The Solution

Beause there is little or no energy infrastructure and transport in environments along the pipeline, the team designed the system to be packaged in modular units. This approach enabled maintenance of the linear portion of the pipeline to be handled by electrical equipment that is powered directly from the autonomous, gas-powered modular power plants.

Power Profile

Customer
Beineu-Bozoi-Shymkent Gas Pipeline, LLP

Location
From Mangystau to South Kazakhstan Region

Commissioned
2014

Fuel
Pipeline Natural Gas

Technologies
- 37 C30 Microturbines
- 7 C65 Microturbines
- 1 C600 Microturbines
- 4 C800 Microturbines

Capstone Green Energy Distributor
Synergy Astana

The high environmental friendliness, innovative gas bearings, low operating costs, resilient loading, long maintenance intervals and modularity are all factors that drove the choice of Capstone's microturbine technology for the government infrastructure project."

— Yuri Markelov, Principal
Synergy Astana

The power generating equipment installed at the Beineu-Bozoi-Shymkent Gas Pipeline in Kazakhstan offers the end-use customer with a wide range of benefits, including, total energy independence, significant energy savings, and emissions reduction.

The implementation of such a complex system was done in phases according to the following schedule:

In 2014, the installation included gas-metering stations, gas pipeline linear parts, repair and maintenance sites, and a rotational field camp. The power generating equipment installed included four C65s, 30 C30s, four C800 series, and one C600. A gas pressure reduction site and telecom shelters were also added.

In 2016, the implementation of the the integrated power supply focused on sections KU1-KU9 of the linear pipeline from Beineu City to Bozoi portion—a total length of 193 miles (311 km). The power generating equipment installed included seven C30 microturbines with a total capacity of 210 kW, six gas pressure reduction sites for supplying the microturbine, and seven telecom shelters.

In 2019, the final portion of the project included the installation of a gas metering station in Beineu including three C65s with a total capacity of 195 kW.

At every step of the project, the process was efficient and cost effective. Because the power plants were factory-assembled at the Synergy Astana factory prior to delivery, there was minimal construction and installation work to be performed, and the commissioning was fast, allowing the power plants to be brought online quickly and easily.

The Results

The modular structure and overall design of the power solution provided the customer with a wide range of benefits that met all of their needs. First, the package provided total energy independence, which was especially important given the lack of infrastructure in the region. Also, because the facilities are completely autonomous and maintence is minimal (just two visits per year), there's no need for any staff to remain onsite.

As an added benefit, the collection of power plants also provides significant environmental benefits over other power generating equipment in that the microturbines are very low emissions, thereby minimizing the release of greenhouse gas pollutants into the atmosphere.

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