

East Akzhar Oil Field

Oil & Gas

The Challenge

The East Akzhar oil field, associated with the salt dome of the same name, is located in the southeastern part of the Caspian hollow in the Aktobe region of Republic of Kazakhstan. First discovered in 1989, the field has been expanding its capacity year after year ever since. Today, it is one of the most important resources for the Republic of Kazakhstan.

Facing growing environmental pressure, the oil field's owner and operator wanted to tap the resource potential of the site's oil and effectively use excess petroleum gas as a fuel source for an onsite power system. In 2019, Capstone distributor in Kazakhstan, Synergy Astana, provided the customer with a reliable, environmentally friendly solution by designing a system around the Capstone C1000S microturbine.

The Solution

Engineered with innovative gas-dynamic bearing technology, the C1000S provided an effective solution for using the site's waste gas for on-site power generation. Unlike traditional generating options, the microturbine technology requires no oil, coolant, and oil storage facilities, and as such, there is no cost for oil disposal, benefits that provide the plant with operational cost savings.



The choice of the Capstone microturbine as the main technological equipment in the project is attributed to their high energy and economic efficiency, reliability and environmental friendliness."

— Yury Markelov, Principal
Synergy Astana

Power Profile

Customer

Major Oil Operator

Location

Aktobe Region of the Republic of Kazakhstan

Commissioned

December 2019

Fuel

Petroleum

Technologies

- 1 C1000S Microturbine

Capstone Green Energy Distributor

Synergy Astana



**Smarter Energy
for a Cleaner Future**



One C1000 Capstone microturbine provides a reliable power supply to the remote oil and gas customer.

The system is built in a modular container specifically designed to withstand severe climatic conditions, including operating temperatures ranging from -40°F to 122°F (-40°C to 50°C). The enclosure also provides a barrier against the increased dust content in the installation area.

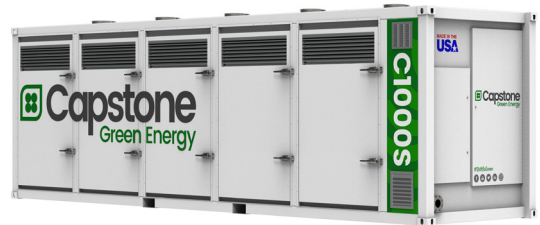
Most important for oil field site operations is the system's impeccable reliability, providing uninterrupted power but also offering electric loading flexibility, which helps further reduce overall plant operating costs.

On the environmental front, the system eliminates the need to flare off the associated petroleum gas. Burning such gas has two negative consequences. First is the irrecoverable loss of natural gas as a useful raw material, which is a mixture of gases and vaporous hydrocarbons that are otherwise a valuable feedstock for the petrochemical industry. Second is environmental pollution. In leveraging the waste gas as a fuel, the microturbines prevent the gas from being released into the atmosphere, thereby reducing the site's emissions. In fact, the installation provided enough environmental benefit that it allowed the plant to avoid environmental emissions penalty costs that the world community had imposed through its decarbonization policy.

The Results

Today, the modular microturbine power plant is providing reliable, cleaner electricity for the enterprise's needs including power for drilling rigs hookup and lighting for the rotational camps. The resulting operational cost savings are a result of overall system efficiency, the ability to use a waste byproduct as a fuel, and the elimination of pollution penalties.

Capstone C1000S Microturbine



A C1000S Microturbine provides 1MW of reliable electrical power in one small, ultra-low emission, and highly efficient package.