

# Turn Your Waste Gas Into Power

Oil & Gas

## At A Glance

Application:  
Oil & Gas, Remote Oil Field

Output:  
Electricity: 3.6 MWe  
Thermal Energy: 6 MWth for Hot Water Boiler

Benefits:  
12 Million Nm<sup>3</sup> /Year of Waste Gas Turned  
Into Clean Heat & Power



SUCCESS STORY



Installation:  
2 X OP16-3A  
May 2005

Location:  
Tedinskoe field, Northern Russia

Customer:  
Lukoil Sever LLC

## The Challenge

Many of the untapped oil resources are based in remote locations. The conditions in parts of Russia are a perfect example of how oil exploration can be challenged by hazardous conditions. The Tedinskoe oil field is in northern Russia. At this extremely remote site near the Arctic Circle, winter temperatures drop to -40 oC and summer temperatures up to 35 oC.

## The Results

Two 1.8 MW OP16 gas turbine gensets use well-head gas to supply 1.8 MWe each continuously at base load output. They are attached to hot-water boilers providing 3 MW each in thermal energy for site heating, process operations and oil line trace heating services. The gas turbines operated for six years before scheduled overhaul, building up an impressive performance record. They each achieved 48 000 hours' running time, working constantly, although 40 000 hours is the recommended period between overhauls.

## The Solution

The OP16 is an all-radial single shaft turbine aimed at reliable power generation applications. The compressor impeller and turbine wheel are placed back to back, which allows the rotor shaft housing to be cantilevered with all bearings in the turbine's cold end. No lubricating oil is needed in the hot section of the turbine, which means lubricating oil consumption is negligible. It has a turbine wheel of single-stage radial configuration resulting in a more compact, shorter and robust gas turbine with good fuel flexibility. One of the reasons Opra turbines were selected was their ability to burn well-head gas (associated gas) – raw natural gas from the oil well. The turbines are running successfully on the sour gas, which has a Sulphur content of 3%. The OP16 can run on different types of associated gas, which has many forms – such as having high or low calorific values, or high or low Sulphur content. To achieve 48 000 hours running on clean natural gas would be very good but to achieve it burning such a high Sulphur fuel must be a record.

48,000  
hrs

Longest Operation  
Before Major Overhaul

-40 oC  
35 oC

Operating in  
Temperature Range



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