

Significant Savings Through Replacement Of A KG2 Gas Turbine With A State Of The Art OP16 Gas Turbine

Industrial & Commercial

At A Glance

Application:
Electricity and Direct Drying

Output:
Electricity: 1.8 MWe
Hot Air: 8.7 kg/s at 575°C

Benefits:
88% Total Efficiency
600 k€ Saved Per Year

The Challenge

The gypsum board production process at SINIAT requires a continuous supply of 5.8 MWth heat and 1.8 MWe electric power. SINIAT operated a KG2 gas turbine with low electrical efficiency 14%, delivering only 1.1 MWe electricity. They wanted higher electrical efficiency along with high temperature heat. SINIAT wanted to install the gas turbine in the same area as the existing KG2 gas turbine within just two weeks so to avoid downtime.

The Results

Part of the gas turbine exhaust is ducted to two calciners. As the temperature requirement of the calciners is higher than the exhaust gas temperature, post-firing is applied. As the exhaust gases still have around 15% O₂, post-firing is possible without additional ambient air blending. The remaining part of the exhaust is ducted to the board dryers, where a lower temperature but higher flow rate is required for the desired drying effect. Exhaust gases are blended with ambient air and post-firing is applied as necessary to control the temperature.



SUCCESS STORY



Installation:
1 X OP16-3A
July 2014

Location:
Delfzijl, Netherlands.

Customer:
SINIAT BV

The Solution

In 2013, SINIAT discovered the state-of-the art, highly developed, all radial OP16-3A Gas Turbine which has an electrical efficiency of 26%. In a joint study OPRA Turbines and SINIAT assessed the feasibility of replacing the old cogeneration plant to be powered by the OP16 Gas Turbine. It was planned to use the OP16 Gas Turbine in island mode, delivering all the power output to the SINIAT plant. 8.7 kg/sec of exhaust gases leaving the turbine at 575 °C are ducted directly to the dryers and calciners. As the exhaust gases still contain 15% O₂, post-firing can be applied at the dryer inlets when more thermal power is required.

As a result, the total electrical and thermal efficiency of the OP16 Gas Turbine exceeds 85%. This high total efficiency, combined with the low maintenance cost of the OP16 Gas Turbine, brings significant financial savings to SINIAT while reducing the CO₂ emissions. As the plant's production is dependent on the cogeneration system and there is only a short summer outage, the old KG2 gas turbine had to be replaced with the new OP16-3A gas turbine within just two weeks.

30%

Reduction
of Emissions

28%

Saving of
Energy Costs

40%

Low Annual
Maintenance Activities

2
Weeks

To Install
the Unit

Get in Touch With Us

OPRA Turbines, Haaksbergerstraat 71,
7554 PA HENGELLO, THE NETHERLANDS

+31 (0)74 245 2121
opraturbines.com
sales@opraturbines.com



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