Fact sheet

Rolls-Royce

Bergen K gas engine projects

Vangazu, Latvia

Fact sheet

Project description

Rolls-Royce entered the energy market of the Baltic States in 2002 with a cogeneration plant in Vangazu, Latvia.

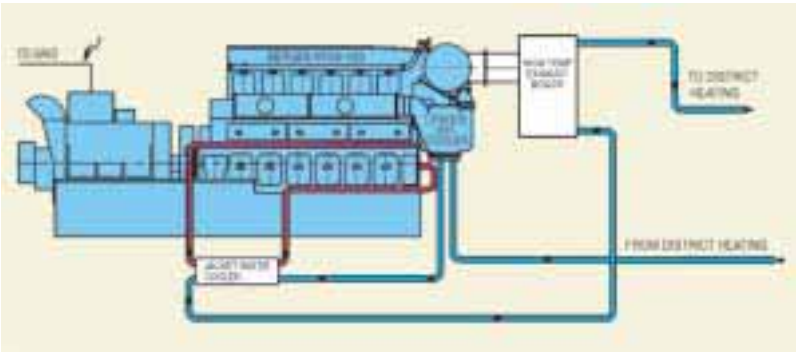
The town of Vangazu is situated 32km East of the capital Riga. The independent power producer Vangazu Sildspeks Limited operates the cogeneration plant, which supplies hot water to the local district heating network and electricity to the Latvenergo national grid.

The Bergen KVGS-12G3 gas engine was selected by the customer Energy Developments AS because of its low through life cost thereby generating maximum revenue for the power plant owner.

The Bergen lean-burn gas engine combines high electrical power output, high efficiency and low exhaust gas emissions, all achieved by an advanced control system that ensures controlled combustion and homogeneous lean mixture of gas and air.

In addition to the low fuel costs associated with a high efficiency engine, no lubricating oil change is necessary. This offers a very simple logistic of oil to the site and no disposal is needed.

The Bergen KVGS-12G3 engine is a medium speed engine operating at



1000rpm, which means low wear and tear on all mechanical parts. The consequence is reliable operation of the engine providing good availability and low maintenance cost.

The Bergen K series gas engine has a design life of more than 20 years and the engines installed in the early ninties are still in service today. As of 2002, many gas engines have passed 75,000 running hours and similar diesel engines have passed 100 000 running hours. The result is a product with the best availability and the lowest life-cycle cost obtatinable in the market.

Technical specification

Engine	1 x KVGS-12G3
Shaft power	1 x 2315kW
Electrical power	1 x 2220kW
Gas consumption	1 x 530Nm³/h
Energy consumption (ISO 3046)	1 x 5295kW
Electrical efficiency (ISO 3046)	41.9%

Total heat recovered

Jacket water	1 x 420kW
Exhaust gas (1 x 13.800kg/h) cooled from 460°C to 110°C gives an output of	1 x 1400kW
Total efficiency (electrical power and heat from charge air, jacket water and exhaust gas)	76%

Design criteria

Ambient temperature at turbocharger air inlet	35°C
Max return water temperature to LT circuit	45°C
Process water temperature from engine	85°C
Generator voltage	6kV
Exhaust temperature after exhaust turbine	460°C
Hot water produced	1820kW
Lower heating value of the fuel gas	36MJ/Nm³
Exhaust gas emissions, NOx	500mg/Nm³

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