



Maximum Fuel Flexibility To Eliminate VOC Emissions

VOC Recovery

At A Glance

Installation:
4 X OP16-3C

Location: Norway

Output:
Electricity: 1.7MWeI

Customer: Altera Infrastructure

The Challenge

Volatile Organic Compounds (VOCs) are light hydrocarbons that evaporate from crude oil during storage or loading & unloading operations of crude oil cargo. These vapors are traditionally vented to the atmosphere, which is a major environmental problem due to their greenhouse effect and represents a loss of a substantial potential of energy.

During the transportation or storage of crude oil, the variation in composition and the fluctuation in volume of the VOCs produced make it extremely difficult to implement an efficient destruction of the VOCs, much less make a profitable use of their energy potential.

The Solution

The OP16-3C gas turbine is integrated into an onboard VOC recovering system and efficiently converts the VOCs into electricity to feed the vessel's microgrid.

The vapors from the cargo tanks are cleaned, compressed, condensed, and separated to produce LVOC (Low volatile organic compounds) and SVOC (Semi volatile organic compounds). The produced SVOC have a Lower Heating Value (LHV) varying between 3.15 and 21.2MJ/kg, while the LVOC have a more stable LHV, around 44 MJ/kg.

The SVOC is the primary fuel of the OP16 gas turbine, while the LVOC is stored on board for further use. Thanks to an advanced dual fuel system, the LVOC is used in the OP16 when needed to compensate for variations in SVOC availability. In this configuration, the OP16 genset can handle automatically both fuels, or any blend of LVOC and SVOC without affecting operations.



The Results

The OP16 produces 1.7MW of electricity from vapors that were previously considered waste gas, with emissions that comply with the most stringent regulations.

The OP16-based genset is lightweight and compact, having the footprint of a 20' container. It is vibration free, and with only one annual inspection, maintenance requirements are significantly reduced compared to potential alternatives.

This successful application demonstrates the flexibility of OPRA and its solutions and has already been deployed on four tankers in the North Sea.

100%

Reduction of VOC Emissions

100%

Reduction of SOx Emissions

87%

Reduction of NOx emissions

68%

Reduction of CO2 emissions

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