

# Echira Oil Field: Middle-Ogooué, Gabon

No Black-out Risk & Less Gas With More Output

*Refitting a gas engine control system can make good financial sense and be a green advantage...*

Refitting an existing gas engine control system with DEIF's comprehensive and innovative Delomatic 400 Gas solution, DM 400 Gas, can make good financial sense and be a green advantage.

The gains are significant and tangible in the form of immediate improved engine performance and reduced emissions. The refitting has a short to medium term return on investment time, and in the longer perspective improved engine performance and a reduced need for servicing means a longer operation life for the generator.

A recent project in the Gabonese Republic's isolated wet forest region of the Middle-Ogooué saw DEIF replace the control systems of a group of hardworking Deutz engines at the Echira onshore and offshore oil field. Fuelled by the oil production wells' waste gas, the power generators provide electricity for 60 oil wells, injection compressors, separation heaters and other oil and gas critical processes.

With an output target set at 10.000 barrels of oil per day, production is dependent on the availability and stability of four Deutz type TBG 632 16 cylinder generator sets: three of the four engines must run 24/7 to generate the 7,000 to 8,000 kW needed for production.

After detailed pre-engineering work and emulation tests, DEIF supplied a complete DM4-Gas control system with multiple side components. DEIF also replaced the cubicle design and supplied and handled adaptation of the existing switchboard including on-site dismantling, mounting and wiring of the new system followed by comprehensive tests, commissioning and fine tuning.

## **The DEIF solution**

Replacement work had to be done engine by engine without plant shutdown, safely managing the complex and critical transition phases with the two systems, TEM and DM 400 Gas, operating simultaneously.

Following the well-planned and flawlessly executed DEIF refit, the TBG 632 16 cylinder generators now use less gas to produce more power. The previous black-out risk has been eliminated and Load Sharing between three engines has been tested up to 2900 kW with a slow power deviation between engines at less than 200 kW and frequency fluctuating slowly around +/- 0.06 Hz.

The combination of two engines in Load Sharing and one engine in Fixed Power was tested up to 2800 kW as the fixed power setpoint, with the Load Sharing engines sharing 1500 kW each. Again, the frequency remained at +/- 0.06 Hz.



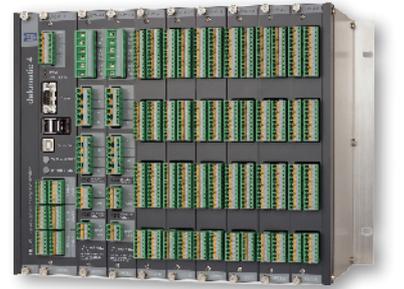
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## Data

- ✓ Using bi-product gas from oil production facility
- ✓ Island load sharing between generators
- ✓ Retrofitted existing control system with DM 400 Gas and AKR 3
- ✓ Digital communication to existing ignition system
- ✓ Individual cylinder firing angle delay based on knocking sensing
- ✓ Possible power output per generator set increased from 2,900 kWe
- ✓ Direct control of gas mixer stepper motor
- ✓ Combustion chamber temperature-based gas mixer control

## Product



Integrated Systems, DM 400 Gas

## Diagram From Case

