

# Mabruk Oil Field

## Two 18V32/40 engines burning crude oil



### Executive summary

For their new on-site power plant, Mabruk Oil needed state-of-the-art engine technology that could run on crude oil taken directly from the field. MAN Diesel & Turbo rose to this complex challenge – using their expertise to create a tailor-made solution. By enabling reliable operation using highly sensitive crude fuel, MAN saved Mabruk time and money – while fulfilling the highest safety standards.

### Challenge

With an output of around 17,000 barrels of crude oil per day, the Mabruk oil field is one of the most important in Libya. Yet ten years after development began in 1994, its operators, Mabruk Oil, were still buying in distillate fuel oil to generate the electricity needed for operations at the field – wasting money and resources.

The company decided to make use of the fuel available on site by building a new power plant capable of running on crude oil. But the low flash point and high particle content of the field's oil meant using it in engines would not be easy.

Mabruk needed an experienced partner that could make their power plant plan a reality.

### Solution

With crude oil engine technology dating back to 1986 – and 65 engines successfully built and sold around the world – MAN Diesel & Turbo was the obvious choice to take on the project. Mabruk contracted the engine giant to supply the power plant generator sets, together with the necessary mechanical and electrical equipment.

MAN Diesel & Turbo began by running comprehensive tests on the Mabruk field crude oil to determine its suitability for use in their medium speed engines. The tests, carried out in MAN's Augsburg lab, confirmed the fuel's explosive nature and revealed particles of around one millimetre – meaning extra precautions would need to be taken to ensure operational safety.



**MAN Diesel & Turbo**

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The expert team at MAN Diesel & Turbo knew exactly how to adapt their engine technology to the sensitive nature of the fuel. To counter the low flash point, a specially designed ventilation system was integrated into the plant design. Cooling air is drawn from outside the machine hall to prevent overheating that could lead to an explosion – a safety measure that was crucial to the project's success.

To deal with the high particle content, MAN Diesel & Turbo installed a pre-treatment system at the power plant. First, the crude oil is separated from the gas; then, it is cleaned in separator modules to remove small particles. This efficient process takes place completely on site – creating a usable fuel to replace the expensive distillate oil that had previously been used.

### Benefits

MAN Diesel & Turbo were awarded the contract in July 2004. Within little over a year the power plant was up and running – and Mabruk soon began to see real ROI. The engines' superior quality and high reliability enabled standalone operation – cutting costs across the board.

By tailoring the power plant technology specifically to the customer's needs, MAN Diesel & Turbo has created a seamless and efficient process – despite the complex requirements.

The care and expertise employed by MAN during testing and construction means that the plant runs to the highest safety standards – essential for the mission-critical processes involved.

MAN Diesel & Turbo's state-of-the-art technology saved Mabruk time and money that had previously been wasted sourcing fuel externally – helping in no small way to meet Mabruk's goal of doubling output at the oil field.

### Project data

Customer:	Mabruk Oil
MAN Diesel & Turbo SE	Generator sets plus mechanical and electrical scopes of supply and services
Scope-of-supply:	
Location:	Mabruk oil field, Libyan Desert, Concession 17, CPTL GOSP area
Purpose:	To generate electricity for oil field operations
Number and type of engines:	2 x 18V32/40
Plant ISO output:	17,280 kW <sub>m</sub>
Engine rated speed/generator frequency	750 rpm/50 Hz
Fuel:	Crude oil
Operating mode:	Standalone
Contract award:	July 2004
Construction period:	13.5 months
Order:	08-2004, 12-2009
Taking over:	02-2006
Country:	Libya

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