Nidec
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Case study

Oil & Gas Refinery Upgrades

The Middle East

Project Summary

Client: Petroleum Development Oman
Project: Oil and gas refinery upgrade program
Application: Electrical drives for centrifugal compressors

Nidec's Role

Nidec Industrial Solutions supplied the electrical package for new advanced centrifugal compressors installed as part of major upgrades to large oil and gas refineries in the Middle East for Petroleum Development Oman.

Scope of Supply:

- 4 synchronous motors – MSCR 1120 Z4, 17.5 MW, 11,000 kV, 50 Hz
- 4 transformers – 25 MVA, 50 Hz
- 4 switchboards – 12,000 kV, 50 Hz
- Motor protection panels and NER (Neutral Earthing Resistor)

The Challenge:
To supply the synchronous motors needed to boost the efficiency, performance and reliability of centrifugal compressors in a harsh refinery environment

Petroleum Development Oman has undertaken a 10-year program to expand operational capacity for oil production and gas output. The company, which owns 130 producing fields and nearly 8,000 producing wells, is responsible for a majority of its sultanate's crude production and gas supply.

Part of that program involves renovating and upgrading its refineries with state-of-the-art technologies that ensure safe, efficient and reliable performance of its production processes.

To drive its new centrifugal compressors, the company's stringent design standards called for proven, dependable motors designed to enhance the stability and performance of oil and gas extraction systems. The electric power solutions also had to be built to withstand the high temperatures and rugged conditions found in the demanding operating environment.

The Solution:
Nidec Industrial Solution's engineered-to-order synchronous motors

Nidec Industrial Solution was selected to provide the engineered-to-order synchronous motors used to drive the extraction systems' centrifugal air compressors, along with the captive/power transformers, switchboards, motor protection panels and neutral earthing resistor needed to complete the system.

Nidec also delivered a training to PDO's operational and maintenance engineers in order to give an understanding of the characteristics and functionality of the motors. The training, both theoretical and practical was held directly at Nidec's site.

Drawing on more than 40 years of experience in the oil & gas industry, Nidec worked with the owner and its contractors to deliver an engineered-to-order solution that is designed and sized to deliver optimum performance over the full operating parameters and life cycle of the project.

Together, the four 17.5 MW motors provided by Nidec for this critical application supply a total of 70 MW of mechanical power.