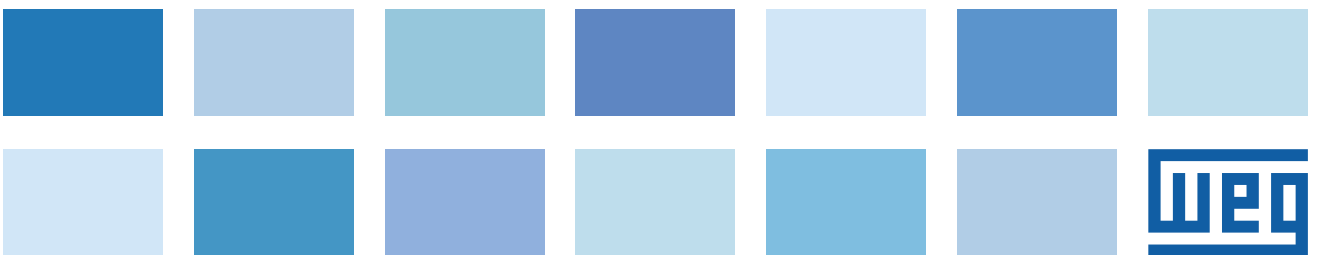




WEG supplies PDO with drives and motors for gas project





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Oman is extending its oil and gas production by opening new fields and boosting depleting fields with enhanced extraction technology. It's a multi-billion dollar undertaking, and WEG is supplying variable speed drives and motors for one of the key projects.

For many years Oman has operated major gas fields in the centre of the country. However, these are now approaching depletion, so there is a need to develop new fields and, where possible, deploy enhanced recovery systems to extend the working lives of existing fields.

The PDO project aims to sustain production capacity of the Saih Rawl main gas field as the reservoir pressure is declining over time. The concept is to install compressors to sustain continued gas production from a field that is primarily used to produce gas for internal use and export.

The project is part of a far larger multi-billion dollar scheme to boost Oman's hydrocarbon production capabilities. This in turn will help the country to broaden its economic base.

Overall, the PDO Saih Rawl Depletion Compression Phase 2 Project will see a significant investment to develop a daily gas production capacity of 30 million cubic metres, which will be fed to the existing Saih Rawl Central Processing Plant. This will compensate for the depletion of the current fields, and is due on stream later this year.

It is expected that Oman will continue to produce significant volumes of natural gas over the next 25 years, representing a long term, sustainable and competitive feedstock for its petrochemical industry, which will include contributions from several gas fields. Plans are also afoot to develop downstream industries such as the production of Ethylene Dichloride (EDC), Caustic Soda and other chemicals.

The PDO Saih Rawl Depletion Compression Phase 2 Project is being undertaken by a leading Indian Engineering, Procurement & Construction (EPC) company Larsen & Toubro and should extend the working life of the field considerably. The basic concept of the project is to use compressors at the Saih Rawl Central Processing Plant to increase the pressure, so that the gas continues to flow. WEG is helping with the supply of 48 individual 30kW variable speed drives and motors and 32 units of 15kW drives and motors, each built into a control system designed for the individual location.



WEG's vertical manufacturing process means that it has been able to supply all of the overload protection, switchgear, relays and pushbuttons used within the drive cabinets. This has ensured component compatibility and trouble-free system building and commissioning as well as efficient ordering and delivery.

Inverter drive development and optimization

Since it first entered the world of electronic variable speed drives, WEG has striven to develop perfectly matched drives and motors, and has perfected this to the point where it has doubled the life of a motor when used with a drive.



Turnkey systems supply

The drives are supplied built into systems and mounted in control cabinets. These are built at a WEG factory in Brazil, where they are also tested in the presence of representatives from PDO and Larsen & Toubro and their nominated third party inspectors. The tests simulate the harsh environmental and operating conditions that may occur in the field, thus ensuring that the systems are completely fit for their intended purpose.

Other elements within the control cabinet for the Oman project include a control power transformer and auxiliary contactors and circuit breakers. A door mounted control panel will incorporate a backlit LCD keypad, local stop/start buttons, a Category 0 emergency stop pushbutton, ready and fault pilot lights and a lighting module. A redundant serial link (2 channels Modbus-RTU over RS485) will provide communication to the wider control system.

The control cabinets will also include space heaters. These are essential because of the large temperature differential between day and night which causes condensation – not something that is welcomed inside an electrical cabinet.

To ensure complete integrity, WEG supported a performance test of the motors with the fans at the fan manufacturer's plant in Korea. Further, WEG organized training sessions for PDO staff in the Brazilian factory, where the motors are made and the control panels assembled.



Gas compressor cooling fans

At the Saih Rawl Depletion Compression Phase 2 Project, the WEG motors and drives will mainly be used on the suction and discharge cooler fan motors used on the main gas compressor. These will be supplied as systems that also include a high capacity circuit breaker for emergency cut outs and a by-pass system for DOL (direct on line) starting. A passive input harmonic filter will be fitted to reduce problems relating to mains borne corruption of the power supply, while an output filter will be used to protect the drive.

WEG's massive investment in research and development and the joint expertise of electric motor and drive design engineers has addressed two of the major drawbacks of modern PWM (pulse width modulating) drives – the voltage chopping techniques used by the drives tend to lead to an increase in motor temperature and also to fast transient high voltage peaks, the consequence of both being a dramatic reduction in motor life.

WEG's drives minimize voltage surges by carefully regulating the time between the pulses of their IGBTs (integrated gate bipolar transistors). This decreases the possible surge magnitude and also allows longer cable runs without detrimentally affecting motor insulation.

Its patented flux optimizing technology produces lower and fewer peak voltages at the motor terminals. This has the effect of decreasing motor temperature rise by as much as 11%. (Insulation life, and therefore motor life, is doubled by every 10° C decrease in its operating temperature).

This high performance drive and motor architecture makes WEG products the perfect solution for the most arduous industrial applications, such as those that are likely to be met in Oman.





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