WEG power for largest FPSO in South America
The newest – and probably the largest – Floating Production, Storage and Offloading (FPSO) vessel in the world relies heavily on WEG 13.5MW synchronous motors, 28,750kVA synchronous generators and frequency inverters to deliver its production capacity of 180,000 barrels of oil and 6 million cubic meters of natural gas a day.

The rig has been deployed in the Marlim Leste oilfield by Brazilian oil major, Petrobras, in the Campos Basin off the coast of Brazil and is expected to reach peak production in the first half of 2010. The rig is unusual in that it is pumping crude oil for refining and natural gas for the national distribution network, but it also has power generation onboard, using natural gas to generate electricity which is then fed into the national grid network.

Marlim Leste is 120km off the coast of Rio de Janeiro state at a water depth of 1,250 meters. Heavy crude was discovered there in 1987. In total, WEG has supplied 269 electric motors: 19 medium voltage and 250 low voltage, for use on P-53 plus 4 13.8kV synchronous generators. The generators, in common with the synchronous motors, were tailor engineered by WEG to meet demanding customer specifications.

The P-53 is one of the largest FPSO’s in the world FPSO and is the size of a large football stadium. The platform uses WEG medium and high voltage motors to drive water injection pumps to pump water into the oil well; this helps maintain oil pressure as oil is pumped out in order to maintain efficient extraction. WEG motors also drive the pumps used for oil production outflow from the platform, and the large natural gas compression units used to liquefy the gas for transfer to the mainland.

The natural gas compression modules used on P-53 are supplied by DRVA, a consortium of Dresser-Rand and Vetco Aibel. These units depend for their reliable operation on three WEG 13,500kW, 4 pole, 6600V, synchronous motors driven by frequency inverters. The motors and inverters were supplied as integrated systems by WEG to Dresser-Rand in USA, one of the largest and most important process suppliers to oil platforms, and to the Oil & Gas market in general.
WEG’s engineered synchronous motors provide the ideal package of reliability and efficiency in the demanding operating conditions encountered on P-53. They are manufactured to international safety standards for offshore use, and are suitable for operation where flammable products are handled, processed and stored, providing full protection to personnel and operating plant.

Manufactured with highly robust and solid steel frames that withstand the most severe operating conditions, WEG’s synchronous motors also deliver low operating and maintenance costs; this is due to their ability to provide high efficiency operation in applications that require power factor correction, high torques and constant speed under load variation.

The performance of the synchronous motors in converting electric energy into mechanical power is also more efficient, resulting in significant energy saving across a wide variety of loads. In addition to the day-to-day reduced running costs this provides, the savings also ensure a faster return on investment (ROI) time for the user.

As well as their efficiency and reliability benefits, the synchronous motors also provide the advantage that they maintain continuous speed despite overload variations, or voltage drops, as long as the mains frequency that supplies them is kept constant. They also improve stability on VFD applications; the motors being designed to operate at any speed range from zero to maximum speed.

Success With Initial Synchronous Motors Resulted in Further Orders...

The supply of the three compression module motors to P-53 follows the success of three identical WEG synchronous motors which have been supplied for the Petrobras P-54 platform which went online a year previously at the end of 2007. These again are used to
drive Dresser-Rand compressors, exporting the gas extracted from Module 2 of Roncador Field, in the Campos Basin in the state of Rio de Janeiro, Brazil.

The P-54 project has a production output capacity of 180,000 barrels of oil, and 6-million cubic meters of gas per day - the same amount projected for P-53. On both platforms, motors supplied by WEG are playing a key role in helping to achieve these targets.

**Generators and LV Panels**

In addition to HV motors, WEG has also supplied P-53 with four of its 28.75MVA synchronous generators - driven by gas turbine generation modules. Low voltage panels, including a 42- column load centre of 4000A - 65kA (resistant to internal electric arc) and a 49 removable- column MCC. Specially designed for offshore application, the low voltage panels are installed on Electric Modules P-08 and P-06, all of which have been fully tested and approved, and are Bureau Veritas certified.

WEG designed and manufactured the motors, inverters and generators for P-53 in accordance with the most advanced technological processes. The equipment was evaluated in conformance with strict certification criteria by inspectors from all the companies participating in the P-53 project: equipment manufacturers, certification entities, QUIP and Petrobras.