SJS seawater lift pumps for oil production

Lifting seawater

Sulzer has developed a new vertical seawater lift pump for the oil and gas industry. The special design of the SJS pump meets the requirements of offshore oil production and is a great success in the market. Sulzer has already sold several units that have been installed on oil platforms around the world. The first units have been operating since 2011 in the North Sea with consistently positive feedback from operators.

Seawater is an important fluid in the processes of offshore oil production platforms because it is used in many circuits, such as cooling and reinjection into the well, and it is also used as firewater. For example, in the injection loop, seawater is pumped up to the platform, where it is then filtered and cleaned. The treated seawater is then injected into the well to increase the pressure there. Sulzer has designed a submersible pump especially for lifting the seawater. The pump design is based on Sulzer’s proven vertical turbine bowl assemblies, which provide reliable and efficient performance.

The SJS pumps utilize a submersible motor to drive the Sulzer vertical pump...
Water ingress. It can continue to run for a certain time because the motor stator windings are insulated and do not short circuit as typical oil-filled motor designs would.

**Optimized design**

The modular Sulzer SJS design with the motor coupled to the pump (rather than impeller mounted on the motor shaft) allows access to motor bearings and motor mechanical seal without the need to dismantle the pump bowl assembly. This allows easy maintenance. Further, temperature readings to the windings and the thrust bearings are standard features to provide sufficient operational machine protection.

A variety of materials are available for the SJS pump:
- Cast iron or carbon steel for freshwater
- 316, Duplex, or Super Duplex stainless steels for seawater
- Coated wear part and bushing materials can be selected to meet specified requirements

**Successfully field tested**

The reliable and efficient performance has been proven on oil platforms during retrofits in the North Sea. They were installed in 2011 as the kickoff of a new development program with the motor supplier. The goal was to harmonize and optimize the design of seawater lift pumps for oil and gas applications. Since the market launch in 2013, Sulzer has sold several SJS pumps around the world. Presently, units are in production in North America, Europe, and in South America. Customers appreciate the simple design of water-filled submersible motors. They like the topside expansion tank in combination with a well-balanced cooling, water-lubricated, hydrodynamic bearing design inside the motor and the possibility of accessing both main modules—pump and motor—separately.