

Schaeffler Global Technology Solutions

Chemical and oil

Spectacular operation on the high seas – Special large spherical plain bearings of X-life quality

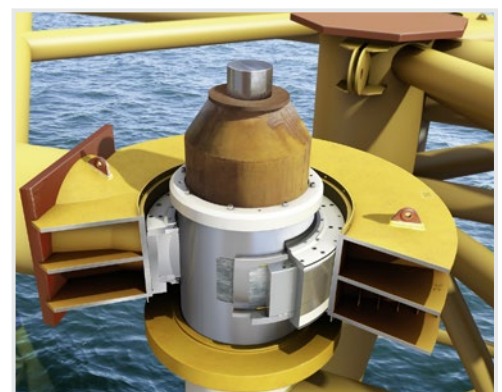
A gas platform in the North Sea off the coast of Scotland had already been expanded by the addition of a satellite platform. In order to increase efficiency, this was now to be expanded further by means of a module extension. For reasons of space, it would not be possible to install the module extension either on the main platform or on the satellite platform. The only way of realising this expansion was by construction of a single-leg platform, known as a “mono column”.

Challenge for Schaeffler

After several meetings with the customer and their contractor, it was clear that a unique design of bearing was required that offered both a very high level of reliability and zero maintenance due to the fact that the customer's solution involved mounting the column on one of the four main platform feet anchored to the seabed. Further calculation work indicated that joints had to be incorporated into the final design of the extension column to allow for movement caused by wave and tidal current relative to the main rig.

Schaeffler Solution

For this special application, Schaeffler developed two large spherical plain bearing units that can securely support and transmit the swivel, rotary and axial movements of the mono column. As a basis for the bearing arrangement, maintenance-free large radial spherical plain bearings of X-life quality with a bore diameter of one metre were selected. In comparison with the standard design, the bearings were matched to the customer's requirements.



Technical Information on the Assembly

Mono column:

Single-leg platform acting as an extension to a gas platform

Module extension (on the mono column):

Size: Approximately the size of a normal house

Point of installation:

21 metres above sea level

Fixing to the main platform:

- Welded latticework extension column made from steel tubes
- 2 spherical plain bearings at the top end of the mono column



Gas platform in the North Sea



The second unit is lowered into place by a crane



During installation, the fitters had to work to millimetre accuracy

Customer Benefit

Thanks to the close cooperation between Schaeffler UK and Schaeffler Germany, the customer received not only the two spherical plain bearings but a complete solution – starting from development and proceeding via the production process to offshore bearing installation. An installation trial was carried out onshore, making it possible to identify any weakpoints and develop remedial measures in good time. Offshore installation was carried out by two experienced Schaeffler fitters from Germany who had the necessary safety training for offshore work. It was important first to hold the mono column to the main platform by means of an ancillary construction. After this, the spherical plain bearings and sleeve units could be installed on the main platform with the aid of a crane. Optimum cooperation between all those involved in the project ensured a smooth process, which meant that the project was completed to the full satisfaction of the customer. The lead construction engineer was particularly grateful to the two Schaeffler fitters whose committed service contributed to completion in accordance with the deadlines.

What's special

The bearing development was decisively influenced by the following factors:

- **Freedom from maintenance and high reliability**, even under extreme environmental conditions.
- **Additional seals and low friction values**: the bearings have a lining of ELGOGLIDE®-W11 on the outer and inner ring as well as additional components such as covers with seals.
- **Anti-corrosion protection**: All the surfaces not directly included in the sealed environment are protected against corrosion by means of a special offshore coating. This coating is a combination of proven twin-component coatings based on epoxy resin or epoxy resin/micaceous iron oxide and polyurethane final coating.

Technical Information about the Solution

Bearing type:

Maintenance-free large radial spherical plain bearings of X-life quality



Bearing bore diameter:

1 000 mm

Customer-specific bearing adaptations:

- Lining of the outer and inner area with ELGOGLIDE®-W11
- Additional components (covers and seals)
- Special offshore coating as protection against corrosion and wear