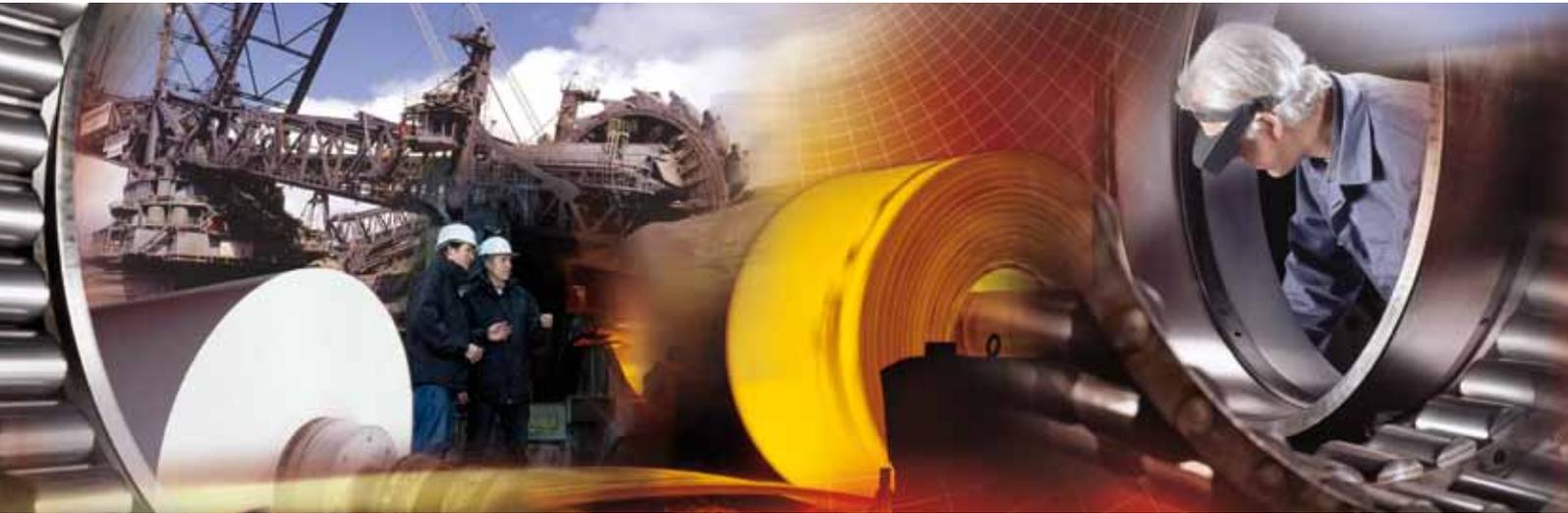


# Smart Performance Program



## Efficient Large-Size Bearing Mounting Using Medium-Frequency Heating

**Industry:** Shipbuilding

**Customer:** Subsea 7, Aberdeen (Great Britain)

As one of the world's leading subsea engineering and construction companies in the oil and gas sector, the annual revenue of Subsea 7 amounts to two billion US dollars. Global operations are supported out of the North Sea, Africa, North America, Brazil and Asia Pacific. Seven Navica is one of the largest Subsea 7 vessels and operates as a pipe layer ship within the worldwide fleet. Operating in water depths of up to 2,000 metres, the vessel has capability for installing both rigid and flexible umbilical pipe, from one deck mounted storage and deployment reel.

### Challenge for Schaeffler

The customer had to replace the existing starboard reel bearing, which highlighted a static fault during a condition monitoring test. Based on the test result, Subsea 7 elected to change the starboard bearing, which also gave the opportunity to examine the condition of the journal, in particular its outside diameter. The challenge in this operation was to minimise the time the vessel was in port, thereby reducing pipelay downtime for the Subsea 7.





**Technical information about the Vessel**

• <b>Vessel:</b>	Seven Navica
• <b>Year of construction:</b>	1999
• <b>Vessel length:</b>	108.5 m
• <b>Width:</b>	22 m
• <b>Tonnage:</b>	5862 GRT
• <b>Reel diameter:</b>	25 m
• <b>Spooling capacity:</b>	2,500 t (rigid and flexible pipe)
• <b>Consumables:</b>	Pipe diameter from 101.60 mm to 457.20 mm

## Schaeffler Solution

Specialized Schaeffler fitters supported Subsea 7 during the installation work at the Dusavik fitting yard in Norway. The bearing was heated with the help of a medium-frequency device equipped with flexible inductors. This secure method allows the heating of large bearings or large and difficult to access mating parts in a very safe manner. The significant feature of inductive heating in comparison to other heating methods is that the heat is produced directly in the workpiece. In addition, the Schaeffler experts were always on-hand to offer advice and help in the event of any difficulties experienced with the reel bearing change.

Bespoke mounting and dismantling tools were used to ensure accuracy and safety of re-build. To guarantee the operational integrity of the replacement bearing, condition monitoring measurements were conducted. These ensured that a baseline condition for the replacement bearing could be established.

## Customer Benefit

In using the specialist skills available from Schaeffler Group, Subsea 7 benefitted from the broad bearing and service knowledge of a leading bearing manufacturer. This guaranteed that the fitting procedure was carried out efficiently and with a high degree of accuracy.

By using the described heating method, the complete mounting time was reduced by one day. In comparison with other methods which involve further expenditure, such as costs for setting up an oil bath or resources for gas flame heating (4 persons / each working 3 hours) the customer realized the following savings:

Daily stoppage costs of the vessel	€ 110,000
Costs savings by using medium-frequency heating	approx. € 8,000

**Total savings** **about € 118,000**

## What's special

As a result of this successful cooperation, Subsea 7 has elected Schaeffler as its preferred supplier for bearing products and services for the future.

### Technical Information about the Solution

- **Special bearing type:** Spherical roller bearing (240/1120 series)
- **Heating method:** Inductive heating with medium-frequency
- **Tools:** FAG bearing mounting/dismounting tools and equipment
- **Grease:** FAG LOAD 220 used in new bearings and for relubrication

