

Schaeffler Global Technology Solutions

Shipbuilding

Subsea 7, Great Britain

Efficient Large-Size Bearing Mounting Using Medium-Frequency Heating

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. Seven Navica is one of the largest Subsea 7 vessels and operates as a pipe layer ship within the worldwide fleet.

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.

Schaeffler Solution

Spezialized 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. 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 dismounting 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.

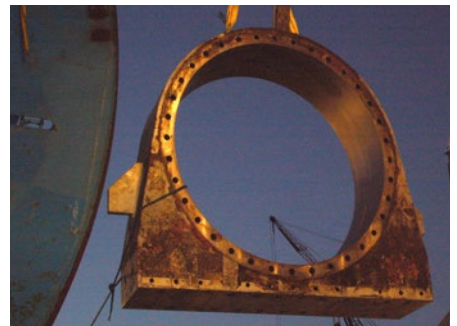
subsea 7	
	
Technical Informationen about the Vessel	
Name and year of construction:	
Seven Navica / 1999	
Vessel length and width:	
108,5 m / 22 m	
Tonnage:	
5862 BRT	
Reel diameter:	
25 m	
Spooling capacity:	
2 500 t (rigid and flexible pipe)	
Consumables:	
Pipe diameter from ø 101.60 mm to 457.20 mm	



The flexible inductors are wound around the bearing



Bearing measurement



Housing

Customer Benefit

In using the specialist skills available from Schaeffler, 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:	approx. € 118 000

Technical Information about the Solution

Special bearing type:

Spherical roller bearing (240/1120 series)

Heating method:

Inductive heating with medium-frequency

Tools:

FAG tools for bearing mounting and dismantling

Grease:

FAG LOAD 220 used in new bearings and for relubrication

What's special

The medium-frequency device with flexible inductors 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. This results in significant shorter heating times and lower energy consumption. As a result of this successful cooperation, Subsea 7 has elected Schaeffler as its preferred supplier for bearing products and services for the future.