

It takes maximum insulation properties to connect the Nini & Cecilie platforms



In November 2002, Saipem UK (former European Marine Contractors, EMC) awarded LOGSTOR Oil & Gas the contract for the thermal insulation and weight coating of an offshore single pipe system for installation in the Danish sector of the North Sea.

Thermal insulation

The pipes were thermally insulated with polyurethane foam (PU) using the spray-on technique. First, the pipes are pre-heated by means of inductive heating to ensure constant process temperature. Then polyurethane foam (PU) is sprayed directly on the pipe while it rotates in a spiral motion. Finally, a multiple layer of HDPE is extruded on the foam layer.

During the process, parameters like foam density, thickness of polyethylene casing, pipe length and diameter are measured and the data is recorded on a "birth certificate" that follows each pipe. The certificate contains all vital information and is the backbone of LOGSTOR's traceability system.

Advantages of single pipes

The single pipe concept offers a thermally insulated shallow water pipe system for offshore applications down to 200 m (660 ft) with the following advantages:

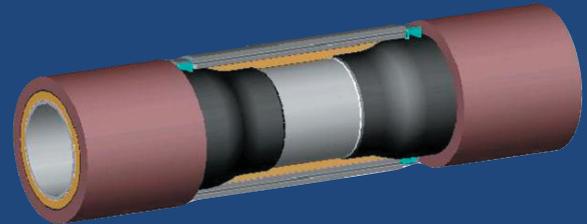
- Integrated water stops in each pipe
- Low U-value 1.0 – 5.0 W/m²K
- Concrete weight coating possible
- Long service life
- Fast delivery
- Quick and easy installation
- Insulated field joints
- Installation methods (S-lay, J-lay, bundle and reeling)



The integrated water stop in both ends makes it a very safe system to use. If an external force damages the HDPE, the water ingress will be limited to one pipe joint only.

Technical specifications of the project

The 33 km multiphase flowline for installation at a water depth of 60 m comprises an OD14" API 5L X65 inner pipe and an OD 428 HDPE pipe extruded directly on the 28 mm PU foam layer giving the pipes an U-value of 1.32 W/m²K. In the field joints the U-value is as low as 1.1 W/m²K. The nominal density was 180 kg/m³ and the thermal conductivity of the foam was 0.041 W/mK taking the creep performance into consideration.



New field joints with lower U-value

For this project LOGSTOR introduced a field joint concept insulated with a combination of low density polyurethane (PU) and high density syntactic polyurethane (SPU) foam. This joint has a lower U-value than the rest of the pipe system.

The field joint consists of 2 PU half-shells covered with high density polyethylene (HDPE). The half-shells are pre-moulded to fit the external diameter of the pipe insulation. During installation the cavity underneath is filled with SPU.

The world's leading manufacturer of pre-insulated pipe systems

LOGSTOR is an international organisation which develops and manufactures complete pipe systems for the transportation of media at temperatures from -200 to 315°C . Our main business areas are district heating, the oil and gas industry, the industrial and the marine markets.

Research and development have high priority. As a result, LOGSTOR supplies a wide range of pipe components which are easy to install and ensure the same material properties throughout the entire pipe system.



[We document the difference]