District heating to ships

http://celsiuscity.eu

A new, innovative use of district energy for the future!

The Stena Line-owned passenger ship Stena Danica is the world's first ship in regular service connected to a district heating grid when in port.

The Stena Line passenger ship Stena Danica coming into port

Stena Danica has a capacity of 2275 passengers and operates the route Gothenburg - Fredrikshavn 650 times each year. Through a ground-breaking demonstration project, it is connected to the local district heating grid when it arrives to port in Gothenburg instead of being heated by the previously used oil-fired boilers.

It is estimated that the switch from light oil to district heating will reduce the CO_2 emissions by as much as 500 tonnes per year (-60%). It will also contribute to a significantly better air quality in Gothenburg as it reduces the ship's levels of SO_x and NO_x with more than 90 % annually. Last but not least it will also reduce the levels of noise in the neighbourhood.

The connection unit ensures that there is no hot water leakage from the network.

This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 314441.

Emission reduction

carbon dioxide
60% CO_2

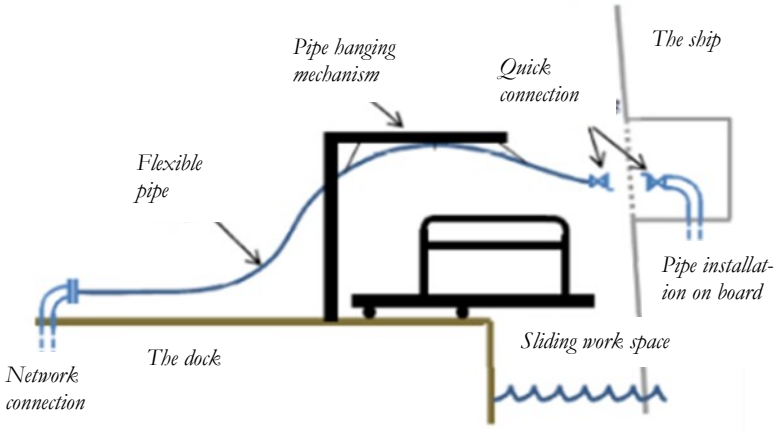
nitrogen oxide
90% NO_x

sulphure oxide
90% SO_x

Connecting Stena Danica to the district heating grid. Photo: Göteborgsposten

This pioneering demonstration scheme is part of the CELSIUS project, which is funded by the EU's Seventh Framework Programme for research. The demonstration project has been carried out in close cooperation between Göteborg Energi, Stena Line and the City of Gothenburg.

The connection of Stena Danica to the district heating grid is truly ground-breaking and innovative. The challenge has been to develop a technical solution that enables daily connections to the district heating grid, which called for a considerably different approach than the one used in regular connections of stationary buildings. It requires a flexible pipe and a system where connections can be done quickly and without any leakage of hot water.



Principle for how the ship is connected to the district heating grid

The return on investment is expected to be less than three years.

The project is also innovative in the sense that it is a new application for district heating. The project shows that district heating can be used for other purposes than just for heating buildings and in so doing contribute to a low carbon economy and ultimately a sustainable world. The project is replicable for other port cities as long as the ships are situated relatively close to the heating grid.

The total investment cost is approximately € 330 000.The project has however proven to provide considerable lower heating costs for Stena Line and the return on investment is expected to be less than three years.