

COLD IRONING cuts costs

Stena Line's goal is that all of their ships, operating in Scandinavia, will be connected to cold ironing at berth before the ending of 2010. This project is part of their Energy Saving Plan to reduce emissions by 2.5% each year, and the investment costs are close to USD 150,000.

■ Cold ironing provides shore-side electrical power to a ship at berth while its main and auxiliary engines are turned off. The process permits emergency equipment, refrigeration, cooling, heating, lighting, and other equipment to receive electricity while the ship loads or unloads its cargo.

"We have clean electricity in Sweden, taken mostly from wind and hydro power. That ena-



Carola Weidenholm
Corporate Communications

To install cold ironing will pay back in 5-7 years time for a new building, depending on the fuel costs; but it will take some years longer for older ships where you have to after-install the equipment.

Remote control-operated

Stena Line considers cold ironing an important element in their ambition to minimise the environmental load in port towns they call at.

"We are situated in the city centre and therefore we take extra responsibility for the surrounding environment. Those of our ferries that are not already connected to shore electric-

bles us to reduce the emissions of carbon dioxide by 5,000 tons, sulphur oxide by 11 tons and nitrogen oxide by 82 tons a year by using shore-based electricity supplies instead of the auxiliary engines in our Scandinavian ports," says Per Wimby, Technical Operations Manager at Stena Line.



PHOTO: STENA LINE

Stena Line in brief

The Stena Line freight route network is Europe's largest, linking key ports and road connections across Northern Europe.

Head office: Göteborg

Employees: 5,700

No of lines: 18 in Scandinavia and the UK

No of ships: 36

Departures: 76,568

Passengers: 15,280,100

Cars: 2,866,600

Websites: www.stenaline.se and www.stenaline.com

Ships insured by The Swedish Club, total Stena Group: 42

Classes of insurance: H&M and P&I

An electrical cable is extended from the pier and plugged into the ship's receptacle to supply power to operate the machinery, but not its main engines. This allows the ship to shut down the diesel engines that normally drive the electrical generators. When the diesel engines are not operating, the ship's emissions and noise are greatly reduced.

and emissions for Stena Line

ity, run their auxiliary engines around 32,000 hours a year, so the method provides a considerable environmental saving. Emissions almost come down to zero and at the same time disturbing noise in the engine room and outside the ship disappears," Per points out.

As early as 1989 the first two of Stena Line's ferries were adapted to cold ironing; they were the Stena Germanica and Stena Scandinavica operating to German ports. The next step was taken in 1997 when Stena Carisma was connected to the same system. Since then the technology has developed from low voltage to high voltage systems, typically 10.5 kV. This reduced the number of cables from 10 to 1 and the connection time from around 20 minutes to at most 5 minutes.

Stena Line and cold ironing

- Investments of between SEK 75 million and SEK 100 million.
- First installations in Göteborg, followed by Stena Line's remaining ports in the Scandinavian business.
- The aim is for all ports to have shore-based electrical supplies by 2010.
- Shore connections require customisation and investments in both vessels and ports, including a connection compartment onboard, a circuit-breaker on the quay and the running of high-voltage lines.
- By means of shore electricity supplies the vessels can be connected to the national grid via a cable. This allows the auxiliary engines to be switched off while alongside, cutting noise and emissions.

"Today the system pretty much runs in the same way as a petrol station; the cable is placed on shore and the process is easily operated by one person via a remote-control from the ferry," Per explains.

Training and motivated personnel

"In the beginning there was some suspicion about working with a high-voltage system, but we solved that with information and training," says Per. "And since our co-workers have been involved in our Energy Saving Programme from the start, several years ago, I would say that today environmental awareness is high among our personnel, which make them more adaptable to new environmental solutions", he continues.

The only drawback, Per can recall, is that it is harder to transfer ships within the harbour as you need to stay close to a transmission line.

"In this project we have only had minor problems that were quickly solved, and the cold ironing is also easy to handle in hard weather – even though the captains might have to manoeuvre with slightly more precision," Per says with a smile.

The next project in Stena Lines Energy Saving Plan is to connect the RoPax ferry Stena Jutlandica to cold ironing also on her short stops, of only 45 minutes, in Göteborg. Today the Port of Göteborg is responsible for the investments ashore, while Stena Line takes on the costs on board. This is of mutual importance for the port, as they also have to live up to main objectives for their environment performance.

Stena Line will continue with their environmental objectives of 2.5% reduction of emissions to air and sea each year. An additional part of the programme involves taking care of sewage and bilge water from the vessels for refinement on board or distribution to a disposal plant ashore. And their standards are high, for example the present emission limit for bilge water is 15 ppm, and the internal goal for Stena Line is reducing it to 5 ppm.

Demands for a standard

An issue that has to be addressed before long, is that ships and ports have different voltages, for



Per Wimby, Technical Operations Manager at Stena Line.

example the U.S works on 60Hz and Europe on 50, while the majority of ships have 60Hz. For that reason you require a transformer to convert the power, which involves an initial cost. In the future there will probably be a requirement for ports to offer both voltages.

At present a new global ISO standard for cold ironing is about to be developed and it should be ready around the turn of the year according to Per Wimby.

"A new standard will make the installations so much easier, as regulations for the equipment will be the same in all harbours. This way we can start focusing on installing the transmission lines in our ports abroad too, especially in Germany and Denmark."

One issue shipowners need to take up with governments worldwide, is that ship fuel is tax-free, which is not the case with electricity. In Europe this issue is already on the agenda and Stena Line are following the debate carefully.

"A positive decision in this matter would make a massive contribution to cold ironing connections booming globally," Per says.

"Shipping is a global business and we need to take joint responsibility for the emissions and put together regulations valid in all parts of the world. Today Europe is an Emission Control Area and the USA is about to join this programme too, hopefully we can extend it to all continents shortly," Per Wimby concludes.

Rules, regulations and emissions

	CO ₂ (carbon dioxide)	SO _x (sulphur oxide)	NO _x (nitrogen oxide)
Shipping regulations	No regulations at present	1.5% in the North Sea and Baltic Sea*	Depending on type of engine
Reduced emissions in ports with shore electrical supplies	- 5,000 tons (86% reduction in emissions). Equivalent to about 2,000 cars driving 15,000 km/year.	- 11 tons (99% reduction in emissions).	- 82 tons (98% reduction in emissions). Equivalent with about 35,000 cars driving 15,000 km/year.

* The limit for sulphur oxide will be lowered to 1% in 2010.