

# Cold credentials

Susann Dutt and Åsa Wilske of the Port of Göteborg show how momentum is gathering in the drive to introduce cold ironing on a global scale

**T**he Port of Göteborg has been a stalwart pioneer in the introduction of cold ironing technology. Situated on the west coast of Sweden, and Scandinavia's leading port in terms of tonnage and twenty-foot equivalent unit (TEU) throughput, the port was the first in the world to provide high voltage On-shore Power Supply (OPS) for cargo vessels. It is also at the forefront of the *World Ports Climate Initiative* which is working to reduce carbon dioxide (CO<sub>2</sub>) emissions and improve air quality across the world's port facilities.

Cold ironing came to the port in 2000 through a collaborative project with the major pulp and paper group, **Stora Enso**. Currently, there are two quays at the roll-on/roll-off (ro-ro) terminal that can offer OPS (or cold ironing), and six vessels operating on behalf of Stora Enso (three **TransAtlantic** and three **Wagenborg** ships) regularly use these connections. In addition, **Stena Line** has one quay with a high voltage supply and two quays with low voltage supply which it regularly uses for four of its vessels.

Today, over 20% of all ship calls to the Port of Göteborg are connected to OPS, which equates to some 1,700 out of 8,000 calls during 2008 – a not insignificant percentage. More specifically in the ro-ro terminal, the number of OPS-connected vessels totalled 30% of all calls in 2008, or around 500 out of 1,500 calls.

Looking to the future, the port has ambitions to become the first ro-ro terminal in the world to offer OPS to all of its visiting vessels. It remains convinced that cold ironing will play a major role in ensuring that shipping is an environmentally sustainable mode

of transport. In 2008, the port received a climate investment grant from the **Swedish Environmental Agency** to supply electricity at all berths at the ro-ro terminal. The grant will provide a third of the total required investment of €2.4 million (\$3.4 million), and the port estimates that a complete switch to on-shore power at this terminal could cut annual CO<sub>2</sub> emissions derived from shipping in the Port of Göteborg area by 10%, or some 30,000 tonnes.

The port believes that the environmental benefits of a switch to OPS can be clearly demonstrated, and will improve the working and living conditions of dock workers, vessel crews, and the wider local community. It has quantified the reduction in emissions by using OPS in place of marine fuel to power on-board electrical systems.

When renewable power sources are used, OPS can almost neutralise CO<sub>2</sub> as well as other emissions. Clearly the extent of the CO<sub>2</sub> reduction will depend on the energy source used (fossil-fuelled electricity production versus a hydroelectric power supply, for example). However, studies have shown that, irrespective of how the electricity is generated, the use of shoreside electricity has a lower environmental impact than using auxiliary engines. In order to ensure that electrically connected vessels are as environmentally sound as possible, the Port of Göteborg uses power generated by two local wind turbines

Another benefit of using OPS in place of on-board power generation is the elimination of noise and vibration from the auxiliary engines whilst at berth.

The Port's work on the implementation of OPS has received several accolades. In 2004, the Port was awarded the European Union's (EU) newly-instituted

**Table 1 Emission reduction efficiencies**

Measure	% Emissions reduction (-) / increase (+) per vessel			
	NOx	SO <sub>2</sub>	PM	VOC
Shore-Side Electricity (compared with 2.7% S Residual Oil (RO))	-97%	-96%	-96%	-94%
Shore-Side Electricity (compared with 0.1% S Marine Distillate (MD))	-97%	0%	-89%	-94%

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environmental prizes, the *Clean Marine Award*, and then in 2008, it received the *Clean Seas Award*, together with Stora Enso, from *Lloyd's List*. This accolade is given to companies or organisations that have made major contributions to combating pollution caused by shipping.

A more recent venture in which the port is taking a leading role is the *World Ports Climate Initiative*. In July last year, 55 ports came together at a conference in Rotterdam to sign a climate declaration whereby they committed themselves to actively reduce CO<sub>2</sub> emissions and improve air quality. Participating ports include Shanghai, Santos, Melbourne, Singapore, Houston, Los Angeles, Long Beach, Antwerp and Rotterdam.

The Port of Göteborg took a leading role in speeding up the adoption of OPS on a global scale, both before and after the conference itself. A guidance document for ports to use in their decision processes concerning a switch to OPS was prepared by the port in partnership with the **Port of Los Angeles** and the **Port of Shanghai**, and this was presented at the conference.

Göteborg is now leading a project to stimulate the use of OPS, and it is working on this with the ports of Amsterdam, Antwerp, Bremen, Hamburg and Le Havre. One element of this project is the creation of a web-based application which would provide practical guidance on OPS to interested ports, and would also contain relevant information for other stakeholders such as terminal operators and

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shipping lines. Within the project's terms of reference, a questionnaire about ports' current status and future plans for OPS has recently been sent out to ports worldwide, and the results should be collated by the beginning of September. (The findings of this questionnaire will feature in the October/November issue of *Bunkerspot*.)

Several OPS projects using high voltage supplies are already underway in Europe, North America and around the world. Ports which have already introduced this include Göteborg, Piteå, Lübeck, Zeebrügge Kotka (ferry and/or ro-ro), Juneau (cruise vessels), Seattle (cruise vessels), Los Angeles (container ships), and Long Beach (container ships).

So, while the Port of Göteborg is a dedicated advocate of a switch to OPS, what are the factors delaying its global uptake? Clearly, a major obstacle is cost, both in terms of establishing the port infrastructure, retrofitting vessels and meeting the costs of the electricity itself. Many EU states impose a tax on electricity, which is something that is

not a consideration when using fuel for auxiliary engines. As a port, Göteborg is looking to the **European Parliament** and national governments to come to a decision on taxation which would make it more economically feasible to choose a more environmentally friendly solution – cold ironing.

In April 2009, the three most significant bodies in Swedish shipping – the **Swedish Maritime Administration**, the **Ports of Sweden** and the **Swedish Shipowners Association** – signed an agreement to stimulate the greater use of onshore power supply. The ceremony, held at the Port of Göteborg, was also attended by Lena Apslund, the Moderate Party's fiscal affairs spokeswoman, and she explained that the Swedish government is in agreement that OPS should not be subject to taxation.

Furthermore, a mandate to use more expensive, lower sulphur fuels in port environments, as well as the publication of an upcoming standard from the **International Organization for Standardization (ISO)** and the **International Electrotechnical Commission (IEC)**, which will clarify the technical requirements for OPS, could be useful drivers in the continuing push for worldwide adoption of cold ironing. Whatever OPS initiatives do emerge over the coming months and years, it seems certain, however, that the Port of Göteborg will continue to occupy a pivotal role in this environmental campaign to reduce shipping emissions.