

Notes of the Shore Power workshop 8 October 2008

Present at workshop

- Asa Wilske, Port of Göteborg
- Wiert-Jan de Raaf, Clinton Climate Initiative
- Per Lindenberg, Port of Göteborg
- Ralph Giercke: Stadtwercke Luebeck
- Carola Lampe: Port of Bremen
- Jan Smits, Holland Marine Equipment
- Paul de Rache, Port of Antwerp
- Ton van Breemen. Port of Amsterdam
- Wolfgang Becker, Port of Hamburg
- Luciano Corbetta, Cavotec
- Ola Johnson, ABB
- Hendrik Hollstein, Port of Hamburg
- Michiel Jak, Altran Netherlands
- Arno Westerbeek, Altran Netherlands

This meeting was Initiated by the Port of Göteborg and the Clinton Climate Initiative

Hosted by the Port of Hamburg and **moderated** by Altran: Michiel Jak and Arno Westerbeek

1. Introduction

Asa Wilske of the Port of Göteborg, supported by Wiert-Jan de Raaf, Clinton Climate Initiative, initiated this workshop with the main goal to make a start with the set up of a toolkit for ports that will assist with decision making and guides the starting up of shore power implementation. After a short introduction of the Clinton Climate Initiative, Wiert-Jan de Raaf explained that the CCI Port and Shipping program started with a C40 World Ports Climate Conference in July 2008. There CCI announced the cooperation with IAPH, ESPO and AAPH. Also 55 ports endorsed a climate declaration focusing a.o. on CO2 calculation, environmental ship index, energy efficient buildings and lighting, cargo handling equipment and onshore power supply (OPS).

2. Session Setting the Scene by Altran, Michiel Jak

Michiel Jak presented the following agenda points to set the scene:

Agenda Setting the scene

- Introduction shore power
- Examples
 - Port of Gothenburg
 - California
 - Port of Stockholm
 - Port of Helsinki
 - Cruise Vessels, Alkasa
 - US Navy
 - Port of Lubeck
- Cost
- Other examples : Aircrafts/ Trucks and Locomotives

In setting the scene the participants actively participated in the discussion and gave their own presentation to endorse the examples. Feedback on the Altran presentation has been used to adjust the presentation which will be made available on the Göteborg website soon.

All participants are requested to send their relevant documents and presentations to Asa Wilske for sharing via Göteborgs website (accessible for the working group only).

3. City- Port presentations

Below are the key points of the presentations given, in telegram style.

Lubeck:

- In 1998 started the project with shore power
- 12.400 ships visit the port per year
- Benzene and NOx were the biggest problem
- Win win situation: city, port, ship owner, power supply
- Lloyds, Det Norske Veritas and Siemens helped with this project
- MOU for 16 ports in Baltic sea in New Hansa project saying they will implement OPS, 4mln euro's from EU support
- Mainly ferries: same situation in every port → no need to wait for ISO standards
- In ISO two models: LA model and Lubeck model: differences on black outs, free cables on the ships (not allowed in EU), potential of onshore power supply
- Stadtwerke Lubeck guarantees the good working (no black out) of the system for the port (terminal) and ship owners. Stadtwerke Lubeck (the public utility company) is liable.
- 10 kvolt → 90% of the ports worldwide
- With chipcard easy to recognize the ship
- Onshore converters and transformers for diverse combinations of voltage * frequency
- Transformer solution in container on the ship
- Technical issue: nr of switchboards needed on the ship
- Insurance system for port and ship owners (Det Norske Veritas + big German insurer) based on contracts for this system (15 yrs). Once there is a public norm then new contracts / insurance solutions needed.
- Energy suppliers don't want to have peaks
- Four contracts: insurer, port, supplier, ship owner
- 50hrz station 300.000 euro, 60hrz 1mln euro, Siemens Shiplink system

Göteborg:

- Main driver: Stora Enso, the Paper company, has to meet environmental requirements
- Funding from government to start new project with ro-ro
- Crew of the ship makes the connection. Ship owner trained the crew.
- Liability → ship responsible for connection
- Boilers to heat up the heavy fuel can't run on shore power they run on oil and have to burn harder because they don't get residual heat anymore from the auxiliary engines.
- Shipnet synchronized with shore network

- Prerequisite: is enough power available?
- 6 MW capacity available
- Q: some containerships use 8MW when they have many reefer containers but 9 out of 10 times they transport less reefer containers and use for instance only 2 MW. What capacity do we need to offer?
- Q: What does it take to build OPS for a complete port?

Hamburg:

- Benchmarking is important
- 2 container terminals appr 10 mln teu
- 1,2 km quays
- Residential area closer and closer to port
- Air pollution issue mainly with cruise ships

4. Afternoon session: elevator pitches

Antwerp

- In Antwerp the port authority is the grid operator.
- Tankers → OPS maybe important but could be very dangerous
- Dry bulk carriers → not very frequently in same port
- → Luciano Corbetta, Cavotec, will provide info on examples for these categories
- It is more logical to start with:
 - ferry and roro
 - cruise
 - container

Per Lindenberg added that LA demands from ships to be able to connect to OPS.

The Key Questions during the workshop were:

1. What kind of ships applicable OPS? – Numbers
2. Environmental benefits - compared to what fuels? (Ton)
3. Electricity tax – port or direct cost OPS
Electricity prices – locally
4. ISO/IEC Standards

5. Liability?
6. Grid situation / availability of power frequency
7. Scale – Whole port?
8. Policy – can we oblige ships to be ready for OPS?
9. Responsibility port authority – Terminal operator
10. Cost owner – Stakeholders
11. Optimal size of the project

After setting the scene and the presentations we did an inventory on four items;

1. What is the ambition, driver and motivation to implement shore power?
2. What to include in, what to cover by the tool kit shore power
3. What are the main issues for decision makers dealing with implementing shore power?
4. Who are the main stakeholders? Who and how to include in a joint working process?

On the next two pages you will find the answers provided by the group on these questions.

Deliver + ambition + motivation	Tool Kit
<p>1. Amsterdam: Environment ↑ air/noise/PM Port area ↑ OPS cargo vessels Sca vessels Study RoRo/container Target CO2</p> <p>2. ABB: Better world/€</p> <p>3. CCI: CO2↓ / speeding up reduction</p> <p>4. Antwerp: Air pollution →port development New vision + ambition Public CO2 / no target yet Grid operator = port</p> <p>5. Hamburg: Noise Growth port!</p> <p>6. Bremen: Future proof Noise / air Sulphur ↓</p> <p>7. Cavotec Image Intermedia Sell</p> <p>8. HME More innovation technology / environment</p> <p>9. Göteborg: Interlocation Clients to clients, Stena Economic Benefit CO2 30% 2020 CO2↓ / Profile</p>	<p>1. Amsterdam: Technical + Financial Feasibility study Standardization Implementation Expert Partners Other stakeholders Scenario planning, benchmarking, reductions</p> <p>2. ABB: Cost benefit analyses Port-shipping line Cooperation</p> <p>3. Antwerp: Parameters Cost/ROI / B.C. between 3-10 years Specifications: vessels + quay → impact costs Safety Checklist/quick scan +B.C. = Target Go/no go Global shipping lines</p> <p>4. Hamburg: Contractual issues / liability Multi-user terminals</p> <p>5. Bremen: Selection suppliers High volume / combine purchasing Analyse efficiency comparison + future scenario + fuels</p> <p>6. Cavotec Communication: ship – shore Technical solution based on</p>

<p style="text-align: center;">Air, law, working conditions</p>	<p>intermediar role Most economic solution → make decision 7. HME SSP → other alternatives Costs / benefits, econ/environment Show difference → practical implementation Practical use Who pays what? ↓+↓ costs Limit the types of ships 8. Göteborg: Quantify environmental costs More than parts: Clients / owners / people, etc.</p>
<p>Main Issues / Q's</p> <p>1. Amsterdam: Benefits ship owners / lines H2 stimulate → inforce Carbon footprint → Benchmark Renewable energy</p> <p>2. ABB: Shipping lines input + costs Collaborations port / shippers / operators H2 spread? Who uses it?</p> <p>3. Antwerp: H2 invent? Utilization Forecast Synchro → W.W. Shipping lines → size max. capacity, no multi-users Included? → Also in discussion</p> <p>4. Hamburg: Multi user terminals</p> <p>5. Bremen: Utilisation, number of calls</p>	<p>Network/Partners</p> <p>1. Amsterdam: Ship owners / NGO environmental parties Port of Rotterdam / Port Council / CCI / city / EU / utilities/ Local government (province) / terminal operations / expert partners</p> <p>2. ABB: Same</p> <p>3. Antwerp: Shipping lines, terminal, international WW shipping IPA, Ecoports, IMO</p> <p>4. Hamburg: Environmental administration ↔ supportive</p> <p>5. Bremen: Most relevant shipping lines? Feeder / feeder lines</p>

<p>6. Cavotec + port =</p> <p>7. HME</p> <p>8. Göteborg:</p>	<p>Fleet specs / visit profile Shore power advantage → Future ↓ Efficiency Cost reduction sludge (no issue > 2010) Clean fuels on-board “we are in between shipping line intermediar” → Communication → Bring decision to strategy instead of technical level SSP vs other alternatives Who pays what? Who makes our decisions? H2 force ships to use OPS Tax reduction (on energy) / lobby EU CCI → Big harbours, mass</p>	<p>6. Cavotec</p> <p>7. HME doors determine</p> <p>8. Göteborg:</p> <p>Utilities ↔ barrier? - PA, Gvt, Ship owners / cargo shippers Harbour fee Client, Client to client Owners Direct environment of the port</p>
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