Onshore Power Supply (OPS)

Shore-side electricity • Shore-connected electricity supply • Shore power •
• Ship-to-shore • Cold ironing • Alternative Maritime Power (AMP)

Content of the presentation

- Introduction
- The OPS Project
- Challenges
- Next steps
- How to get involved!

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Green Port Conference 2009, Naples, Italy
Introduction

• OPS replaces onboard generated power from diesel auxiliary engines with electricity generated on-shore (high voltages)

• Port of Göteborg – Stora Enso
  First port in the world to offer OPS high voltage for cargo vessels in year 2000

• Significant reduction in local air pollutants (NOx, SO₂, PM, VOC)

• Additional benefits noise & working conditions

• Use a renewable energy source and reduce greenhouse gases to a minimum

• Container, ro/ro, ferries, cruise, tankers

• The interest for implementing OPS is increasing
Introduction

• At World Ports Climate Conference in Rotterdam, July 2008
  - A Guidance document – Onshore Power Supply

The content of the Guidance Document:
1. Background
2. Guidance for implementation (Plan, Do, Check, Act)
3. Best practices and case studies
4. Pros and cons
5. Frequently asked questions

www.portgot.se (Environment-World Ports Climate Initiative)
The OPS Project

Overall goal –

- Reduce local air pollutants & greenhouse gas emissions by stimulating as many ports, terminal operators & shipping lines worldwide to implement the technology of OPS

- Accelerate the market & lower the price for the technology
The OPS Project

The process

- Two workshops+ conference, autumn 2008, Hamburg/Göteborg

- Participants

Workshops - Clinton Climate Initiative, Port of Antwerp, Port of Amsterdam, Port of Bremen, Hamburg Port Authority, Port of Le Havre, Stena Line, Stadtwerke Lübeck, ABB, Cavotec, Siemens, Bemac Uzushio Electric, Holland Marine Equipment, Altran …

Seminar – 60 participants Shipowners, suppliers, ports & experts

- Need for an online toolkit based on the Guidance Document
  "aid for decisionmakers” ”if & how”

- Early stage in the project

- Many questions still to be discussed
Preliminary goals of an online OPS Toolkit

1. Help port authorities, terminal operators and ship owners in decision making about Onshore Power Supply.
   - Is OPS the right solution to reduce local air pollution and greenhouse gas emissions?

2. Help the different stakeholders to do a quick scan cost-benefit analysis, focusing on economical and environmental costs and benefits.

3. Give guidance how to maximize the reduction of GHG by implementing OPS projects.

4. Assist in the implementation process
   - How are we going to do it?
     Based on best-practices, suggestions & examples
The OPS Project

The scope in stage 1:

1. Ferry and Ro/ro
2. Cruise
3. Container
Stakeholders

- EC, IMO, WMF, IAHP, IACS, ISO, IEC, ESPO, ICS, etc.

Governments, City Authorities

Power Supplier

Port Authorities

Suppliers:
- Cavotec
- ABB
- Siemens
- SAM
- Electronics
- Others...

Ship Owners

Oil Companies

TOP 5 Auxiliary Engine Manufacturers:
1. MAN B&W
2. Daimler
3. Wartsila/Sulzer
4. Yanmar
5. MAK

Engine Manufacturers
OPS Tool Kit

Who am I?
- Ship Owner
- Port Authorities/Terminal Operator
- City Authorities

OPS?
- YES: Quick Scan/Feasibility
- NO: Why not?

Do
- YES: DON’T
- NO: DO

How to start-up?

Tool Kit
Who am I?

Ship Owner

Environment
- GHG emissions
- Noise pollution
- Air quality
- Urban area proximity
- Reduction of negative externalities
- Legislative policies
- Client demand, CSR
- Fuel mix and OPEX
- Electricity production method

Special Conditions
- Regulations / Legislation
- Length and terms of charter contract
- Frequent changes or long movements along the berth
- Security and Safety
- Public Image
- Ship life span criteria
- Code and standards / coordination

Scenario Planning
- Growth
- Cost developers

Use
- Liability
  - Control / Inspection
  - Operability in all weather
- Insurance
  - Safety Procedures
  - Responsibility (fault tolerance)

Operations
- Availability management / utilization
- Quay facility for every call / mobility restrictions and intermodal efficiency
- Electric power / Low S / bilge water quality - treatment
- Time needed for connection, desalination, delay due to weather matching / synchronization

Cost
- Electricity / 50/60 Hz
- Supply
  - Oil Price (Heavy fuel oil / Marine gas oil / Low S diesel / Alternatives)
  - Taxation
  - Benchmarking / Compared with alternatives
- Maintenance
  - Ship auxiliary engine
- Kays / Environmental tax / Financial Incentives
- Depreciation

On-board modifications
- Reels / Transformers
  - Auxiliary lighting spec
  - 50/60 Hz / System voltage

Grid connection / Cable management / Length / Position / number of cables / Cable deployment
- Cables / Connectors / Plugs / Sockets / Wharf outlets / Space management

Infrastructure
- Installations / Electrical design and electrical lead transfer
- Communication between port and ship / control and protocol
- Grounding / Short circuit limitation
Who am I? Port Authority

Operations
- Number of calls (frequency)
- Berthing time
- Required power (idle / operation)
- Ship type
  - Cruise
  - Container
  - Ro-Ro

Environment
- GHG emissions
- Noise pollution
- Air quality
- Urban areas
- Proximity
- Reduction of negative externalities
- Legislative policies
- Client demand, CSR
- Fuel mix and CO2S
- Electricity production method

Special Conditions
- Regulations / Legislation
  - National
  - EU
  - Global
- Length and terms of charter contract
- Frequent changes of long movements along the berth
- Security and Safety
- Public Image
- Ship life span criteria
- Code and standards coordination
- Cost developers
- Growth

Scenario Planning

Use
- Liability
  - Insurance
    - Safety Procedures
    - Responsibility (fault tolerance)
  - Control / inspection
    - Billability in all weather
- Billing and metering

Cost
- Electricity / 50/60 Hz
- Oil price (Heavy fuel oil / Marine gas oil / Low S oil / Alternatives)
- Taxation
- Benchmarking / Compared with alternatives
- Ship auxiliary engine

Infrastructure
- Installations / Electrical design and electrical fuel transfer
- Communication between port and ship / Control and protocol
- Grounding / Short circuit limitation
- Cables / Connectors / Plugs / Sockets / Wharf equipment / Remote management
- Grid connection / Cable management / Length / Position / Number of cables / Cable deployment

On-shore connections
- Cable reels and cranes
- Total aspects

On-board modifications
- Transformers
- Auxiliary engine
- Spec

Supply
- Electricity / 50/60 Hz
- Maintenance
- Shore installation
- Kms / Environmental tax / Financial Incentives
- Depreciation
Challenges

• Get the online Toolkit user friendly
• Get it simple and at the same time reach the goals
• Financing the Toolkit
• Keep it updated/maintain the Toolkit
Next steps

• Share knowledge & experience
• Decide upon the scope of the Toolkit
• Find sponsors for the development of the Toolkit
• Get shipowners involved
• Communicate with/via IAPH, ESPO, Ecoports, PIANC …
• Preliminary time frame – Online Toolkit 2009
How to get involved?

Different ways:

- Take part of the Guidance document
- Share your own experience
- Keep yourself updated at
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Thank you for your attention!