Good practice: Terminal operation at the Port of Hamburg

Clean air in ports and port cities, 04th June 2014, Jan Hendrik Pietsch, Corporate Sustainability Manager
Overview

- The company HHLA
- HHLA’s sustainability strategy
- Modal shift from street to rail
- Terminal measures to keep the air clean
  - Technology
  - Organisation
  - Know How
- Q & A
A Leading Port Logistics Company

Company overview

**Container**
- Container handling
- Container transfer and storage
- Value-added container services (e.g., repair, maintenance)

**Intermodal**
- Rail- and road-bound transport services in the port’s hinterland
- Loading/Unloading of carriers
- Operation of hinterland terminals

**Logistics**
- Special seaport handling — Bulk commodity, Fruit, RoRo, ConRo
- Consulting, training
- Warehousing and contract logistics

**Split 2013 (HHLA Group)**

By revenue — € 1,155.2 million
- Container 62%
- Intermodal 27%
- Logistics 8%
- Holding / Other / Real Estate 3%

By employees — 4,994
- Container 59%
- Intermodal 22%
- Logistics 6%
- Holding / Other / Real Estate 13%
HHLA in the port of Hamburg
About 70 % of throughput in Hamburg is handled by HHLA
FILM EUROPEAN TRANSPORT CHAIN
Modern production concept shifts goods from street to rail

- Two crucial levers to minimize air pollution:
  - Modal shift to rail
  - Terminals
## Group Policy

We are actively networking with other logistics players to create sustainable environmentally-friendly transport chains.

## Objective

By extending its facilities and networks HHLA meets its requirement for an over-proportional increase in the use of railways in the hinterland.
Action areas and group policies
Ecological transport chains and climate protection

GROUP POLICY
We exploit all technically meaningful and economically justifiable alternatives in our sphere of influence to reduce CO₂.

OBJECTIVE
HHLA has set itself an objective to reduce emissions of CO₂ per handled Container by the year 2020 by at least 30%, based on the year 2008.
Modal shift from street to rail
Joint development of specially designed energy efficient rail cars
Efficiency improvement to reduce air pollution

Lightweight railcars, specially developed for maritime traffic

- More than 10% additional containers on one train, decreasing air pollution, noise and GHG emissions.
- Less shunting in harbour areas through hub and shuttle system
- 30% lesser weight than traditional railcars
RAIL-PORT HAMBURG

More than 70%* of all long distance containers arrive and leave the port by train; the high share of rail reduces emissions.

Market share of rail Containers (2013*, TEU Mio)

- Ecological and reliable
- Good infrastructure and connections
- Highly efficient

Success factors

Quelle: HHM  *im Langstreckentransport über ca. 300 km
Clean air in ports and port cities, Jan Hendrik Pietsch, 04th. June 2014 © Hamburger Hafen und Logistik AG
Minimisation of air pollution

Three levels

<table>
<thead>
<tr>
<th>Technology</th>
<th>Processoptimisation</th>
<th>Know How</th>
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<tbody>
<tr>
<td>▪ Substitution of diesel powered machines</td>
<td>▪ Optimisation of processes to decrease energy consumption</td>
<td>▪ Inclusion of employees</td>
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<td>▪ Use of technology most advanced air pollution minimised machines</td>
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<td>▪ Usage of energy from renewable sources</td>
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<td>▪ Decrease port time of ships through high terminal productivity</td>
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Minimisation of air pollution at terminals

Substitution of diesel powered machines through electrified machines
Decreasing CO$_2$ emissions and air pollution
Project BESIC
World’s first zero emission carriers at HHLA’s terminal in Hamburg
Minimisation of air pollution at terminals - technology

FILM BESIC
World’s first prototypes at HHLA terminal

- 10 battery powered AGV’s in operation
- Locally emissionfree
- Powered by green electricity
- Battery weight: 12 tons
Biggest fleet of Electric vehicles in Northern Germany

60 EV’s on all harbour terminals in operation

- Purely electric driven
- Speed limited to 30 km/h
- Charge station for every EV
Biggest fleet of Electric vehicles in Northern Germany

60 EV’s on all harbour terminals in operation

- High acceptance from employees
- Very quiet
- Over 150,000 km driven already
Solarenergy
Container Terminal Tollerort

- On the roof of the maintenance center of Container Terminal Tollerort
- Production of CO$_2$ free electricity 2013: 116,600 kWh
Emission reduced Hybrid straddle carriers

Significant reduction of air pollution between stage 1 and stage 3 b

- During last decade reduction of specific Diesel consumption by 30% through hybrid technology
- Usage of „normal“ Diesel
- Reduction of air pollution through technology
Development of clean air standard for straddle carriers
Since 1999 80% reduction of NOx and 95% reduction of PM

- All HHLA straddle carrier comply to the EU – Nonroad – directive 97/68/EG
- HHLA operates biggest fleet of Northrange ports which complies with stage Stufe III b
- Zero local emission machines are purely electric powered. They emit no PM, NOx and no SOx
Add Blue Technology
Reliable technology to reduce air pollution

- Add blue is stored in a separate tank and added to the combustion process
- Prozess and technology introduced on HHLA Terminals
Process optimisation to reduce emissions

Optimierung logistischer Prozesse – Twin Operation

- Simultaneous transport of two 20’ containers reduces the number of empty drives and therefore the Diesel consumption and the noise emissions
- More than 100,000 L Diesel saving annually
Process optimisation to reduce emissions
Combined loading and discharging improves the energy efficiency

**Conventional**

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<th>Loading</th>
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<td>1. Move</td>
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<tr>
<td></td>
<td>Loaded trip</td>
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<td>Empty trip</td>
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**Future principle:**

- Two moves of bridge for two boxes
- Advantage: noticeably more throughput in the same amount of time, reduced immissions, reduced berthing time

**No move in vain:**

- Unnecessary empty moves are obsolete
Employee Know how
Inclusion of employees

- Intranet-based portal for car-pools of employees
- Increase usage of public transportation systems through subsidized cards
- Ideas competition to reduce energy consumption
Development of CO₂ emissions
Since 2008 reduction of 24,9%
Questions and answers