Capital Markets Day
The ballast water treatment possibility

Anders Lindmark
MD AlfaWall
The ballast water challenge

THE PROBLEM: Aquatic invasive species
- Foreign species travelling with ballast water to new areas, threatening current ecosystems.
- UN says one of four major threats to the world’s oceans.

THE SOLUTION: Legislation
- To prevent the spread of invasive species by installing ballast water treatment systems.
The market and its changing dynamics

- New build market

MOVING AWAY FROM COST FOCUS

**Before legislation**
- Yard decided
- Focus on initial cost
- Performance of less importance since systems generally not in operation

**After legislation**
- Decision power to shipowner
- Focus on compliance
  - dual certification
  - system performance
  - service capability
The market and its changing dynamics

- The retrofit market

CUSTOMER FOCUSES ON:

- Dual certification and service capability
- Functionality
  - easy to install and operate
  - optimal energy consumption
  - high biological efficacy
- Financial strength of systems’ provider
The market potential 2016

- Expected market development after IMO ratification

In September, 2016
The market potential 2017

- Expected market development after retrofit system rule being pushed

In September, 2017
Alfa Laval’s offering – a good fit

• Strong brand in marine market
• Market-leading technology
• Solid portfolio and vast experience
• IMO and US Coast Guard approvals
• Global sales & service network
Going forward

- Focus on further developing the offering
  - Launch of solution with reduced production cost, footprint and installation cost
  - Improved large-flow solution

- Service network & service offering

- Connectivity
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The route to competitive compliance – SOx

Rene Diks
MD Inert Gas & Exhaust Gas Cleaning Systems
The sulphur problem

THE PROBLEM: Air pollutants in ships’ exhaust gases turn into acid rain – negatively impacting humanity, animals, crops and forests.

THE SOLUTION: Air emission regulation on land and now at sea limiting the release of sulphur emissions.
IMO’s air emission regulation (SOx)

SECA 1 January 2015
0.1% sulphur in EU, North America and US Caribbean

Sulphur Cap in 2020
(0.5%) globally

0.1% sulphur - ECA
0.5% sulphur - globally
Compliance options

**SWITCH TO LNG**
- Always in compliance
- High investment cost
- Limited infrastructure
- Price uncertain

**USE LOW-SULPHUR FUEL**
- Low investment cost
- Higher price than HFO
- Fuel quality issues

**INSTALL A SCRUBBER**
- Continued use of HFO
- Payback time depends on fuel price delta
Scrubber market potential

- How many vessels will install a scrubber?

**TOTAL MARKET**

<table>
<thead>
<tr>
<th>Retrofit</th>
<th>Worldwide fleet</th>
<th>~60,000 vessels</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Newbuild</strong></td>
<td>Yearly average</td>
<td>~1,500 vessels</td>
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</tbody>
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**Market Model Based on EG**

- Fuel price difference
- Investment cost
- Vessel:
  - Operating profile
  - Fuel consumption
  - Remaining lifetime
- Financial position
  - Ship segment
- Charter/owner

**Market Potential 2017-2025**

~5,000 vessels
What you get from Alfa Laval

IN GENERAL
- Quality, reliability ➔ strong brand name
- Unmatched support & service presence
- A major supplier to the industry

SPECIFICALLY
- Systems in compliance since 2009
- 50 years’ experience with marine scrubbers
- Vast experience with PureSOx projects
- Continuous product development
What’s next?

- Continue to work on our offering
- Strengthen connectivity proposition
  - MEPC reporting
  - Vessel performance
  - Preventive maintenance
- Service

Compliance at all times = peace of mind
• Regulations are in place, driving demand
• We are a strong supplier with solid product portfolios
• We continue to focus on further development to meet future demands
Connectivity