MAKING MARINE APPLICATIONS GREENER

Bengt Ramne

Presents
GreenPilot

Making marine applications greener

GreenPilot

Bengt Ramne

Co-financed by

Swedish Maritime Administration

Trafikverket

Methanol Institute
METHANOL AS MARINE FUEL

Why?
VISION:
COMPETITIVE SHIPPING WITH MINIMUM ENVIRONMENTAL IMPACT
Alternative Marine Fuel - Feedstock and products

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METHANOL AS FUEL

- Low flashpoint
  - 11°C (Diesel >43°C, Gasoline <-60°C)
- Low flame visibility
- No smoke from combustion
- Material compatibility
- Toxicity
## PILOT 729SE

<table>
<thead>
<tr>
<th>Name</th>
<th>Pilot 729SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year build:</td>
<td>1996</td>
</tr>
<tr>
<td>Yard:</td>
<td>Smögens plåt och svets</td>
</tr>
<tr>
<td>$L_{OA}$</td>
<td>12.6 m</td>
</tr>
<tr>
<td>$L_{PP}$</td>
<td>11.1 m</td>
</tr>
<tr>
<td>Breath</td>
<td>4.16 m</td>
</tr>
<tr>
<td>Depth</td>
<td>1.05 m</td>
</tr>
<tr>
<td>Draught</td>
<td>0.7 m</td>
</tr>
<tr>
<td>Class</td>
<td>NBS Y 90</td>
</tr>
<tr>
<td>Hull material</td>
<td>Aluminium</td>
</tr>
<tr>
<td>Superstructure</td>
<td>Composite</td>
</tr>
<tr>
<td>Lightship</td>
<td>11 ton</td>
</tr>
<tr>
<td>GT/NT</td>
<td>20/6</td>
</tr>
<tr>
<td>DWT</td>
<td>1.5 ton</td>
</tr>
<tr>
<td>Max speed</td>
<td>32 kn</td>
</tr>
</tbody>
</table>

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GENERAL ARRANGEMENT

- Composite superstructure
- Aluminium hull
- 2x 600 l diesel
- Engines aft below deck
- Water jet
GENERAL ARRANGEMENT

- New tank room
  - 2x 440L methanol

- Fuel pumps and filters in steel chest

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METHANOL TANKS

- Independent fuel tanks
- SS tanks (EN 1.4404/ ANSI 316L)
- 2x 440 litre
- Solenoid valves on tanks
- Combined tank ventilation, exit PS
TANK INERTION

- Inert gas in fuel tanks to prevent the possibility of a combustible atmosphere
- 100 mbar overpressure
- Electrically controlled pressure control valve
- Mechanical P/V-valve on deck to sustain pressure and protect from vacuum pressure

- Tank inertion required in class rules and IGF code for methanol fuelled ships
- Not required for transport of methanol in IBC code

**LR rules for classification of methanol fuelled ships Ch1 Sec6**

6.8.1 **Provisions shall be made for supply of nitrogen inert gas. This shall be either through on board generation of inert gas or through an inert gas storage system with provisions for refilling from shore**

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NITROGEN SYSTEM

Nitrogen storage on deck

P/V valve on tank ventilation

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PUMP CHEST

Pump chest

In machinery room looking forward towards Pump chest.

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CONTROL AND AUTOMATION

- Vapour detection system
- Monitoring tank pressure
- Control of fuel valves and fuel pumps
- Tank volume

- Fuel flow
- Torque on reverse gear

} Efficiency
CONTROL AND AUTOMATION

HMI panel in cabin. Currently displaying a system overview.

PLC cabinet
Fuel valves and Gas detector

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BUNKERING

SB bunker manifold

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RESULTS AND CONCLUSIONS

- No observed problems with the auxiliary systems or engines
- Low noise
- No observed problems with material compatibility
- Easy to detect methanol leakage
- Simple bunker solution works well
- Nitrogen system not needed for small installation
METHANOL

A cost efficient, clean burning, universal, future proof fuel

with potential to be sustainably produced in large quantities
ENGINES

- Large 4 stroke engines – Wärtsilä
- Large 2 stroke engines – MAN B&W
- Smaller engines 100 – 450 kW
  Converted Scania engines from ScandiNAOS
Thank you

Bengt Ramne
ScandiNAOS AB