Perspectives of LNG in inland waterway transport

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Value Chain and Maritime LNG training
6th December 2017, Świnoujście
• is funded by the Horizon 2020,
• the biggest EU Research and Innovation programme,
• 17 partners from the Netherlands, Belgium, Germany, Austria and Romania,
• include the implementation of pilot tests of standardised systems for LNG propulsion, diesel after-treatment, energy efficient navigation, certification and monitoring of emissions and operational profiles.
for introduction of LNG as fuel and as cargo for inland navigation
• analyse costs and benefits of LNG use,
• transfer know-how from maritime into inland navigation sector and raise awareness,
• facilitate the creation of a harmonised European regulatory framework considering LNG as fuel and as cargo for inland navigation,
• deliver technical concepts for new and retrofitted vessels,
• execute pilot deployments of vessels and terminals,
• prepare wide-scale deployment.
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LNG Masterplan for Rhine-Main-Danube

- Framework & Market Analysis
  - Status quo analysis & trends
  - LNG supply analysis
  - LNG demand analysis
  - Impact analysis: safety, ecology & socio-economic aspects

- Technologies & Operational Concepts
  - Engine technologies & concepts
  - LNG tank & equipment technologies
  - LNG bunkering
  - Technical evidence & safety and risk assessment

- Vessels & Terminal Solutions
  - Terminal concepts & cost assessment
  - Vessel concepts (new-build)
  - Vessel concepts (retrofit) & other vehicles & machinery
  - Financing models for terminal infrastructure & vessel investment

- Regulatory Framework & Masterplan
  - Provisions for harmonised European regulations
  - Education & training requirements
  - Assessment of concepts, trials & pilot deployments
  - Masterplan (strategy & recommendations)

- Pilot Deployment
  - LNG Terminals
  - LNG Tankers (LNG as cargo)
  - LNG propelled vessel (LNG as fuel)
  - LNG vehicles & machinery

- Project Management
  - Project Management
  - Exploitation & Dissemination
  - Management of Industry reference group
  - Liaisons with relevant Organisations / Projects (global)
The shipping industry is committed to further reducing its emissions of air pollutants and greenhouse gases. Alternative fuels play a key role in achieving this goal. Liquefied Natural Gas (LNG) can serve as a transitional fuel towards low-emission shipping. This website monitors progress in the introduction of LNG to the markets of inland waterway transport and Wadden Sea navigation.
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OBSERVATORY OF EUROPEAN INLAND NAVIGATION

Map of Europe with various markers indicating ports and infrastructure.
LNG Hybrid Barge Hummel

- supplies power to cruise ships during the summer season and is able to operate as a floating power and heat plant in the winter
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becker marine systems
### Energy Sector Triangle

<table>
<thead>
<tr>
<th>Environment</th>
<th>Self Supply</th>
<th>Shore Power</th>
<th>LNG Hybrid Barge</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The</strong></td>
<td>Marine gas oil</td>
<td>Power mix (Germany)</td>
<td>LNG (Liquefied Natural Gas)</td>
</tr>
<tr>
<td><strong>Environment</strong></td>
<td>CO₂  ●●● NOₓ  ●●●</td>
<td>CO₂  ●● NOₓ  ●●●</td>
<td>CO₂  ●●● NOₓ  ●●●</td>
</tr>
<tr>
<td></td>
<td>SOₓ  ●●● PM*  ●●●</td>
<td>SOₓ  ●● PM*  ●●●</td>
<td>SOₓ  ●● PM*  ●●●</td>
</tr>
<tr>
<td><strong>Economic</strong></td>
<td>Cost efficiency</td>
<td>Risk of utilisation</td>
<td>No risk of utilisation</td>
</tr>
<tr>
<td><strong>Feasibility</strong></td>
<td>► But no public acceptance!</td>
<td>► Only stationary use (450 h/year)</td>
<td>► Year-round concept (365 days/year)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>► In conflict with energy laws and regulations</td>
<td>► Generates power, heat – and revenue</td>
</tr>
<tr>
<td></td>
<td></td>
<td>► Fluctuating demand (uneconomic)</td>
<td>► In line with energy laws and regulations</td>
</tr>
<tr>
<td><strong>Guaranteed</strong></td>
<td>State of the art</td>
<td>Grid-dependent</td>
<td>Grid-independent</td>
</tr>
<tr>
<td><strong>Supply</strong></td>
<td>► Existing solution</td>
<td>► Low capacity (city grid)</td>
<td>► Guaranteed supply</td>
</tr>
<tr>
<td></td>
<td>► But no public acceptance!</td>
<td>► 50 Hz frequency (cruise ships 60 Hz)</td>
<td>► 60 Hz frequency (cruise ships)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>► Available on demand (24/7)</td>
<td></td>
</tr>
</tbody>
</table>
Seatech Engineering
a design of an inland waterways LNG push tug
Seatech Engineering

a design of an inland waterways LNG push tug

• the overall dimensions normal for this type of tug when powered by diesel fuel,
• a pair of Mitsubishi diesels converted to LNG operation. Each one produces 720kW,
• the LNG power is forecast to give the tug a speed of 16 to 18 km/h when pushing the normal two barge tow loaded,
• meets DNV rules, the IMO rules for LNG installations on ships, and the various technical requirements for inland waterway vessels.
LNG w żegludze śródlądowej

Piotr Zbysz
Dodany: 21.01.2014

Powstała w wyniku porozumienia pomiędzy dwoma holenderskimi przedsiębiorstwami [Veka Group i Deen Shipping] Grupa LNG ma na celu budowę statków napędzanych skroplonym gazem ziemnym i ich popularyzację wśród armatorów.
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