PIONEERING LNG AS FUEL FOR SHIPPING: OPPORTUNITIES AND CONSTRAINTS

By: Dir. Armatek
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CORPORATE VISION AND MISSION

VISION PT PELNI

“To be a solid shipping company and customers first choice”

MISSION PT PELNI

• Managing and developing the sea transport to ensure public accessibility in order to support the establishment “Archipelago Principle;
• Improving the contribution of revenue for the state, employees, and role in the environment and service to the community;
• Improving the value of the company through creativity, innovation and human resource development competencies;
• Conducting business fairly with the principles of benefit to all parties involved (stakeholders) and apply Good Corporate Governance
Fleet

- Passangers Ship (3000 Pax) = 1 Unit
- Passangers Ship (2000 Pax) = 9 Units
- 3 in 1 Vessel (Modification) = 2 Units
- Passangers Ship (1000 Pax) = 9 Units
- Passangers Ship (500 pax) = 3 Units
- Ro-Ro & High Speed Craft = 2 Units
- General Cargo = 3 Units

TOTAL 29 Units
PT.PELNI Ships Engine

**MAIN ENGINE**
- MaK
- DAIHATSU
- B & W
- MITSUI
- MTU

**AUX. ENGINE**
- MaK - Caterpillar
- DAIHATSU
- MaK
## PT.PELNI Ships Engine

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<tr>
<th>Engine Model</th>
<th>Power (kW)</th>
<th>Ship Name</th>
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<td>MaK 6MU601AK</td>
<td>6000</td>
<td>TIDAR UMSINI</td>
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<td>MaK 6M601C</td>
<td>6400</td>
<td>B. SIGUNTANG</td>
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<td>MaK 8M601CC</td>
<td>8400</td>
<td>KELUD SINABUNG</td>
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<td>G. DEMPO</td>
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<td>MaK 6MU453C</td>
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<td>AWU BINAIYA</td>
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<td>MaK 8M20</td>
<td>1200</td>
<td>PANGRANGO</td>
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<td></td>
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<td>DAIHATSU</td>
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<td>B &amp; W MITSUI</td>
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DUAL FUEL SHIP CONVERSION (FEASIBILITY STUDY)
Dual Fuel Conversion Background

- There are opportunity for passengers to use other transport with competitive rates, a faster and better service (Low Cost Carrier)
- Fuel cost is the biggest cost component i.e 54% of the total operational cost of shipping.
- Increasing of fuel cost (HSD) within 15 years of more than 1000%.
- Ship design is fixed (not easy to changed) causes high operational cost.
Dual Fuel Goal

- Reducing the use of subsidized fuel, according to Government Direction.

- Potential savings in fuel costs as the largest component of ship vessel operating cost (54% of Total Cost of Operations)

- Green Shipping for a healthy environment

- Reducing the amount of exhaust emissions (NOx, SOx, COx) due to operation of the vessel
Additional Equipment Scheme for Dual Fuel Conversion

- Filter
- Turbo charger
- Cooler
- Engine
- Generator

- Air supply
- Gas train
- Gas supply
- Gas admission valve
- Gas injection control system
- Dual Fuel control unit
- DcDesk 2000 configuration and visualisation program

- Map monitoring
- Camshaft speed
- Injection pump
- Diesel actuator
- Exhaust temp. monitoring
- Speed
- Generator management

- Gas shut-off
- Gas flow injection command
Dual Fuel Usage Scheme
(Case Study: KM. Ciremai)
Results of KM.Ciremai Dual Fuel Study (2013)

- Fuel Consumption Of KM Ciremai (Jakarta – Surabaya – Jakarta):
  - 100% HSD ⇒ 136,371 Ltrs,
  - 40% HSD dan 60% LNG ⇒ 54,548 Ltrs HSD and 2,498.96 mmbtu LNG

- The total cost of the dual fuel modification at KM.Ciremai ⇒ 8,052 Billion rupiah

- Operating Dual Fuel is FEASIBLE (NPV is positive)
  - Net present value/ net saving value (subsidized HSD)
    - With opportunity loss ⇒ 1,13 Billion Rupiah
    - Without Opportunity loss ⇒ 14,99 Billion Rupiah
  - Net present value/ net saving value (Non-Subsidized HSD)
    - With opportunity loss ⇒ 86,12 Billion Rupiah
    - Without Opportunity loss ⇒ 99,89 Billion Rupiah

- Limit of Dual Fuel FEASIBILITY is maximum price of LNG (dual fuel scenario 40% HSD and 60% LNG)
  - With opportunity loss ⇒ 14,3 USD/mmbtu
  - Without Opportunity loss ⇒ 17,8 USD/mmbtu

  Note: Price of Subsidized HSD (5.500 Rp/liter)
Constraints of Dual Fuel Application on Ship

1. No Recommendation from Engine Maker to Dual Fuel Modification for Existing Engine

2. The uncertainty of the availability and sustainability of the Gas Supply

3. Pelni ships classified by BKI, but Guidelines for The Use of Gas as Fuel for Ship still in the process of refinement at the time (2013)
Follow Up (Action) to Minimize The Constraints

1. Engine Maker Recommendation

2. Uncertainty Gas Supply

3. Guidelines for The Use of Gas as Fuel for Ship

- Back to Class Regulation
- MoU with PGN
- MoU with Pertamina
- MoU with BKI

Refinement of Guidelines By BKI
2013 Edition (9 Sections) to 2015 Edition (19 Sections)
1. Usage of Gas (LNG) as Fuel Ship is a must and can not be avoided, because it is the world needs and provide the great potential saving.

2. Need Government Policy on National Gas Allocation:
   • Gas allocation for Domestic Shipping
   • Various locations of Gas Supply in Indonesia Port
   • Guarantee the reliability and sustainability of the gas supply
   • The stability of gas prices

3. Specific Regulations/Guidelines for Passengers Vessel with Gas as Fuel is required.
Thank You