Biofuel Test on Vessel Main Engine

Eastern Pacific Shipping
FAST FACTS
All About EPS

1. Over 60 Years of industry experience
2. Leading Provider of DF vessels
3. Complete management services
4. Diversified Shipping Portfolio
5. Dynamic and efficient fleet

#5000strong

POWERED BY
ETHANE LNG LPG
THE RATIONALE
The driver behind the test and our goals

RATIONALE
EPS is committed towards decarbonisation and environmental preservation investing in alternative marine fuels

HOW
We partnered with GoodFuels Marine to conduct a full test on engines with biofuel made from 100% sustainable waste and residue streams

RESULTS
The results of the trial showed ZERO CO₂ emissions while using biofuel on main engines
PREPARATION & PROCEDURES

Before Biofuel Bunkering

1. MIND MAP
2. PREPARE
3. CLEAN
4. SEGREGATE
APPROVALS & GUIDANCE
For the usage of biofuels

**01**
FLAG STATE APPROVAL

MPA approval provided basis MARPOL ANNEX VI regulation 4.2 (equivalent fuels) for the vessel’s main propulsion engine to carry out trials using biofuel.

**02**
CLASS APPROVAL

ABS Approvals were based on Flag State approvals

**03**
MAIN ENGINE MAKERS

Guidance
## COMPARISON OF FUELS

### General Specifications

<table>
<thead>
<tr>
<th>VLSFO</th>
<th>Biofuel</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔ Density @ 15°C : 940.3 kg/m³</td>
<td>✔ Density @ 15°C : 921.3 kg/m³</td>
</tr>
<tr>
<td>✔ Viscosity @ 50°C : 98.3 cST</td>
<td>✔ Viscosity @ 50°C : 16.6 cST</td>
</tr>
<tr>
<td>✔ Sulphur (Max.) : 0.5% (m/m)</td>
<td>✔ Sulphur : 0.04% (m/m)</td>
</tr>
<tr>
<td>✔ Pour point : 18°C</td>
<td>✔ Pour point : 12°C</td>
</tr>
<tr>
<td>✔ Calorific Value : 42.1 MJ/kg</td>
<td>✔ Calorific Value : 35-42 MJ/kg</td>
</tr>
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### Specifications in Actual Test Environment

<table>
<thead>
<tr>
<th>VLSFO</th>
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<tr>
<td>• <strong>MCR Power: 8580 KW</strong></td>
<td>• <strong>MCR Power: 8580 KW</strong></td>
</tr>
<tr>
<td>➢ Rpm: 108.1</td>
<td>➢ Rpm: 108.2</td>
</tr>
<tr>
<td>➢ Speed: 12.5 Knots</td>
<td>➢ Speed: 12.5 knots</td>
</tr>
<tr>
<td>➢ Slip: 15%</td>
<td>➢ Slip: 15 ~ 19%</td>
</tr>
<tr>
<td>➢ Load: 58.8%</td>
<td>➢ Load: 58.4%</td>
</tr>
<tr>
<td>➢ Power: 5045 KW</td>
<td>➢ Power: 5015 KW</td>
</tr>
<tr>
<td>➢ Good weather Daily FOC: 22 MT/day</td>
<td>➢ Good weather Daily FOC: 24.4 MT/day</td>
</tr>
</tbody>
</table>

The Calorific Value of biofuel is up to 10% lower when compared with VLSFO.
A DEEPER DIVE

Vessel DWT: 47,377 MT  
Cargo Carried: 41,076 MT  
GHG Rating: A  

All impact reports for CO2 emissions are certified by the International Sustainability & Carbon Certification (ISCC).

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<tr>
<td>AER</td>
<td>0.0g CO₂/t Nm</td>
<td>5.09g CO₂/t Nm</td>
</tr>
<tr>
<td>EEOI</td>
<td>0.0g CO₂/t Nm</td>
<td>5.88g CO₂/t Nm</td>
</tr>
</tbody>
</table>

for main engine only
CONCLUSIONS

Benefits of biofuels

01

Daily Savings
68.51 MT of CO₂-eq

02

Good Alternative
marine fuel for vessels

03

Emissions Reduction
when used in all areas