Efficiency matters!

Dr. Jan-Henrik Hübner, Global Head of Shipping Advisory, DNV GL
Efficiency matters!

Cost structure of a midsized container vessel\(^1\)

\[
\begin{array}{ccc}
20\% & : & 30\% & : & 50\% \\
\text{OPEX} & & \text{CAPEX} & & \text{Bunker}
\end{array}
\]

Source of achievable bunker savings

\[
\begin{array}{ccc}
50\% & : & 50\% \\
\text{Design/Technical} & & \text{Management/Operations}
\end{array}
\]

1. Excluding ports/terminals and canal costs, today’s operating profile
Energy efficient ship design: bunker cost per 1,000 cargo miles reveal significant differences in energy efficiency

Efficient vessels consume > 30% less than inefficient vessels at same operating profile

Panamax vessels

1. Modelled by DNV GL based on data from IHS Fairplay
The favourability of new optimized vessels vs. average existing vessels is significant at today’s operating conditions

Costs in USD/TEU/1,000 NM

<table>
<thead>
<tr>
<th>4,500 TEU</th>
<th>AVERAGE OVER OPERATING PROFILE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bunker</td>
<td>Avg. existing vessel: 34</td>
</tr>
<tr>
<td></td>
<td>Optim. new vessel: 22</td>
</tr>
<tr>
<td></td>
<td>Bunker: -42%</td>
</tr>
<tr>
<td>CAPEX</td>
<td>Avg. existing vessel: 18</td>
</tr>
<tr>
<td></td>
<td>Optim. new vessel: 7</td>
</tr>
<tr>
<td>OPEX</td>
<td>Avg. existing vessel: 12</td>
</tr>
<tr>
<td></td>
<td>Optim. new vessel: 8</td>
</tr>
</tbody>
</table>

Reasons for better cost position:

- Improved **propulsion** efficiency due to lower rpm
- Higher efficiency of **engines**
- Reduced **hull** resistance due to optimization for lower target speeds
- Better specific costs due to higher **TEU intake** (at 14t)
- **Less steel** work due to shorter vessels at same capacity
- Better specific costs due to higher **TEU intake** (at 14t)
- Stronger **competition** of yards
- Less **lubrication oil** consumption of smaller engines
- Better **supporting systems** of modern engines
- Less **maintenance** effort
- Better specific costs due to higher **TEU intake** (at 14t)
Design

Many existing container vessels can be improved by 10-15% in energy efficiency by retrofitting

Share of vessels able to achieve x-y% improvement

Areas for technical efficiency improvement

- Hull and superstructure
- Propeller and rudder
- Main engine and auxiliary engine
- Supporting systems
- Consumer
- Capacity enhancement

1. Quick scan of world container fleet based on IHS Fairplay data, assuming all relevant measures are implemented
Retrofitting provides an advantage vs. average existing vessels, but new optimized vessels are out of reach

4,500 TEU, Costs in USD/TEU/1,000 NM

AVERAGE OVER OPERATING PROFILE

Whom do you need to beat?
- The few optimized new vessels currently entering the market?
- The majority of the 600+ Panamax vessels sailing today?
Operations

Energy efficient ship operations: key success factors for effective energy management

1. Acknowledge the effort of implementation, if you really want to improve your company’s energy performance.

2. Stretch for far-reaching measures beyond weather routing and engine settings, collaborate along the value chain.

3. Anchor energy management in the organization by assigning clear responsibilities.

4. Support crews and shore staff to adapt to the new world, behavioural change is key.

5. Introduce smart dashboards for daily performance management of energy consumption, only what gets measured gets done.
The OPEX challenge: strengthening operational excellence, reducing operating expenses

Traditional conflict in ship management
Managing performance

Managing operating expenses

Today’s challenges
- Ageing fleets, increased need for repair, expiring guarantees
- Partially delayed/reduced maintenance last 2-3 years

Chance for German ship managers
Agree on performance level

Reduce operating expenses

OPEX efficiency increasingly important but not first priority area before crisis

Efficiency matters!
Efficient ship management

Quality ship managers can leverage their competence with performance based fees

Anchor performance to ship management contracts

- German “owning managers” with reputation for high quality technical management
- Standard ship management contracts don’t determine performance expectations but just crewing and budget
- Chance for quality suppliers to leverage competence in 3rd party management with performance based fees

Operations related KPIs

- Availability/off-hire
- Port state control performance
- Incident/accident statistics
- Industry standards as
  - TMSA level
  - Vetting performance
  - Selected InterManager KPIs

Asset related KPIs

- Port state control performance
- Conditions of class at regular surveys
- Dedicated condition surveys
- Industry standards as
  - TMSA level
  - Vetting performance
  - Selected InterManager KPIs
Efficient ship management

5 key initiatives to tackle operating expenses

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Initiatives</th>
<th>Potential Savings$^1$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procurement</td>
<td>From transactional to strategic approach - Streamline transactional jobs - Advance tactical procurement - Become strategic</td>
<td>5 - 15%</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Less can be more - Question PMS jobs - Operationalize maintenance strategy - Apply risk based approach - Establish KPIs on implementation and effect</td>
<td>5 - 15%</td>
</tr>
<tr>
<td>Docking</td>
<td>Proper planning prevents surprises - Set-up dedicated team - Prepare properly considering learnings from sisters - Combine with retrofitting - Expect the unexpected</td>
<td>20%+</td>
</tr>
<tr>
<td>Crewing</td>
<td>Good people pay off - Define crewing strategy and manning levels - Advance in sourcing of officers and ratings - Stay ahead in contracts and incentives - Develop staff</td>
<td>±0%</td>
</tr>
<tr>
<td>Administration</td>
<td>Right set-up and lean processes - Challenge business processes and historically grown workarounds - Develop integrated IT strategy - Adapt organization to lean processes</td>
<td>15%+</td>
</tr>
</tbody>
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1. Project experience as percent of addressable spend, saving potentials are partially overlapping
Summary

- **Energy efficiency becomes THE differentiator in shipping**
  - 50% of achievable savings are related to design, 50% to operations
  - Bunker costs per 1000 cargo miles is the KPI to compare vessels
  - 30%+ difference in fuel efficiency within a peer group
  - Newbuilds’ full costs can be lower than existing vessels’ cash costs
  - Retrofitting can improve energy efficiency by 10-15%
  - Significant additional improvement potential from energy management

- **OPEX efficiency is the next challenge to take**
  - Performance expectations to be clarified in ship management contracts
  - Performance based fees are a chance for German managers
  - 5 key initiatives to tackle OPEX: procurement, maintenance, docking, crewing and administration
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Dr. Jan-Henrik Hübner
Global Head of Shipping Advisory
Jan-Henrik.Huebner@dnvgl.com
+49 (0) 40 - 36149 - 8770

www.dnvgl.com

SAFER, SMARTER, GREENER

Efficiency matters!