BALLAST WATER TREATMENT

NCL Innovations: Solutions from CSIR India
Technology

- An apparatus which can filtrate and disinfect sea water/ship’s ballast water
- Based on a mechanical process that kills micro-organisms to the required levels
  - Uses hydrodynamic cavitation and rupture of cavities to kill micro-organisms
- Also can be used in making potable drinking water from contaminated water

Problem: Ships when they leave the port empty, take sea-water into ballast tanks for stability and to adjust buoyancy. When the ballast water is emptied at a different location, it releases micro-organisms into the location, causing environmental pollution and ecological imbalance.
Applications, Market Potential

Applications

- Sea water treatment
- Ship’s ballast water treatment
- Making potable drinking water from a contaminated source
Market Potential*

- Annual market for Ballast Water Treatment is estimated to be between $700 million to $1 billion (in the short term, while all the current vessels are being fitted with this technology)

- More than 17,000 vessels (both new and retrofit) can be fitted with this technology

- Long term market projected to be between $200 to $300 million (which will be mostly on newly built vessels)

* All data derived from Haskoning Report, 2001
Value

- Eco-friendly as using hydrodynamic cavitations without using any chemicals, UV or ultrasound
- No harmful by-products
- Efficient disinfection technology
- One of the best alternatives to current technology
- Economical
- Easily installed on the vessel
  - Minimum area for installation as filtration and disinfection happen in a single equipment
Technology Status, IP Status

- Two US Patents filed
  - US Application No. 11/377,810 (Link)
  - US Application No. 11/726,339 (Link)
- Licensed to HyCa on a limited exclusivity
Links & References

- Global Market Analysis of Ballast Water Treatment Technology, published by the Northeast-Midwest Institute, October, 2001, 57pgs.

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<table>
<thead>
<tr>
<th>Technology Summary</th>
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<tr>
<td>Technology title</td>
<td>Ballast water treatment</td>
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| Related patents (with links) | US Patent Application No. 11/377,810 [Link](#)  
| Technology readiness level | Ready to be adopted |
| Licensing status   | Licensed with limited exclusivity to HyCa |
| Encumbrances       | Limited |
| Availability       | Yes |