NEXT-GENERATION MULTIPURPOSE DOUBLE-DRAFT NUCLEAR ICEBREAKER WITH THE RITM-200 REACTOR PLANT

MULTIPURPOSE NUCLEAR ICEBREAKER SPECIFICATIONS

<table>
<thead>
<tr>
<th>Main dimensions on the design water line (DWL)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>length, m</td>
<td>160</td>
</tr>
<tr>
<td>beam, m</td>
<td>33</td>
</tr>
<tr>
<td>Draft</td>
<td></td>
</tr>
<tr>
<td>DWL, m</td>
<td>10.5</td>
</tr>
<tr>
<td>minimum draft, m</td>
<td>8.5</td>
</tr>
<tr>
<td>Shaft power, MW</td>
<td>60</td>
</tr>
<tr>
<td>Maximum ice thickness, m</td>
<td>2.9</td>
</tr>
<tr>
<td>Displacement, t</td>
<td></td>
</tr>
<tr>
<td>at minimum draft</td>
<td>25540</td>
</tr>
<tr>
<td>at DWL draft</td>
<td>33530</td>
</tr>
<tr>
<td>Number of reactors, pcs</td>
<td>2</td>
</tr>
<tr>
<td>Service life, year</td>
<td>40</td>
</tr>
</tbody>
</table>

RITM-200 REACTOR PLANT (RP)

The integrated pressurized water reactor for the multipurpose nuclear icebreaker uses forced circulation of the primary coolant and an external gas pressurizer system.

RITM-200 RP SPECIFICATIONS

<table>
<thead>
<tr>
<th>Steam generator unit (SGU) type</th>
<th>integral</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal power, MW</td>
<td>175</td>
</tr>
<tr>
<td>Capacity factor</td>
<td>0.65</td>
</tr>
<tr>
<td>Fuel enrichment, %</td>
<td>&lt;20</td>
</tr>
<tr>
<td>Reloading periodicity (at 0.65 capacity factor), year</td>
<td>7</td>
</tr>
<tr>
<td>Overhaul period, year</td>
<td>20</td>
</tr>
<tr>
<td>Assigned service life, year</td>
<td></td>
</tr>
<tr>
<td>permanent equipment</td>
<td>40</td>
</tr>
<tr>
<td>replaceable equipment</td>
<td>20</td>
</tr>
<tr>
<td>Assigned life time, thousand hours</td>
<td></td>
</tr>
<tr>
<td>permanent equipment</td>
<td>320</td>
</tr>
<tr>
<td>replaceable equipment</td>
<td>160</td>
</tr>
<tr>
<td>Protective shielding dimensions (for two RPs), m</td>
<td>6x13,2x15,5</td>
</tr>
<tr>
<td>RP mass within the limits of shielding, t</td>
<td>1100</td>
</tr>
</tbody>
</table>

OTHER RITM-200 RP APPLICATIONS TO RESOLVE POWER AND PROPULSION CHALLENGES:

- 150-300 ton displacement floating fish factories, vessels and lighter carriers (fishing fleet, container ships, tankers, liquefied gas transport ships, chemical transport ship), floating heat-and-power plants and power-and-desalination complexes, offshore drilling rigs
- offshore facilities: power supply for high seas surface and underwater oil and gas (other minerals) recovery, purification and preprocessing

COMPETITIVE ADVANTAGES

- substantially enhanced technical and economic performance; significantly reduced mass and size characteristics as compared to RPs on operating nuclear vessels
- competitive against fossil fuel power sources
- multipurpose applicability for vessels, floating facilities, and use as part of power sources for various applications
- potential for upgrading and development of a power range family of this type of plant to broaden its field of application