The ERICON-AB (European Research Icebreaker Consortium) is an EU-funded project with the purpose to set up scientific, financial, legal and organisational framework, technical requirements and design for a new ship: a multi-disciplinary polar research icebreaker with core drilling capability. On these requirements the concept 'AURORA SLIM', the technical solution and proposal was developed, designed and tested by Aker Arctic Technology Inc.
Double Acting Ship - DAS™ Concept AURORA SLIM
Improves Efficiency for Polar Research at Reduced Cost

AURORA SLIM is a technically unique design, based on Aker Arctic Technology's vast experience and knowledge of ice going vessels, for a combined multi-disciplinary research, deep-sea drilling and heavy icebreaking vessel. AURORA SLIM can operate in Polar Regions to obtain climate-related data during all seasons. In addition to heavy ice conditions she is also intended for worldwide ocean research. To date no other single-ship, year-round Polar expedition platform exists. The ERICON members represent national marine research institutions from Germany, France, Italy, Denmark, Finland, Romania, Bulgaria, Norway and Russia.

- **Optimized bow form**
  - excellent icebreaking capabilities
  - good open water performance
  - seakeeping at acceptable levels
  - two bow thrusters in tunnels

- **Station keeping**
  AURORA SLIM can keep station "stern ahead" with main thrusters letting the bow weather vane with ice flow, wind, waves or current. This is even possible in ice over 2.5 m thick.

- **Stem form**
  - buttock flow stern with single skeg
  - three 15 MW azimuthing thruster propulsion
  - heaviest ice operation by stern
  - possibility for "self-ice-management"
  - good steering also in heaviest ice

- **Ice breaking performance in level ice**
  - Excellent icebreaking capability up to 3 m level ice thickness

- **Economy of open water cruising**
  - Normal DP capability in up to 21 m/sec wind, corresponding waves and 1.5 kn side current, with both bow thrusters in operation.

- **Reduced Annual fuel consumption**
  - Innovative design and improved performance result in reduced instrument (500 MEUR) and operation costs
**Azipod® Propulsion-Guaranteed Power for Excellent Ice Management and Performance**

The new way of thinking: “Self ice management”

The triple AZIPOD® solution enables the possibility to clean the ice around the hull by steering the propeller wake in the needed direction. The solution also effectively prevents ice from going under the bottom, protecting the sensitive science equipment and allowing research work through the moon pool in hard ice conditions.

Growing interest to use Azipod® propulsion in the high-potential Arctic market prompted ABB Marine to decide to develop high power units of high ice class, with particular focus being on the highest class, PC1. AURORA SLIM project provides an excellent European industrial and maritime technology demonstrator.

The extensive ice model test series clearly show the benefits of the AURORA SLIM Concept. The AURORA SLIM was able to proceed and perform all the set tasks in the required ice conditions.

**Ice Model Tests by Aker Arctic clearly demonstrate the advantages of the AURORA SLIM**

- **Level ice ahead, transit mode**
  - 2 knots at 2.5 m level ice

- **Pack ice ahead, transit mode**
  - 2 knots at 2.5 m pack ice in concentration 9/10

- **Steering, ahead / astern**
  - Good steering in level ice and pack ice (tested in 1.5 m and 2 m)

- **Ridges astern, scientific mode**
  - Easy penetration independently astern through 15 m deep ridges

- **Level ice astern, scientific mode**
  - 1 knot at 2.7 m level ice

- **Station keeping astern, scientific mode**
  - Excellent maneuverability
  - Turning almost on the spot in up to 2.5 m thick pack ice

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