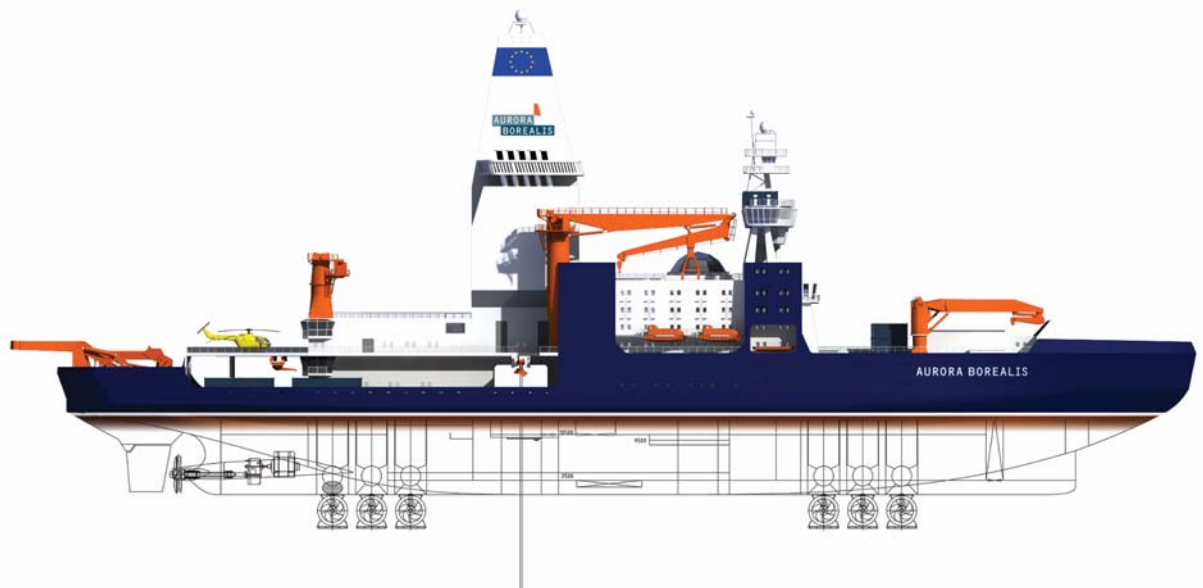


TECHNICAL DETAILS

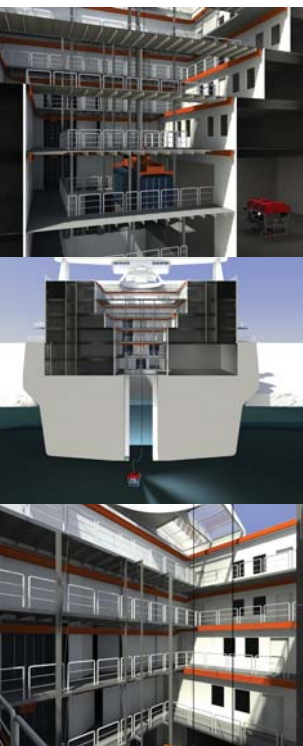
AURORA
BOREALIS

The Research Icebreaker AURORA BOREALIS will be the most advanced Polar Research Vessel in the world with a multi-functional role of deep-sea drilling and supporting climate/environmental research and decision support for stakeholder governments for the next 35-40 years. The new technological features will include dynamic positioning in closed sea-ice cover, advanced ice-forecasting and management with autonomous, multiple helicopter support and the deployment and operation of Remotely Operated Vehicles (ROV) and Autonomous Underwater Vehicles (AUV) from the twin moon-pools.



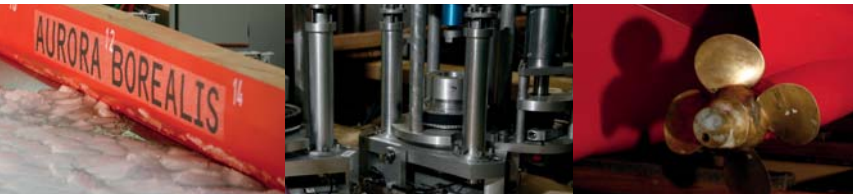
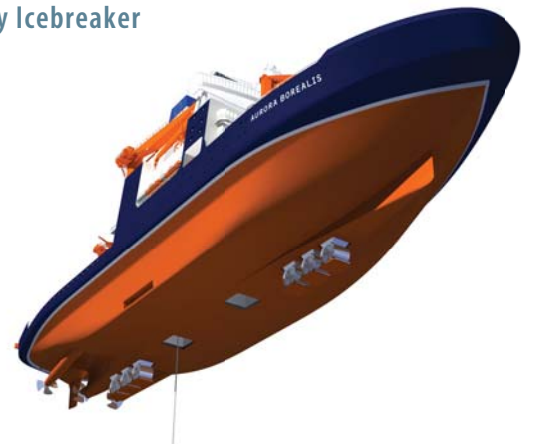
The most unique feature of the vessel is the deep drilling rig, which will enable sampling of the ocean floor and sub-sea up to 5000 m water and 1000 m penetration at the most inhospitable places on earth. The drilling capability will on the long run be deployed in both Polar Regions and AURORA BOREALIS will be the only vessel worldwide that could undertake this type of scientific investigation. The possibility to flexibly equip the ship with laboratory and supply containers, and the variable arrangement of other modular infrastructure (in particular, winches, cranes, etc.), free deck-space and separate protected deck areas, will allow the planned research vessel to cover the needs of most disciplines in marine research. The ship can be deployed as a research icebreaker in polar seas because it will meet the specifications of the highest ice-class for polar icebreakers.

The vessel will be a powerful research icebreaker with approx. 65,000 tons displacement, a length of 199 m and with 81 Megawatt diesel-electric propulsion power. It will have high ice performance to penetrate autonomously (single ship operation) into the central Arctic Ocean with 2.5 meters of ice cover, during all seasons of the year. The construction of AURORA BOREALIS requires several new technical solutions and will provide an extended technical potential and knowledge for marine technologies and the ship building industry.



TECHNICAL DETAILS COMPACT

Vessel type: Multi-Purpose Research Vessel, Deep-Sea Drilling Vessel, Heavy Icebreaker with highest AICS Ice Class: Polar Class 1



- Length over all: 199.85 m
- Length between perpendiculars: 174.27 m
- Moulded breadth: 49.00 m
- Breadth at 13 m draught: 45.00 m
- Maximum draught: 13 m
- Displacement: approx. 65,000 tons
- Max. cruise speed in open water: 15.5 kn
- Cruising speed in open water: 12 kn
- Max. operational endurance: 90 days
- Propulsion: diesel-electric
- Maximum generator output: ca. 94 MW (electric)
- Number of generator units: eight plus onshore and emergency generators, waste heat recovery and exhaust gas cleaning systems
- Main propulsion: 81 MW (3 x 27 MW)
- Main propeller: 3 x 6.5 m diameter, fixed pitch, ice strengthened
- Transverse thrusters: 2 x 3 units, fixed, fully retractable, one unit forward and aft also usable in retracted position for manoeuvring
- Operational temperature limit: full functional capability to -50°C , working capacity $+45^{\circ}\text{C}$ to -30°C
- Berthing capacity: 120 (science and crew)
- Accommodation: 80 single and 20 double cabins
- Dynamic positioning: in drifting ice of up to 2.5 m thickness and in open water
- Icebreaking capacity: more than 2.5 m multi-year ice with 2 – 3 kn
- Scientific disciplines: Geology, Geophysics, Biology, Physical and Chemical Oceanography, Glaciology, Meteorology, Atmospheric Physics and Chemistry, Bathymetry
- Moon pools: 1 for scientific drilling, 1 for other science equipment deployment, 7x7 m size each
- Drilling rig: Riserless drilling, 85 m height above keel. Max. static hook load: 680 mT, heave compensated
- Max drilling depth: 5000 m water depth, >1000 m below mudline
- Scientific echosounders: Multibeam with $1^{\circ}\times 1^{\circ}$ resolution and sediment echosounder, additional echosounding systems depending on configuration
- Helicopter hangar and landing deck capacity for 3 helicopters

Start of construction: 2012 (planned)
Commissioning: 2014 (planned)
Operational lifetime: 35 – 40 years
Estimated construction costs: 650 Mill. €
Estimated operational costs: 36 Mill. € p.a.

December 2008

AURORA
BOREALIS
EUROPEAN
RESEARCH
ICEBREAKER