

## ABB's modernization to improve maneuverability and safety of the icebreaker Sisu



ABB modernized the Finnish icebreaker Sisu in 2015.

### Modernization for icebreaker Sisu

The propulsion system on board the icebreaker Sisu have been modernized by ABB Marine and Ports as a turnkey project carried out in the autumn of 2015. The vessel, owned and operated by specialized ice breaking company Arctia Icebreaking Oy, was originally delivered in 1976 and have been in operation since.

“We have been extremely pleased to work with ABB Marine and Ports in this project. With a challenging project schedule, their decision to have a site office next to the ship in Katajanokka, Helsinki since early engineering phase has especially improved the communication response time and guaranteed project execution on time and with high quality”, says Mr. Kari Ruotsalainen Electrical and Technical Superintendent from Arctia Oy.

### ABB's scope of delivery

In 2008 ABB Marine Services Finland undertook a complete feasibility study to examine the condition and life cycle status of Arctia's ice/multipurposebreakers, and to offer recommendations on how to extend each vessel's life expectancy. For Sisu, it was agreed to make a retrofit of a new propulsion drive, the upgrading of the drive control system and alarm system. ABB Marine and Port's delivery included DCS800 drives, AC800M control system, control levers for bridge and engine control room and onsite modified cubicles, consoles and control desks with related cabling, wiring and system commissioning. New alarm system was based on alarm monitoring and control system AMCS500 and duty alarm and engineer call system EAS500. Integral to the project was the replacement of obsolete spare parts with parts that are readily available in today's market.

### Updating Ward Leonard

The ship, including its four DC driven propulsion motors, has not seen any major modernization since 1976. In fact, Sisu was still equipped with Ward Leonard Drive system, widely used DC motor speed control system at that time. With the experienced service team, ABB Marine and Ports upgraded the maneuvering components and implemented them as part of the 40 years old system, instead of changing the whole system. This extends the lifetime of the vessel significantly and improves both maneuverability and safety of the vessel with less investment costs for the customer.

### Successful project

Whole project from contract to delivery was executed in 7 months and wet docking was done in 8 weeks. Due to the precise planning phase and strong knowledge of the systems, ABB Marine and Ports was able to meet the tight schedule and expectations. Specific open water trials were done before the project as a reference to be able to compare the performance before and after the upgrade. Seatrial for Sisu was planned with same phases and tests as a seatrial to a new built vessel with adding all the original tests from 1976. Successful seatrial took less than two days.

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Icebreaker Sisu leaving for duty after successful modernization project.



ABB upgraded key components of the Ward Leonard system to extend the lifetime of the vessel significantly.

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