

ABB onboard icebreaker Oden to the North Pole



The mission was a five-weeks long, 24-hours-a-day operation, about 200 kilometers from the North Pole.

In 2004 Sweden's largest icebreaker Oden assisted the high-profile research mission of Arctic Coring Expedition, ACEX. The mission was to drill about 450 meters into the sediment of the seabed of the Arctic Ocean at 1200 meters water depth. The sediment cores will be used for reconstruction of the environmental history over the past 56 million years in the Arctic. Prior to this extremely demanding mission, the control system onboard Oden was upgraded by ABB.

EVOLUTION SCHEME	Workstations	Controllers	I/O Modules
Industrial IT			
Advant	5 Advacommand for Unix	2 Advant Controller 450, marine specified	
Master	4 Master View 800	6 MasterPiece 200/1	S100 I/O including cabling, 3 200 channels

Upgrading Reused Outphased





The control equipment on board Oden corresponds to a larger industrial plant.



The indications given by the core samples are that the Arctic Ocean once has experienced 20° C surface temperature. Further studies will establish the precise nature of the transition period from hothouse to icehouse that this region evidently has experienced already once.

Upgraded control system to meet tough demands

The controls, monitors and alarms onboard Oden have many vital functions. During this critical five-weeks long, 24-hours-a-day mission, nothing was allowed to go wrong. Prior to the departure for the North Pole, ABB got the task to modernize the previous ABB system, dating back from 1987. The system had become sensitive to excess vibrations and temperatures. There was also a need for upgraded computer power and a modern communication platform. That the existing I/O-unit, including the cabling could be reused, as well as the application software, meant large cost savings.

Like driving into a brick wall

Deep-sea drilling from a ship is problematic. Once the drill reaches the seabed, the drill ship must keep its position within a few tens of meters. To keep station, not being caught up in the drifting sea-ice, the drill ship needs assistance from icebreakers. For this reason Oden and the nuclear driven Russian icebreaker Sovetskiy Soyuz worked day and night to keep the drilling vessel Vidar Viking free. The Russian ship broke large ice floes into bergy bits, while Oden crushed them into pieces of the size the drilling ship could withstand while drilling. Old multi-year ice floes are thick and tough – colliding with them is like driving into a brick wall.

“The best grade I can give”

The five-weeks, 24-hours-a-day operation among sizable ice floes created very difficult operating conditions for all equipment on board. On one occasion a 6-meter thick ice floe approached the drilling ship and Oden had to manage it before it seriously interfered with the drilling process.



Claes Benson, head of the five icebreakers owned by the B&N daughter company Hornet.



Thomas Strömnäs,
Second Officer onboard Oden.

Thomas Strömnäs, Second Officer,
describes the situation:

– We had only one choice and that was to speed up and drive up onto the ice. Oden was lifted 2 meters into the air. The forces at play when Oden hit the ice and then fell onto it were enormous. The fact that the new ABB equipment survived this episode is remarkable. Other equipment on the ship did not.

Dahn Joelsson, Chief Engineer
and Technical Supervisor, concludes:

– The battering from the ice, the vibrations and the sudden thumps formed the toughest conceivable environment for technical equipment. The ABB control system has functioned absolutely reliably and without a single incident during the whole journey to the Arctic and back. That's the best grade I can give.

“We saved 40 % of the cost”

The control system on board Oden corresponds to a fairly large industrial plant. Everything is controlled, from the four giant engines to the cooling, heating, ballast tanks, water pumps, ventilation, electrical supply, power generation, and lighting.

Claes Benson, head of the five icebreakers owned by the B&N daughter company Hornet, says:

– Oden's new control system is the best purchase of control equipment we have ever done to our icebreakers. The upgrade worked without a hitch and with the solution ABB proposed we saved 40 % of the cost. The smaller icebreakers were upgraded earlier, which became a much costlier affair.

For the latest information on ABB visit us on the World Wide Web at <http://www.abb.com>



ABB Process Automation

Vasteras, Sweden
Phone: +46 (0) 21 32 50 00
Fax: +46 (0) 21 13 78 45
www.abb.com/controlsystems
e-mail: processautomation@se.abb.com

ABB Process Automation

Wickliffe, Ohio, USA
Phone: +1 440 585 8500
Fax: +1 440 585 8756
www.abb.com/controlsystems
e-mail: industrialitsolutions@us.abb.com

ABB Process Automation

Mannheim, Germany
Phone: +49 (0) 1805 26 67 76
Fax: +49 (0) 1805 77 63 29
www.abb.de/controlsystems
e-mail: marketing.controlproducts@de.abb.com

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