Ice Load Monitoring System on Baltika

The oblique icebreaker *Baltika* has been equipped with a strain gauge sensor based measurement system to measure ice loads. The system has been up and running since 2014.

An ice load monitoring system was installed on board the *Baltika* in 2014. As she was a completely new vessel design, Aker Arctic wanted to measure the ice load effects on the new oblique hull form.

"The ice load monitoring system installed on the *Baltika* included 22 gauges on the port side of the hull," says Electrical, IT and Automation Team leader Antero Jäppinen. "The display onboard shows only the plain data from each sensor, instead of prediction and the more user friendly graphical user interface, which our current system has. The amount of data that is registered by the system is around 1TB per year."

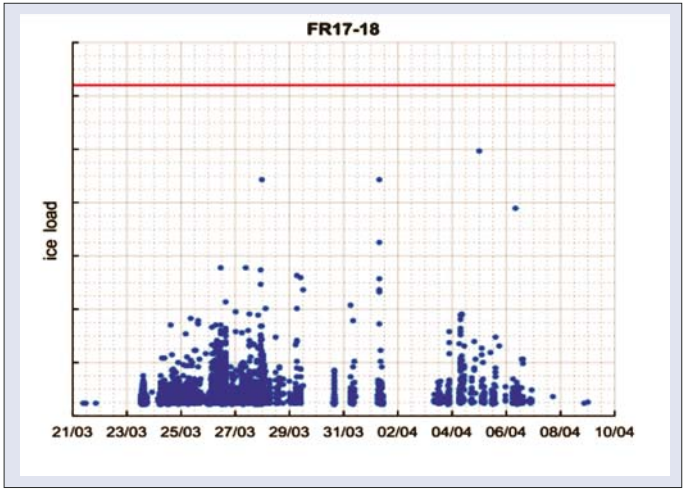
In the current version of the ice load monitoring system, there are sensors on several locations around a vessel's hull. The results are also immediately displayed on a monitor for a clear overview of the load, peak values and the predicted ice load in simplified form. This supports the captain in deciding how to proceed in an ice field and at what speed.

Two different types of sensors can be used, fibre-optic sensors or traditional strain gauge sensors. The advantage of fibre-optic sensors is that they are free of any electrical interference and can easily be installed on both dry and wet tanks. The main advantage of traditional sensors is the lower price range for the overall package.

A new feature under development is to add propulsion monitoring to the system.

"Our plan is to offer an integrated monitoring and prediction system for ice loads on both the hull and the propulsion line in the future," Jäppinen adds.

The ice load monitoring system is especially useful for vessels which do not constantly operate in areas with ice, as it helps the crew to operate more efficiently and safely in ice.



The ice load monitoring system has been operating for two years on icebreaker Baltika.