



LNG-fuelled 40 megawatt line icebreaker for Rosatomflot

Rosatomflot and Aker Arctic signed a contract to design a powerful line icebreaker for escorting commercial vessels sailing year-round in western areas of the Northern Sea Route: mainly the Kara Sea, the Gulf of Ob and the Yenisey river. The icebreakers will use liquefied natural gas (LNG) as fuel.

The new line icebreakers will replace the current ageing nuclear-powered shallow draft icebreakers and respond to increased traffic in the area together with the new nuclear-powered icebreakers currently under construction in Russia. The vessels will operate with LNG fuel, which is readily available in the operational area from the Sabetta terminal with a fuel capacity sufficient for 30 days operation in the prevailing ice conditions.

One month autonomy

The project began in 2017 with a feasibility study to investigate if sufficient autonomy time can be achieved with LNG fuel. In addition, two alternative propulsion systems were compared on the design board and in the ice model

basin. As a result an autonomy time of 30 days with LNG fuel was found to be feasible with the customer preferring conventional shaftline propulsion for the line icebreaker.

The new icebreakers will replace existing icebreakers operating in the area which are approaching the end of their service life and need to be renewed. The cargo traffic in the area is also increasing which means the need for icebreaker assistance is growing.

A huge leap forward

Compared to previous LNG-fuelled icebreakers the new 40-megawatt line icebreaker is a huge leap forward. "The new vessel design will have the same capabilities that could previously only be achieved with nuclear-powered

icebreakers," says Project Manager Mika Hovilainen. "Additionally, the new icebreaker will have sufficient autonomy time for operation in the harshest ice conditions in the area, which was a special challenge with LNG fuel."

The new 40-megawatt icebreakers will be even more powerful than the well-known nuclear-powered icebreakers *Taymyr* and *Vaygach* built in Finland in the late 1980s. As LNG is available locally from Sabetta there is no need to travel long distances for bunkering. The icebreaking performance of the new design is 2.5 metres of multi-year level ice, comparable to the older *Arktika*-class nuclear icebreakers. The new vessels will be about 160 metres long and 30 metres wide.

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