



# Arctic Condensate Tanker for Yamal LNG

Aker Arctic has developed the concept design for an Arctic Condensate Tanker and has signed a design licensing agreement with Guangzhou Shipyard International (GSI). We have now proceeded to model testing and basic design. The vessel, which is intended for delivery in 2017 will be used to transport gas condensate from the Yamal LNG production site in the Russian Arctic to Europe and Asia.



*There are not many tankers in the world with an Arc7 ice class.*

Yamal LNG is a natural gas project with the majority shareholder Novatek, an independent Russian gas producer, and minority shareholders from France and China.

The vast gas reserves are located in the northern part of the Yamal peninsula in the Russian Arctic. Most of the year, the climate is cold and the waterways are frozen. The temperature may drop to -50°C. The liquefied natural gas (LNG) plant and the port of Sabetta are currently under construction on the coast of the Ob Bay.

The gas condensate tanker, will be used for transporting gas condensate, the by-product which is fine oil separated from the natural gas before its liquefaction process. This product is a low-density mix of light oils and is a valuable raw material for the petrochemical industry or as fuel.

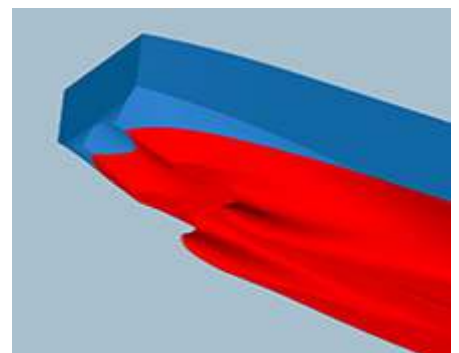
Aker Arctic and its predecessors have been working with the Ob Bay projects already since 1995, beginning with initial ice research and then undertaking two test voyages to Sabetta in 1995 and 1998, and later on with development

work, research and planning for how to solve the transport needs from Sabetta. From 2010 onwards Aker Arctic was involved in the design development of the LNG-carriers for export of the natural gas, participated in the planning of Sabetta port as well as designed the icebreakers needed to ensure safe, reliable and efficient operations in the area.

Two years ago, Aker Arctic designed two Polar-class heavy cargo carriers, of which the first was completed in the beginning of 2016 and began transporting construction modules for the LNG plant from Europe and Asia.

### Gas condensate tanker

Due to the harsh environment and long lasting severe winters in the Russian Arctic, the gas condensate tanker has to be specially designed in order to secure safe transportation of the gas condensate throughout the year. Additionally, the condensate production diminishes over time. Therefore, the tanker has been designed so that, in the future, it is capable of transporting other oil products as a product tanker.

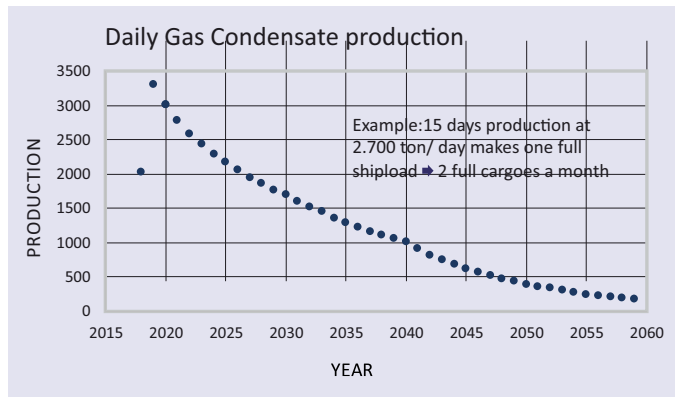


*The hull form is new with a round-shaped twin skeg aft hull. Model tests have shown that such an aft hull form will work well in the harsh circumstances the vessel will be sailing in.*

The "Aker ARC 212" design is planned to be 214 m long and 34 m wide. It can transport almost 60,000 m<sup>3</sup> gas condensate or oil cargoes in five cargo segregates. It has a moderate ice bow and is designed on the Double Acting Ship (DAS®) principle, sailing bow ahead in open water or light ice conditions and ▶

stern first in heavy ice. Its propulsion is based on diesel-electric machinery with two azimuth propulsion units. The hull form is a new type with a round-shaped twin skeg aft hull. Model tests have shown that such a hull form will work well in the harsh circumstances the vessel will be sailing in and will improve performance in open sea conditions as well. Due to year-round operations in the Arctic area, the hull is ice-strengthened to a high ice class Arc7 according to the Russian Maritime Register.

*Gas condensate production diminishes over the years and therefore the vessel has been designed to carry also other cargoes in the future.*



*Two test voyages to Sabetta with the ice-strengthened tanker MT Uikku were carried out in 1995 and 1998.*



With the large Arctic LNG-carriers leaving Sabetta port every second day year-round in the future, the gas condensate tankers can also utilise the broken ice channel the carriers create.

"There are not many tankers in the world with an ice class this high," says senior designer Mauri Lindholm, Aker Arctic Technology Inc. He adds that the reference vessels for this design are the two 70,000 tdw tankers for the Prirazlomnaya project, designed for Sovcomflot some ten years ago. The new gas condensate vessel, however, has a higher ice class and her cargo capacity is smaller.

"When we began the design task in early 2014, the plan was to construct one larger vessel. Nevertheless, during the process it was decided that two smaller vessels would be better for the future, in view of versatility and redundancy."



**Main dimensions:**

Length	214 m	Cargo and slop tanks	59,800 m <sup>3</sup>
Breadth	34 m	Service speed	13.0 knots
Draught design	11.7 m	Propulsion units	2 × 11 MW
Draught ice	12.0 m	Main diesel generators	31.36 MW
Draught scantling	12.9 m	Ice class	Arc7 (RMRS)
Deadweight	43,400 t	The tanker will have dual classification provided by Bureau Veritas (BV) and Russian Maritime Register of Shipping (RMRS).	
	(with condensate cargo)		
	49,700 t		
	(with oil cargo)		

**First LNG-carriers under construction**

Aker Arctic's co-operation with Yamal LNG included the design development of the LNG-carriers for exports of the liquefied natural gas (LNG) to the market. The 170,000 m<sup>3</sup>-sized vessels are currently being constructed at Daewoo Shipbuilding & Marine Engineering (DSME) in South Korea.

The first one of fifteen vessels was launched in January and is expected be ready in the end of 2016. The remaining fourteen vessels are scheduled for delivery over the next four years. Aker Arctic has been supporting DSME in the design work.

Once the LNG plant is in full production, a large LNG-carrier will leave Sabetta port every second day year-round and deliver LNG to Asian and European ports, where it will be stored for consumption or reloaded and shipped further with ordinary LNG carriers.



Source: PortNews