February 2010

# Arctic Passion New

# New icebreakers for the Caspian Sea

On page 4 chief designer Mika Hovilainen tells about the project, its challenges and how they were solved.

### Arctic Shuttle Tanker Jaunched Read more on page 8





# New inventions at Aker Arctic



Reko Suojanen, responsible for R&D in AARC, tells about a new simulation program to be used in training of staff for icebreaking ships and a new type of exploration drilling ship. Read more on page 6.

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### Appointments at AARC



Sales and Marketing Manager. Arto returned

back to us in September 2009 after having held various positions in ABB Marine for 10 years.



Esko Huttunen Project Engineer, Esko graduated from the Aalto University and joined our team in 2009. He is also a proud father of a newborn son.



Project Engineer. Veikko graduated from the Aalto University

and joined our team in

September 2009.

Veikko Kymäläinen

#### Front cover:

Russian 13 MW "double acting" ARC 7 ice class container vessel MS "Norilskiy Nickel" in harsh Kara Sea ice on one of her regular voyages from Central European ports to Dudinka in the river Yenisei. See also page 9.

## From the **Managing Director**

In these days we celebrate 40 years since ice model testing start-up in Finland, which took place in conjunction with the famous project and experimental North-West Passage voyage of T/T Manhattan.

Shipbuilding and ship design are an art of traditions, which carry forward experiences from generations to generations. The idea of Aker Yards in 2004 to separate the Ice Technology and to safeguard it from the turbulent shipyards and invite other industrial partners interested in Arctic operations, like ABB, Wärtsilä and Aker Solutions, to join for a shareholding has appeared to be the right visionary decision. The four years from the inauguration of our new facility in Vuosaari have turned out to be very successful. From the modest 12 person staff we have already grown up to 35 with a turnover close to 7 Mill. EUR. Our invoicing from Finland, however, has remained under 10 per cent.

Today we have framework agreements in place with most of the oil majors and many other industries, we assist classification societies in introducing better rules and we consult shipowners, shipyards as well as authorities on a continued and regular basis.

Natural resources are today the drivers and major development activities are underway on three continents. We already launched to the market new innovations like the Aker Arctic DAS™ concept and our goals include large size Arctic floaters, Arctic LNG carriers as well as gas driven icebreakers and nuclear powered transpolar cargoships. We, The Ice Technology Partner, aim to be among the first to sail commercially on the Northern Sea Routes.



You now have in your hand the first issue of the new Arctic Passion Newsletter, to be distributed in the future both in hard and electronic copies. I started my thesis work in 1969 for Wärtsilä along with the T/T Manhattan model tests and offered my heart to the Arctic Passion in 2004 when invited back to establish Aker Arctic. This newsletter is a response to the feedback received from our recent Client surveys in which we were asked to regularly share a bit of the Passion with stories on our ongoing Arctic activities and especially on the staff already infected.

Enjoy your reading!

when

### Aker Arctic Technology Inc will participate in the following events. Come and meet us there.

4. March **5th Arctic Passion Seminar** Helsinki, Finland

13.-15. April SEATEC exhibition and Northern Maritime Challenge Conference, Helsinki, Finland 27.-29. April **5th Annual Arctic Shipping** Summit, Helsinki, Finland

3.-6. May **Offshore Technology** Conference (OTC) Houston, USA

21.-25. June Neftegaz 2010 Moscow, Russia

20.-29. September Icetech 2010 Anchorage, USA

30. September-2. October **SEVTEK-2010** Murmansk, Russia

## 40 years of ice model testing

Aker Arctic reached in December 2009 two important milestones; the five year milestone as an independent entity focusing on Arctic Technology and 40 years since ice model testing started in Finland.





Turret mooring carriage for floaters. AARC 2009





Trimaran icebreaker, AARC 2009



In the middle of 1960's as oil had been found in the Alaskan North Slope, there rose a need to study the possibility to transport oil through the North-West pas-

sage to the market on the U.S. East coast. An existing 106 000 DWT tanker was chosen by Esso to be modified for the task, the TT Manhattan.

At the same time, oil company Esso (Humble Oil) initiated the idea for building an ice model basin, where performance of the vessel and future vessels could be tested. The Wärtsilä Icebreaking Model Basin was ready for testing in the end of 1969, exactly 40 years ago.

The first years of the new facility were the time of calibration. The first vessel developed from the beginning utilizing ice model tests was the Baltic icebreaker Urho, with many to follow. During the entire 1970's the icebreaker development continued to bloom.



Wärtsilä Arctic Research Centre WARC 1983 - 2005

In 1983, Wärtsilä opened a new ice model testing facility, the Wärtsilä Arctic Research Centre, which became Masa-Yards Arctic Research Centre in 1989.

Due to collapsed oil price the oil exploration activities were down and the 1990's were quiet. However, more and more model tests were directed to offshore structures. The development of the Azipod electric thrusters gave way to the Double Acting Ship concept, a new way of thinking of icebreaking.

In the end of 2004 it was decided to establish a new separate company for ice testing in Finland, and to build a brand new testing facility. Aker Arctic Technology started operations in January 2005 and the new facility in Vuosaari Marine Business Park was ready for start-up in February 2006. Today Aker Arctic employs 35 people with a turnover close to 7 Million euro.





To celebrate these milestones, Aker Arctic Technology invited customers, partners and other stakeholders for a reception in Vuosaari in November. Close to 100 persons attended the festive event. In front Mr. René Nyberg, Head of East Office, former Ambasader of Eisland in

Office, former Ambassador of Finland in Moscow and Berlin discusses with AARC MD Mikko Niini.

# New icebreakers for the Caspian Sea

AARC was in April 2009 awarded a contract by STX RO Offshore Braila SA shipyard in Romania for the technical project and class approvals on three plus two shallow draught icebreaker tugs to be built for the Kazakhstanbased Caspian Offshore Construction group. The icebreaker tugs will be operated in the North Caspian Sea- in Kashagan oil field developments, one of the largest offshore discoveries of this decade.





Mika Hovilainen is the Chief designer of the Caspian Tug project. He is a Naval Architect and studied naval architecture at the Helsinki University of Technology. He transferred to Aker Arctic in 2006 from the Helsinki Shipyard. In his career he has been participating in tens of different kinds of ship design projects so far.

Mika Hovilainen's work is to plan and design new, different kinds of offshore vessels for use in ice conditions. "Our main project right now is designing a shallow draught ice-breaking tug for Caspian Offshore Construction. The three vessels will be used for independent year round operations in the North Caspian Sea. The vessel is an icebreaking tug for very shallow waters, intended especially for pushing and towing barges and for ice management."

### **Team of experts**

"Our project team consists of 15 experts, I am the Chief designer. Additionally we have partners from the Romanian shipyard, from STX Norway, from the customer Caspian Offshore Construction and Bureau Veritas. A successful project is based on close co-operation and therefore we keep constantly in touch, in addition to our monthly meetings when we evaluate progress and solve any uprising critical issues," Mika Hovilainen emphasizes.

The Caspian Tug project started already in 2006 when the ship concept was created, but the final agreement about who will build and design the ships was made in April 2009. "The basic design process will be done within 2009, but we will support the shipyard until all vessels are ready. Two vessels are under construction and the first will be ready for delivery in summer 2010. Probably in September 2010 she will start assisting in construction works of the oilfield. The second and third vessel will be delivered in 2010 and 2011, with an option of two more vessels," Mr. Hovilainen continues. "The North Caspian Kashagan oil field development is a huge building process and should be ready for production in 2012."

### Project challenges

One of the challenges in this project has been the shallow waters in the Northern Caspian Sea. At some places the water depth is only three meters. "The harsh iceconditions together with shallow waters pose a technical challenge we have managed to solve by using features from our earlier icebreaking supply vessels and Russian river icebreakers we have designed. Naturally technical demands of vessels increase all the time, so the Caspian tug has more power and even less draught than any previously designed ones," Mr. Hovilainen explains. "The ice strengthening of the hull is developed by AARC, giving the vessel a special Bureau Veritas notation "Ice Class IASuper, Special Service - North Caspian Sea Icebreaker with ice breaking capa-bility up to 0,6 m level ice thickness."

"Another challenge has been the mortal Hydrogen Sulphide (H<sub>2</sub>S) risk in the field. The tug had to be equipped with facilities with clean breathing air from where you are able to manage the tug safely and evacuate people in case of emergency, e.g. a blow-out situation. This has been solved by using an over-pressurized citadel where up to 300 people can fit. This is also one reason why it is so important that the icebreaking features are totally reliable, as the tug has to keep an ice-free passage for dedicated evacuation vessels at all times."

"The third challenge was the zerotolerance for polluting the sea in this fragile area, so the vessel is designed environmentally friendly and covers zero dumping policy of the charterer."

### Shallow water testing

AARC's new ice model testing facility is designed to meet all the same challenges which can be encountered on the globe. For this project a special "false bottom" was created and the model of the Caspian tug was built and tested in the same conditions it will face in the Northern Caspian Sea.

"AARC had the best references of similar vessels and our expertise has a strong reputation. Also the package we could offer the oil company, i.e. a professional Kazakhstan partner, a reliable shipyard and shipbuilding group, a winning design, made us win the contract. There are icebreakers designed by us at the Caspian

\$2.00

Sea already for 100 years," Mika Hovilainen points out.

"There is an offshore-boom going on in the Beaufort Sea, Sakhalin and Barents Sea in addition to the Caspian Sea so there is a high demand of expertise in this field.

Our speciality is icebreaking vessels and there are many projects going on and coming up."

"Technically this project has been successful so far, all the testing has gone well and everything is on schedule. The final verifications will be made in winter/ spring 2011 at the Caspian Sea, when the worst ice-conditions are present, but I am confident that this vessel will be a success," Mr. Hovilainen concludes.



"Kaspij", the first ever icebreaker built in Helsinki in 1913.

### Technical characteristics

Length oa abt.	66.0 m
Length dwl abt.	63.7 m
Width abt.	16.4 m
Depth abt.	4.4 m
Draught dwl, moulded	3.0 m
Minimum operating draught,	
moulded	2.5 m
Air draught to highest fixed point	
max. 17 m above base line	
Bollard pull	50 tons

#### Main diesel engines

Main engines are four (4) high speed Caterpillar 3512 C turbocharged, after cooled diesel engines driving generators, total power abt. 7 160 kW.

Max. continuous output: abt. 1 790 kW with nominal speed of 1 800 rpm

#### Main propulsion plant motors

The main propulsion is arranged by three (3) asynchronous squirrel cage Novenco AC motors connected by couplings to the azimuthing Schottel SPR 2020 propeller units. Rated output power: 1 600 kW per unit The motors are cooled by closed air circulation provided with air to water heat exchangers.

#### Classification

The vessel is be designed and built under initial survey of Bureau Veritas, under the following notations:

I ★HULL ★MACHINERY, Tug / Fire - Fighting Ship 1, ICE CLASS IA SUPER, SPECIAL SERVICE - NORTH CASPIAN SEA ICE-BREAKER with ice breaking capability up to 0.6 m level ice thickness, UNRESTRICTED NAVIGATION, ★AUT-UMS Ice Class will be 1A Super according to Finnish-Swedish Ice Rules, but ice strengthening has been made beyond that, according to the extraordinary conditions and operation of the vessel.

#### **Environmental conditions:**

Design criteria for the vessel and its equipment complies with the following ambient temperature conditions: Air temperature + 40 °C to -35 °C Water temperature + 32 °C to -1 °C Max. current velocity 1 kn Relative humidity 80 % max. The vessel will be able to withstand 50 knot wind, and hold station under that condition. The vessel is intended to **oper**ate under environmental conditions where H2S risk occurs

> The ARC 104 icebreaker features only 2.5 meter draught combined with ability to break level ice up to 60 cm and to clear ice rubble forma-tions in the Caspian Sea fresh waters.

Her bollard pull is 50 tons.

## New inventions at Aker Arctic

Developing and learning are key words at Aker Arctic and own R & D accounts for 7 % of the turn-over. More than ten development projects are usually going on at the same time. Current projects include a new simulation program to be used in training of crew for icebreaking ships and a new type of exploration drilling ship.

Reko Suojanen is responsible for Re-search & Development at Aker Arctic. He started working at the company already ten years ago with ice model testing and

ship design and since two years back with R&D.

"Our R&D projects can be divided into three different areas. First we have joint projects funded by the European Com-mission and Tekes, the Finnish Agency for Technology and Innovation.

We participate actively in these projects because we know networking is important in this business. One example of joint projects is developing the world's largest research icebreaker Aurora Borealis. Another example is the Ice-Win project, where we work jointly with Russia, Sweden and Estonia in order to inves-tigate more on winter traffic, ice-breaking and transportation costs.

We also want to support all arctic development projects in Finland because we want Finland to keep a strong position in this area," Reko Suojanen explains.



Reko Suojanen is a Naval Architect and a father of two girls. His passion is sailing, which he started as a teenager.

"I always wanted to work with something related to the sea. Then I was lucky enough to join a Neste Shipping expedition on the Northern Sea Route and saw the ice there and knew that this was my future."

### Improved ice management

The second area of current R&D is the work in creating new kinds of ships. In ice conditions one big challenge is how to get a drilling ship to stay while the ice and current are moving around it and the wind is blowing. AARC has developed a new type of exploration drilling ship to tackle this problem.

"Our solution to this problem is twofold," Mr. Suojanen explains. "First of all the drilling ship should be surrounded by icebreakers in order to protect it from drifting ice. Secondly, we have developed a Dynamic Positioning tool that can be used in ice, eliminating the need of anchoring the drilling ship. Until now, Dynamic Positioning has only been used in open water. With improved ice management, the operating window of the drilling can be extended, with substantial monetary savings as a result.

Our clients are very interested in this new concept and waiting eagerly for it to be ready. We expect it to be ready within this year, although in R&D there is always room for further improvements." "We also have a joint project going on with Norwegian partners for creating a well intervention vessel for service work in the Beaufort and Barents Sea," Mr. Suojanen continues.



"A third example of a ship we have developed is the double-acting ship concept, which has been very successful. The challenge now is that ship sizes are getting bigger and bigger and need more powerful propulsion systems. For this we have created a hybrid solution with two azimuth thrusters and one main shaft propeller. No rudder is needed and the power to break ice is excellent." The solution has been named Aker Arctic Hybrid DAS™.

### Simulation program for design and training purposes

The third area of R&D at Aker Arctic is part of the consulting work. Different services are planned for customers and analyzing methods and programs for evaluation are developed. "One example of this is a completely new simulation program for ice-going ships we have been working on, which can now be utilised in full-mission bridge simulators," Mr. Suojanen tells. "There has been a need of a training method for arctic environments. New ships are developed with new ice-going features, but no advanced training methods for the people who will steer the ship. This development is going to change that. The first demo version was launched in Finland in December and we hope to get support and find interested partners for continued efforts in this area."



"When a ship is handed over to the customer, part of our service is the technical training. With this simulation program, we can further improve the training for operations personnel and increase safety in hard ice-conditions. The challenge with ice is that there are so



many different kinds of ice and they all behave and move differently. To steer and control a ship in ice is no easy job!

The simulation program can also be used at maritime academies as part of the basic education."

### New vessel concepts for Arctic offshore



The ARC 107 is a combined Anchor handling tug supply vessel for AHTS operations in North Atlantic, Gulf of Mexico waters or Chuckhi Sea and during the winter season as an icebreaker or an offshore support vessel in icy waters.

The ARC 106 is a multipurpose icebreaker for year round operation in the Baltic Sea. The tasks of the vessel as a Baltic icebreaker are to operate as an escort icebreaker and contact towing for small and medium sized assisted vessels. The vessel is also equipped with the additional functionalities: oil combating, with DNV notation OILREC fire fighting vessel, with DNV notation FireFighter I rendering assistance to ships in ice and open water during emergency and rescue operations. It is prepared for offshore duties by partly being equipped or partly prepared for later outfitting for the oil industry. The vessel is designed for year round operation in areas where oil rigs are located, both in open and icy waters but excluding polar and multiyear ice areas. The vessel is based on the double acting principles, Aker Arctic DAS™.

Aker Arctic has also helped BMT Fleet Technology Limited and STX Canada Marine to develop a Canadian Arctic offshore patrol ship. The AOPS will be able to operate in medium first year ice and sustain operations up to four months. It will be gun-armed, have sophisticated surveillance and communications equipment and will be able to carry a helicopter. The ships are planned to be delivered in 2013 to 2019.

### Fifth Arctic Shuttle Tanker launched



Kirill Lavrov is the fifth Aker Arctic DAS<sup>™</sup> shuttle tanker designed for JCS Sovcomflot. She was launched on December 18th in St. Petersburg while her sister ship Mikhail Ulyanov was preparing for sea trials.

Kirill Lavrov and Mikhail Ulyanov tankers have both been completely designed by Aker Arctic Technology Inc of Finland to ship oil from Prirazlomnoye (an Arctic oil field operated by Gazprom subsidiary Sevmorneftegaz), in the Pechora Sea, to terminal facilities just outside Murmansk. The contract for the Basic Design task was signed in 2006.

### No icebreaker escort needed

The ships have an ice-enhanced hull structure designed in compliance with ARC 6 ice-class standards under dual classification of the Russian Register of Shipping and Lloyds Register, and are able to operate in temperatures of -40°C and break heavy ice without the need of an icebreaker escort.

MT Kirill Lavrov and MT Mikhail Ulyanov are Aker Arctic DAS<sup>™</sup> double acting vessels, using a forward bow movement in clear waters and a forward stern movement in ice. The ships are capable of breaking through 1.2 m thick ice at a stern speed of 3 knot. The vessels are designed to carry up to three grades of cargo of around 1.025 t/m<sup>3</sup> density simultaneously, including crude oil, oil products and gas condensate.

The ships have a deadweight of 70,000 tdw and are 260 m long and 34 m wide. They have a draft of 14,0 m and a depth of 21 m. There are two 12.5 t/h boilers, a total cargo tank capacity of 86,700 m<sup>3</sup> and separated ballast tanks of 35,200 m<sup>3</sup>.

The electrical centrifugal cargo pumps have capacities of 3/3350 m<sup>3</sup>/h and 2/300 m<sup>3</sup>/h. The ballast pump has a capacity of 2/2000 m<sup>3</sup>/h. The vessels have a dynamic positioning system, a heli deck, and a bow loading facility.

The bridge is outfitted with state-of-the-

art communications and navigation equipment supplied by Transas. The electronics include communication equipment for GMDSS area A4, two radars for extreme temperatures, two ECDIS 3000-I systems, six information displays with Navi-Conning, Automatic Identification System, Voyage Data Recorder, log, and echo sounder.

### Followers of the forerunners Tempera and Mastera

This pair of vessels is the first Arctic tankers design to follow the Baltic 105.000 tdw Aframax vessels MT Tempera and TM Mastera of Neste Shipping, which entered service in 2003. This pair was originally ordered in 2004 by OOO Sevmorneftegaz, but the contract was later transferred to JSC Sovcomflot.

The class uses four Wartsila 9 L 38 C diesel generators  $(4 \times 6,525 \text{ kW})$  and one Wartsila 4L 20  $(1 \times 720 \text{ kW})$  as an auxiliary generator. The service speed at 15,400 kW and 14.0 m draft is 16 knot. The ship's double acting facility allows

### **Arctic Passion News**









Prime Minister Vladimir Putin greeting the Admiralty Shipyard's staff at the launching ceremonies in St. Petersbura together with CEO of Sovcomflot, Mr. Sergei Frank and the godmother Alisa Freyndlich, who many years worked with Kirill Lavrov at the St. Petersburg Drama Theatre.

Photos SCF- Group

#### DAS Mikhail Ulyanov preparing for sea trials while Kirill Lavrov was launched from the building berth.

Kirill Lavrov is the fifth Aker Arctic DAS<sup>™</sup> shuttle tanker for JSC Sovcomflot and follows the three units of "Vasily Dinkov"- type delivered from Samsung Heavy Industries in Korea. (left)

### Technical characteristics

Main dimensions -			
main particulars			
length over all abt	258 m		
length betw. perp.	236 m		
breadth	34 m		
depth	20,8 m		
draught summer load line	14,0 m		
draught scantling	14,0 m		
draught ballast open water	8,93 m		
deadweight	70 000 t		
trial speed	16 kts		
freeboard type	А		

### Main engine particulars

totally four (4) main engines; engines driving generators at constant speed all engines designed for flexible mounting make and type Wartsila 9L38 **main particulars** max continuous rating (MCR) 6 525 kW

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#### Bow thruster particulars two ice class bow thrusters data values classification, ice class LU 6 drive configuration electric maximum output power 2000 kW

#### **Propulsion particulars**

two Azipod propulsors, size V23 data values classification, ice class ARC 6 type of operation pulling maximum output 8 500 kW propeller diameter abt. 5,6 m propeller material stainless steel

### Norilsk Nickel fleet operations results for 2006-2009 verify the Aker Arctic DAS<sup>™</sup> concept process

Average sailing distance (hundreds nautical miles)





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### February 2010

February 2010

### Suomenlinna IIanother "doubleacting" icebreaking vessel

Some time ago the local Helsinki commuter Suomenlinnan Liikenne Oy which keeps connections to the historical Sveaborg (Suomenlinna) fortress islands took delivery of a double-ended ferry, the 329 GT MS Suomenlinna II. This innovative ice class IA ferry has been fitted with Compact Azipods, but suffered from various teething problems in her early life. Now Aker Arctic's specialists have been advising the Owners for some improve-



ments in the hull form which were implemented during a recent regular maintenance docking. As a result of these hull form modifications steering course stability was considerably improved and the vessel's staff now is able to praise on the benefits from the "double-acting" icebreaking features and efficiency as in many other ice-going designs recently introduced by Aker Arctic.

Improvements created by AARC to MS Suomenlinna II" to bring her to the category of efficient independently operating ice going vessels.

### Aker Arctic in Aurora Borealis

The Research Icebreaker Aurora Borealis is being developed under the European Union 7th Framework Program in a four-year project ERICON (European Research Icebreaker Consortium) in which Aker Arctic is a participant. The project will end in 2012.

Aurora Borealis will be the most advanced Polar Research Vessel

in the world with a multi-functional role of deep-sea drilling and supporting climate/ environmental research and decision support for stakeholder governments for the next 35-40 years. The new technological features will include dynamic posi-tioning in closed sea-ice cover, advanced iceforecasting and management with autonomous, multiple helicopter support and the deployment and operation of Remotely Operated Vehicles (ROV) and Autonomous Underwater Vehicles (AUV) from the twin moon-pools. As a demonstrator of technology AURORA BORE-ALIS shall also have a sustained positive impact on manifold industrial sectors such as shipbuilding, ice and marine technology and engineering, thereby providing key technology innovation and economic incentives to the European maritime industry sector. The platform is envisioned to become a motor of Euro-pean efforts to generate continuous strategic leadership in environmental research in the high latitudes offering scientists unprecedented access to new frontiers.

Unique deep drilling rig

The most unique feature of the vessel is the deep drilling rig, which will enable sampling of the ocean floor and sub-sea up to 5000 m water and 1000 m penetration at the most inhospitable places on earth. The drilling capability will on the long run be deployed in both polar regions and Aurora Borealis will be the only vessel worldwide that could under-take this type of scientific investigation. The possibility to flexibly equip the ship with laboratory and supply containers, and the variable arrangement of other modular infrastructure (in particular, winches, cranes, etc.), free deck-space and separate protected deck areas: will allow the planned research vessel to cover the needs of most disciplines in marine research. The ship can be de-ployed as a research icebreaker in polar seas because it will meet the speci-fications of the highest ice-class for polar icebreakers.

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Aker Arctic's tasks in the consortium focus on ice performance and simulating the operations and operating costs. All ice model tests in the heaviest polar ice were conducted in Aker Arctic's ice tank. ©AWI/SCHIFFKO PRV 200



Aker Arctic is one of the participants and the technical expert in developing Aurora Borealis. AARC's work has been focused on ice performance and ice model testing. It continues with operating cost estimates as well as building cost calculations. This picture from the AARC model tests was taken by Jan Meier from Bremen and was awarded 2nd prize in the German contest of Scientific Photographing in 2009.

More information at the official website Http://www.eri-auroraborealis.eu/en/about aurora borealis/

technical\_details/

# AARC intensifies co-operation with Aalto University

The university system in Finland is currently going through a huge structural change. Three traditionally strong units in the capital region, i.e. Helsinki School of Economics, the University of Art and Design Helsinki and the University of Technology have been merged, starting from 1.1.2010, under the new name of Aalto University.

The Aalto University creates a new science and arts community and opens up new possibilities for strong multidisciplinary education and research. It will be a foundation based university based on a Government donation of 500 M EUR and donations of 200 M EUR from the industries and other sources and creates an international community of 20 000 students and 4 000 staff.

One of the basic ideas of this change is to intensify the co-operation between the academic world and the industries. AARC has therefore launched some cooperative research projects, like one on the theories of high speed icebreaking which brought AARC-employed student of naval architecture Mr. Teemu Heinonen to lead fullscale measurements and model tests in the Aalto University ice basin with the model of IB Otso on high speeds in various level ice and pre-sawn ice channels. Mr Heinonen is also spon-sored by AARC to complement his basic studies at the Aalto University at UNIS, the University of Svalbard, where he will be continuing studies the spring term.



Mr. Teemu Heinonen and ice model tests.





### First SNAME Suomi Collegium

The first Society of Naval Architects and Marine Engineers, SNAME, meeting in Finland was held at the Aker Arctic Technology offices and ice test basin in Helsinki in December 2009. The Society of Naval Architects and Marine Engineers (SNAME) gather regularly to discuss current topics. Many of the members have been part of the group more than 30 years. This meeting was the first ever held in Finland and included presentations on Jack-Up Drilling **Rigs and Developments** around the Greenhouse Gas Initiatives, IMO and the shipping industry. The proposed Energy Efficiency design Index, EEDI, was also discussed

Of particular interest to the Finnish attendees, were the SNAME initiatives relating to Ice and Arctic Technology, such as ICETECH 2010, Anchorage September 2010 and the inaugural Arctic Technology Conference, ATC, Houston, February 2011.

#### **Floating symposium**

In the summer of 2010, the Suomi SNAME group together with colleagues from the Norwegian and Swedish SNAME groups will host a floating symposium on "Efficient Ships and Shipping in the Greenhouse Gas Era".



### Naval challenges in the Baltic Sea

The AeroSpace and Defence Industries Association of Europe Convention delegates gathered at Aker Arctic Technology Inc in October 2009 to hear presentations on naval challenges in the Baltic Sea.

Aker arctic works closely with the Finnish Defence Forces (the Finnish Navy) and the Finnish Coast Guard in developing new ice capable naval and offshore patrol units for the Baltic Sea and international tasks.



# Row, row, row your boat...

At AARC Health, Safety and Environment (HSE) is regarded as utmost important.

The company has its own rowing team, which participates in two big rowing events in Finland

every year; the Sulkava rowing event and the Kulosaari rowing event.





Aker Arctic's Rowing Team Captain Göran Wilkman hands out medals and diplomas with 21 years of experience in the Sulkava rowing event. Team member Hannu Lehtonen supervises.

The Sulkava rowing event is one of the major summer events in Finland and is held every July in the Lake Saimaa district. The boat is a traditional Finnish wooden boat style, 12 metres long and 2 meters wide, which people used to go to church with. The distance in the event is about 60 km, which takes between 4 and 6 hours depending on the team. Each team has 15 members; 14 rowers and a cox. The tradition of rowing these "church boats" rose again some 40 years ago and the number of participants in the event

has risen steadily and is today close to 10.000.

"The first time the "ice people" participated was in 1989," Göran Wilkman, Manager, Research and Testing Services, tells. "We wanted something fun and crazy to do together but afterwards we were all so sore and tired we said never again."

Since then, Mr. Wilkman has challenged the weather at Sulkava 21 times with altogether 94 colleagues. Training starts after ice melts in the Gulf of Finland in May and continues till September twice a week.

"The Sulkava rowing event is a tradition we don't want to miss out on", he says. "We put the date in our calendars and then schedule our other summer activities. Summer weekends are usually busy so it is sometimes a bit of a challenge to fit in between weddings and funerals but we do our best.

After the competition, there is always a party, sometimes starting already in the boat."

### Arctic Passion Newsletter

Aker Arctic Technology Inc's quarterly newsletter

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