



# THE YEAR **2016**



## RELIABLE SERVICES IN ARCTIC CONDITIONS

Arctia's main mission is to safeguard icebreaking operations and winter navigation in the Finnish marine areas. We offer our customers reliable maritime services in challenging conditions throughout the world. In 2016, we achieved all service targets set for us in the Baltic Sea. We also represented and promoted Finland's unique Arctic expertise worldwide.

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# 01

## THE YEAR 2016

### FLEET MODERNISATION AND REPLACEMENT PROGRAMME UNDERWAY

In summer 2016, icebreaker Voima underwent a ten-year life span extension in which, e.g. the navigation equipment on the bridge was replaced. In the autumn, the new-generation icebreaker Polaris, designed for the most challenging conditions in the Baltic Sea, joined our fleet.

### DIVERSE OFFSHORE EXPERTISE

Icebreaker Otso provided assistance in a seismic survey of the seafloor in the waters along the North-East coast of Greenland in August–September 2016. In 2016, Arctia investigated the service needs of operators carrying out scientific research in the polar regions or those interested in doing so, and took the initiative of launching

### HARBOUR ICEBREAKING THROUGHOUT THE BOTHNIAN ARC

In April 2016, Arctia Karhu Ltd expanded its operations to the entire Bothnian Arc when it signed a contract on escort tug services with the Port of Luleå.

Image: Patrik Raski





## Polaris joins the fleet

The world's first LNG icebreaker Polaris joined Arctia's fleet in September 2016. This unique vessel uses both liquefied natural gas (LNG) and low-sulphur diesel as fuel. The use of LNG significantly reduces the vessel's emissions. Polaris is the most eco-efficient diesel-electric icebreaker in the world. It started its operation as a Baltic Sea icebreaker in January 2017. The EU supported the construction of Polaris with TEN-T funding.

 Co-financed by the European Union  
Trans-European Transport Network (TEN-T)

Image: Patrik Raski



## Ahto now also assisting in Luleå

In April 2016, Arctia Karhu Ltd and the Port of Luleå signed a contract on escort tug services in the open water season. Arctia hopes that the contract is a beginning of long-standing cooperation with the Port of Luleå. For the port, the contract is part of the Malmporten project. Channels leading to the port are dredged to allow access to larger Panamax and post-Panamax class vessels. Larger ships need escort tug services, and the contract between Arctia Karhu Ltd and the Port of Luleå will meet this need.



## Life span of Voima extended

The icebreaker Voima spent the rest of the summer 2016 in Naantali where it underwent a major life span extension. For example, its bottom was fitted with about 250 tonnes of new sheet metal and the navigation equipment on the bridge was replaced. The lifetime of the vessel was increased by ten years with the life span extension. Arctia donated two of Voima's old engine order telegraphs to maritime museums. The modernisation of Voima was part of the WINMOS II project, and it was partly funded by the European Union's Connecting Europe Facility (CEF) for Transport.

 Co-financed by the European Union  
Connecting Europe Facility

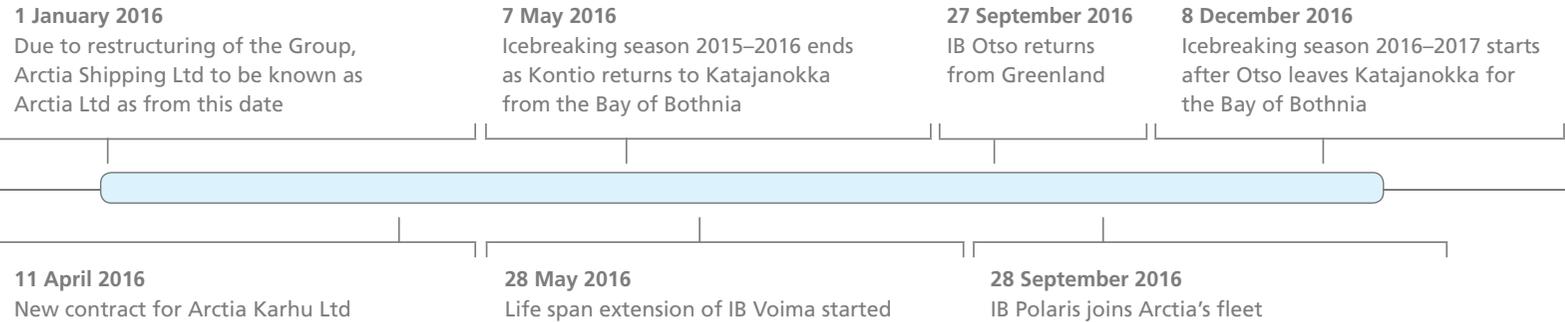
Image: Timo Aaltonen



## Changes in the STCW Code increase training needs

The training organised by Arctia for its sea personnel in 2016 focused on the renewal of qualifications and refresher training due to changes made in the international STCW Code (International Convention on Standards of Training, Certification and Watchkeeping for Seafarers). The extensive training schedule organised by the employer in a centralised way offered new aspects into increasingly safe operating methods even for the most experienced seafarers. In 2017, the sea personnel is able to continue working with updated qualifications and knowledge. The changes in the STCW Code will have an impact on the training needs of sea personnel also in the future.

# 2016



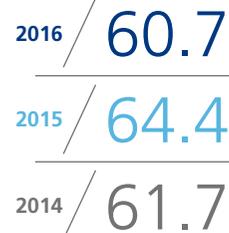
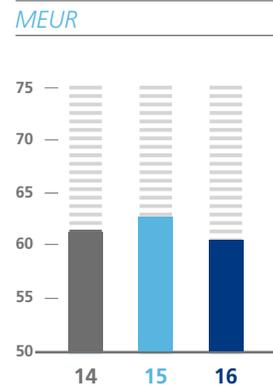
## Staff



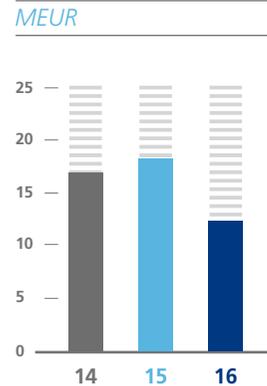
## Operating days



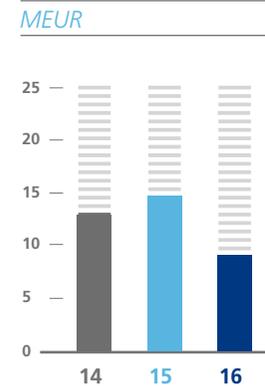
## Turnover



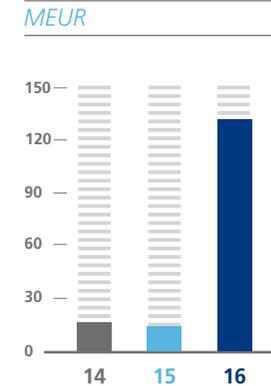
## Operating profit



## Result of the financial period



## Gross investment



\*Polaris

## Return on capital invested



## CEO's review

# THE SEAS ARE CHANGING

In 2016, the Arctia Group's performance remained at a good level and the operational cash flow was positive despite a fall in turnover. Due to a mild ice winter, the need for ice-breaking services in the Baltic Sea was fairly low, and merchant vessel traffic continued smoothly throughout the winter. Polar icebreaker Otso carried out successful operations again in the waters of Greenland in the summer.

After the long-term ice management contract in Alaska came to an end, the company told about its intentions to aim for new markets, such as Russia and the Far East. The strategy was a success as the company signed a service agreement with a Russian customer and a letter of intent with a Japanese partner as a result of work carried out during the accounting period. At the same time, sales and marketing efforts in the North-American market continued in order to find new, long-term partnerships in several different customer segments.

In accordance with the owner's policy, the company will carry out the market-based programme of replacing its fleet by year 2030. Our fleet was joined by icebreaker Polaris at the end of 2016. The acquisition was funded



on market terms, and it has a significant impact on the company's balance sheet. The vessel is the most eco-efficient icebreaker of all time as it uses liquefied natural gas, LNG, as fuel in addition to ultra-low-sulphur diesel. In terms of its technical properties, Polaris has turned out to be an excellent icebreaker for the Baltic Sea, able to work efficiently in changing and demanding ice conditions.

The life span of the oldest vessel in our fleet, icebreaker Voima, was extended in the summer. The modernised vessel will be able to carry on its icebreaking duties for the next ten years. Harbour icebreaker Ahto, on the other hand, fostered Finnish-Swedish cooperation in 2016 by serving the Port of Luleå in addition to Kemi and Tornio and providing oil recovery readiness services in the entire Bothnian Arc.

The ice conditions in the Baltic Sea and the Arctic region were exceptional during the fiscal period. Arctic sea ice fell to a record low level in the summer. The past ice winter in the Baltic Sea was characterised by areas of ridged ice and jammed brash barriers, which were difficult to navigate, although the area of ice remained fairly small. When Arctia replaces its fleet in the next few years, the company will take account of the anticipated changes in ice conditions, utilising the latest research findings.

The state owner outlined in 2016 that 49.9% of the company's shares would be transferred to the new State Business Development Company Vake Oy. The state owner has also emphasised the significance of corporate responsibility as a

basic value of state enterprises. Arctia is the first Finnish shipping company to provide a regular public report on corporate responsibility. Financial responsibility is born by safeguarding the company's self-sufficiency and development possibilities with long-term partnerships. Environmental responsibility is constantly developed with new technical solutions, e.g. utilising environmentally friendly fuel technology. We assume our social responsibility by taking care of the continuity and development of human capital with training and mentoring. The number of occupational accidents fell in 2016 as a result of targeted occupational safety development measures.

The outlook for 2017 is more difficult than in the previous year, and the results will probably turn out to be less favourable than in the previous year. Customer work continues with our current and potential new customers. A new kind of demand for polar marine services can be expected in the market, e.g. with the growing needs of coast guards and the demand for passenger ship services. Cooperation in the Baltic Sea region will also provide new opportunities as Finland, Sweden and Estonia tighten their cooperation and the icebreaking agreement between Finnish and Russian governments enters into force. Arctia has a strong position at sea, developing icebreaking cooperation in the Baltic Sea region and providing service solutions for the needs of the entire Baltic Sea.

**Tero Vauraste**  
*President and CEO*



# 02

## Arctia

### STRONG AND VERSATILE FLEET OF ICEBREAKERS

Arctia's fleet includes conventional icebreakers Voima (commissioned in 1954, refitted in 1979 and 2016), Urho (1975), and Sisu (1976). Otso (1986) was converted in 2015 to be able to operate in international tasks in addition to icebreaking in the Baltic Sea. Kontio (1987) has the most experience in oil recovery services. Multipurpose icebreakers Fennica (1993) and Nordica (1994) are capable of operating in all seas of the world. Ahto (2014), on the other hand, is a new-generation harbour icebreaker equipped with the latest technology to collect oil from icy water. Designed for the most challenging conditions of the Baltic Sea, Polaris (2016) is the world's first icebreaker using LNG as fuel. It has an in-built oil recovery system.

### WINTER SECURITY, ARCTIC EXPERTISE

Arctia is a specialised shipping company owned by the state of Finland. The company offers icebreaking, oil recovery, and offshore services, as well as harbour icebreaking and towing services. The company's turnover is EUR 60.7 million and it has about 270 employees.

## Operating environment

# FINLAND OPERATES THROUGHOUT THE YEAR

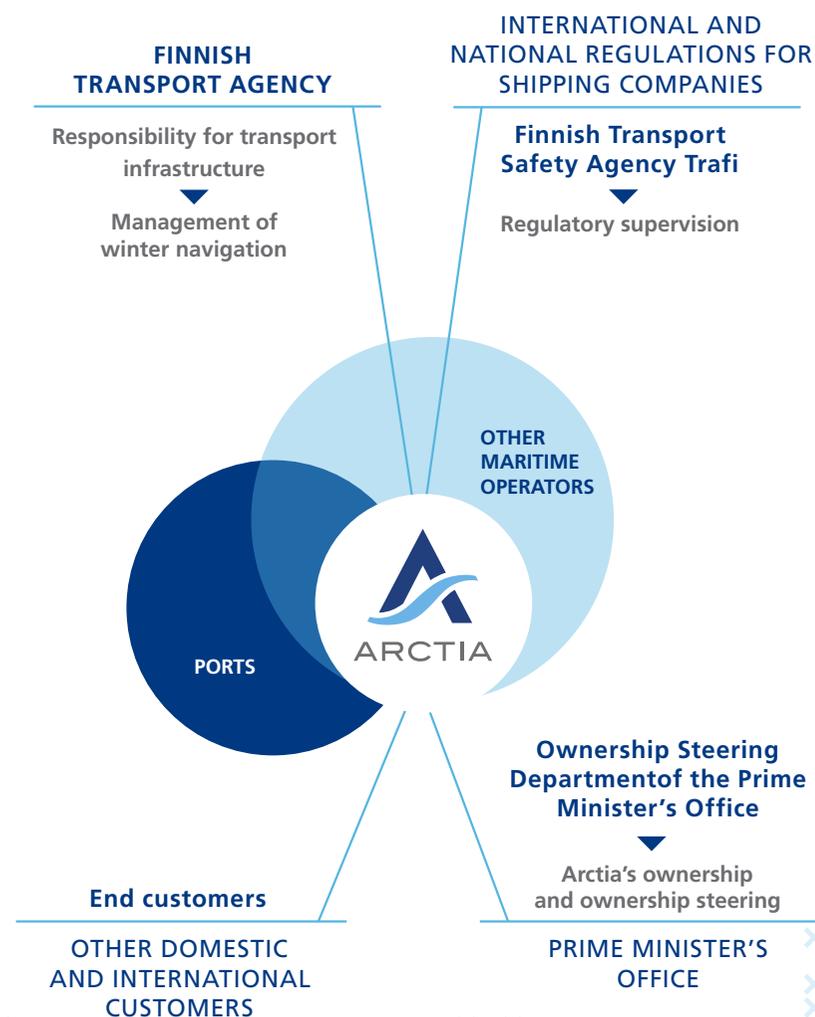
Arctia offers icebreaking services in Finland and safeguards efficient winter navigation. The company also sells maritime services to international customers. It maintains close contact with its domestic and international stakeholders at all levels of the organisation.

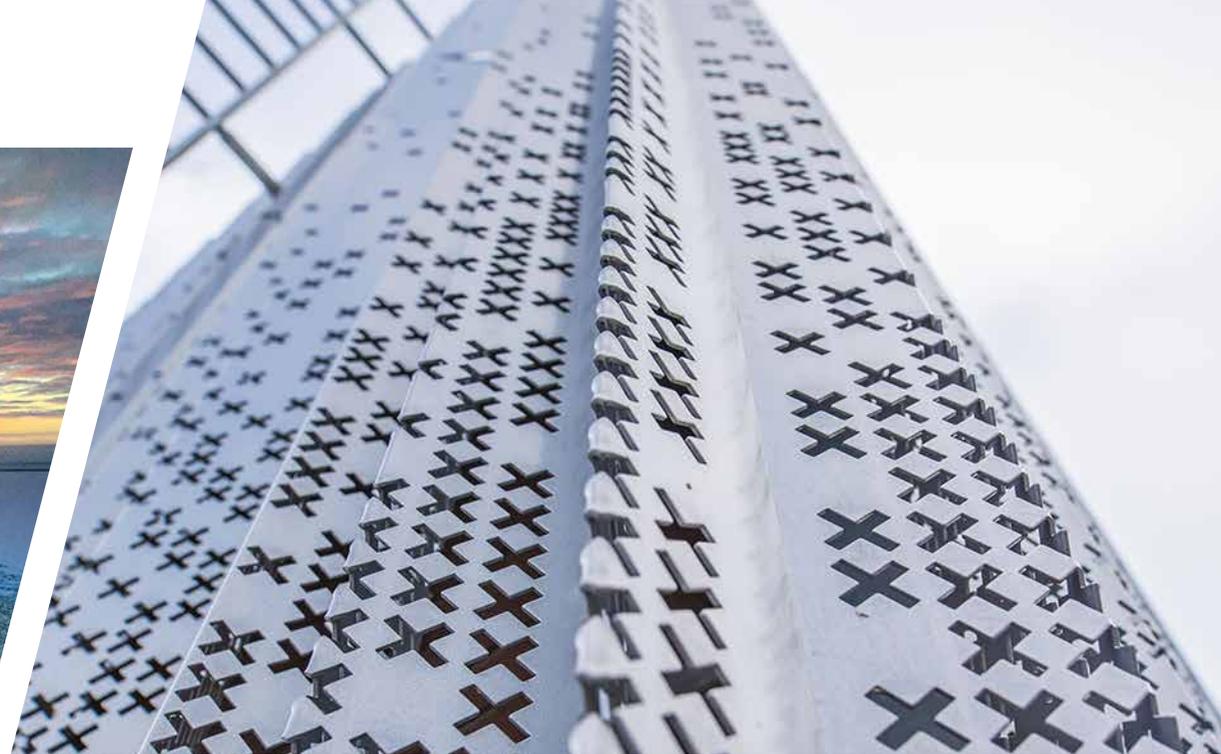
Arctia's **STAKEHOLDERS** and especially the constant dialogue with them help Arctia to succeed in its service provision. Our key stakeholders include customers purchasing icebreaking services, end customers of cargo vessels, the authorities, and actors in the Finnish commercial sector. Goods transport at sea involves many participants in the wintertime. We act in cooperation with, e.g. merchant vessels travelling through ice, pilots, charterers and ship-owners.

Arctia's services contribute to the functioning of Finnish society throughout the year. Without icebreakers, Finland would be a summer society to a great extent, or goods transport would be considerably more expensive than at present. Together with its stakeholders, Arctia safeguards a functioning Finland. As the stakeholders and their expectations change, the icebreaking services will also have to change to meet the needs in accordance to the expectations.

We need to have good understanding of the **EXPECTATIONS OF OUR STAKEHOLDERS** so that we can take them into account in the development of our services and in our decision-making. The expectations and concerns of Arctia's key stakeholders are often of such nature that Arctia is not solely responsible for them or has limited influence over them. Such issues include the overall costs of the winter navigation system and the definition of service levels for icebreakers operating in the Baltic Sea.

At best, feedback from our stakeholders provides us with new viewpoints and makes our targets more concrete. Based on the feedback, in 2016, for example, we communicated more clearly about the availability of vessels and the importance of tasks in the summer season to the company and the entire country. The next chapters deal with Arctia's key stakeholders and their expectations.





## SHIPPING COMPANIES AND MERCHANT VESSELS

The services of icebreakers are free to merchant vessels sailing to Finland when they meet the regulations and capacity requirements. Shipping companies pay fairway dues to the state of Finland for their vessels arriving in Finnish ports. The amount of the fee depends on the size of the vessel and the number of annual port visits. As in the previous year, the fairway dues were halved in 2016.

Shipping companies and merchant vessels expect a speedy response to their requests for assistance. In icebreaking and winter transport, it is usually necessary to plan the whole entity instead of assisting individual vessels. If we concentrated on the assistance needs of each individual vessel in our icebreaking tasks, all our operations would slow down considerably. Therefore, the icebreaker sets

a pace for the vessels, coordinates winter transport by setting waypoints and avoids transfer voyages without vessels to be assisted.

Arctia gathers feedback on successful operations annually in cooperation with the Finnish Transport Agency. The icebreakers also have contractual quality meters, such as assistance efficiency and waiting time.

## FINNISH COMMERCE AND INDUSTRY

Icebreaking contributes to the year-round operation of the Finnish commerce and industry. Year-round operations would not be possible without the willingness of businesses to use vessels travelling through ice. However, icebreaking and an ice-class vessel as a carrier entail more costs

than, for example, shipping in Southern Europe. It is important to Finnish trade and industry that ships operate on time throughout the year and the costs of winter navigation remain at a reasonable level.

Arctia engages in a dialogue with representatives of the industrial and commercial sectors alone and together with the Finnish Transport Agency. Through this dialogue, we maintain an up-to-date picture of the expectations and demands placed on us. In 2016, Arctia had frequent discussions, for example, with the Confederation of Finnish Industries and its member associations. The company's management met industry representatives from Northern Finland during the traditional road trip to the Bay of Bothnia in autumn 2016.

## STATE OWNERSHIP STEERING

The Prime Minister's Office is responsible for the ownership steering of Arctia Ltd. In 2016, the minister responsible for state ownership steering was the Prime Minister. The Ownership Steering Department of the Prime Minister's Office prepares and implements the state ownership policy and steers state-owned enterprises.

As the owner, the state expects its companies to operate in a responsible way. The owner expects the company to generate a return on its investment, operate profitably and discharge its duties efficiently. Furthermore, the owner requires the company to be able to finance its own operations and investments. In 2016, the state owner emphasised corporate social responsibility as a basic value for state-owned companies. State-owned companies are expected to build their competitiveness in the long term.

The dialogue between Arctia and its owner is continuous and open. The company meets the requirements set by the owner by keeping its operations profitable and cash flow positive. In 2016, Arctia launched the replacement of its fleet by acquiring the icebreaker Polaris. Furthermore, a life span extension has been carried out on the icebreaker Voima and is planned for the icebreaker Sisu, and these measures will enable distribution of vessel investments over a longer period of time. The life span extensions of Voima and Sisu have received funding from the European Union's Connecting Europe Facility (CEF).

In May 2016, the Government outlined its ownership steering policy and reported that 49.9% of Arctia Ltd shares will be transferred to a State Business Development Company, which is to be established at a later date. However, Arctia remains a company with a strategic ownership interest and the Prime Minister's Office directly controls the majority of the company's shares. In December 2016, the Government issued the mandate of the State Business Development Company Vake Oy.

## FINNISH TRANSPORT AGENCY

The Finnish Transport Agency is Arctia's most important customer. Arctia in turn is the most important but not the only supplier of icebreaking services to the Finnish Transport Agency. The Agency is responsible for winter navigation and its organisation in Finland. This includes, e.g. the ice classes of vessels and the ice class rules, traffic restrictions according to the ice conditions, launching, suspension and ending of icebreaking operations, and cooperation with the other countries around the Baltic Sea.

The Finnish Transport Agency acquires icebreaking services as multiannual service contracts in compliance with the Act on Public Contracts. The structure of the contract includes icebreakers being on standby over a fixed period against payment and reimbursement for icebreaking on the basis of a daily fee. Efforts have been made to build the contract so that it enables flexible use of the icebreaking capacity in accordance with the demands of the ice conditions.

From its service providers, the Finnish Transport Agency expects cost-efficiency and safe, punctual and reliable operations. Arctia engages in a regular dialogue with the Finnish Transport Agency during and after the icebreaking season. Targets have been set for Arctia, e.g. regarding ship waiting times, towing speed and the number of transit voyages. The achievement of these targets is actively monitored in cooperation with the Finnish Transport Agency during the icebreaking season. In 2016, Arctia met the objectives assigned for it.

## OTHER AUTHORITIES

In addition to the Winter Navigation Unit and the VTS Centres (Vessel Traffic Services) of the Finnish Transport Agency, another important authority in safeguarding safe winter navigation is the Finnish Transport Safety Agency Trafi, which is responsible for the safety of navigation. Trafi ensures that merchant vessels in winter navigation and their crews meet the regulatory requirements, e.g. by carrying out national port inspections. Trafi also mainly carries out classification of Arctia's vessels. It performs audits and monitors the compliance of Arctia's shipping activities.

Trafi requires safety from the shipping company's vessels and an impeccably functioning safety management system (SMS) from the shipping company. Any non-conformities identified during Trafi's audits must also be corrected by the specified deadlines. Arctia has responded to Trafi's observations and identified non-conformities by developing its SMS.



## INTERNATIONAL CUSTOMERS

Arctia's multipurpose icebreakers and the refitted IB Otso are capable of operating in demanding conditions across the globe. Icebreaker Kontio was chartered for icebreaking to the European Maritime Safety Agency's (EMSA) until spring 2016, while IB Otso assisted an international customer in seafloor research off the coast of Greenland.

In addition to international conventions, international customers expect shipping companies to comply with the practices and rules defined by the customer. The rules set by the customer are usually stricter than the requirements of general maritime regulations. The requirements vary according to the customer concerned, and they may concern, e.g. occupational safety on the vessel, supplier management, responsibility in general, or emissions from the vessel in a certain area.

Arctia develops its own operations in order to better fulfil the customers' requirements. During chartering, we carry out close cooperation with the customer on a daily basis. Our own operations are actively directed and monitored by ourselves and by the customer, e.g. with inspection rounds, working group meetings and audits.

## OTHER STAKEHOLDERS

In addition to our own personnel, other key stakeholders of the Arctia Group include pilots, ports, service and material suppliers, the media, Finland's administration of foreign affairs, and various parties in civic society. Arctia engages in constant dialogue with all of its stakeholders. Arctia also aims to promote the visibility of the Finnish maritime cluster at the national and international levels.

In June 2016, Arctia presented IB Polaris, e.g. at the international CIMAC congress for the combustion engine sector in Helsinki together with the

designers and builders of the vessel. The operation of Polaris and Arctia was also presented to the media and the stakeholders at home and abroad at events concerning the seafaring sector and the development of the Arctic region.

Arctia meets regularly with its external stakeholders and also ensures that its own personnel and the interest groups representing it have sufficient information on the company's operations and future plans. Arctia listens carefully to the opinions of its stakeholders with regard to issues such as the quality and safety of icebreaking services, responsibility, and cooperation.

## Core messages and organisation

### ARCTIA ENSURES SMOOTH NAVIGATION TO FINNISH PORTS EVEN IN THE WINTER

- All Finnish ports can freeze over in the winter.
- Finnish icebreaking has a solid tradition that goes back over 125 years.
- Icebreaking safeguards Finland's trade and industry and thereby Finnish welfare.

### ARCTIA CONTRIBUTES TO SUSTAINABILITY AND FINLAND'S GROWTH IN THE ARCTIC

- When operating in the Baltic Sea and in other marine areas, Arctia's icebreakers contribute to the protection of fragile environments from accidents.
- Arctic oil spill response is an area of special expertise for Arctia.
- Arctia is a global leader in icebreaker operations.
- The year-round use of multipurpose icebreakers provides cost-effectiveness for the company.
- Arctic operations help preserve existing jobs and create new opportunities.

## Vision

We are the leading and most sought-after provider of icebreaking in the Baltic Sea and polar maritime services globally.

## Mission

We secure winter navigation in Finland effectively. We deliver reliable and safe maritime services in the polar regions.



### ORGANISATION

Arctia is a group of companies, and its parent company is Arctia Ltd. Arctia Ltd is the sole owner (100%) of its subsidiaries Arctia Icebreaking Ltd, Arctia Offshore Ltd and Arctia Management Services Ltd and owns 90% of Arctia Karhu Ltd. Arctia Management Services Ltd was established at the end of 2015 and it started actual operations as a management shipping company at the beginning of 2016. The entire share capital of the parent company Arctia Ltd is owned by the state of

Finland, and the Ownership Steering Department of the Prime Minister's Office is responsible for the company's ownership steering.

The parent company and Arctia Management Services Ltd of the subsidiaries provide administrative services for the group companies. The other subsidiaries own the fleet, liaise with the customers and sign chartering agreements with external customers. If required, subsidiaries may also charter vessels from each other when there is free capacity. The sea personnel is employed by the subsidiaries operating at the customer interface.



Arctia's Board of Directors is responsible for the company's administration and appropriate organisation of operations. According to the Articles of Association, the Board consists of a minimum of three (3) and a maximum of seven (7) ordinary members. A personal deputy can be appointed for each Board member. The Chairman and the other members of the Board of Directors are elected by the Annual General Meeting. The Board may appoint a vice chairperson from amongst its members. The term of a Board member ends at the closing of the first Annual General Meeting following the election. The Board of Directors constitutes a quorum when more than half of its members are present in the meeting.

The Board of Directors has rules of procedure that specify the duties of the Board in further detail. The rules of procedure are updated annually by the Board. The Board of Directors performs an annual self-evaluation of its work and develops its activities

according to the results. The Board of Directors has established a Remuneration and Nomination Committee to support its activities. The Committee's duties are specified in further detail in its rules of procedure, which are updated on an annual basis.

The Board of Directors appoints the Chief Executive Officer of Arctia and decides on the terms of his or her employment. The CEO manages the company's day-to-day administration in accordance with the instructions and orders of the Board of Directors and ensures that the accounts of the company are in compliance with the law and that its financial affairs have been arranged in a reliable manner. The CEO is responsible for the achievement of the company's targets.

The group has a Management Team that includes the President and CEO; the Senior Vice Presidents (Icebreaking and Offshore); the CFO; Senior Vice President, Human Resources; Senior Vice President, Security & HSSE; as well as the Communica-

tions Manager. The Management Team meets on a weekly basis. The Management Team is tasked with the implementation of the company's operations in line with the strategy and policies specified by the Board of Directors and the steering of the CEO. The duties of the Management Team are specified in further detail in its rules of procedure. The rules of procedure are updated annually.

Long-term business objectives and policies are defined in Arctia's strategy, which is reviewed and updated on an annual basis. The company specifies the measures required to achieve the targets set out in the strategy and the indicators for monitoring the achievement of these targets. Each business and administrative unit is issued with its own targets and indicators in accordance with those outlined in the strategy. The Board of Directors and Management Team regularly monitor the achievement of strategic targets, the progress of defined measures and indicator trends.

Image: Tim Bird

# Board of Directors

## **Christer Granskog**

Chairman of the Board  
CEO, Oy Piceum Ab  
Board member since 2014  
Year of birth: 1947  
Education: MSc (Tech.)



## **Ilpo Nuutinen**

Vice-Chairman of the Board  
Senior Government Adviser,  
Prime Minister's Office  
Board member since 2013  
Year of birth: 1964  
Education: LLM with court  
training, Licentiate of Laws,  
MSc (Econ.)



## **Antti Pankakoski**

Board member since 2012  
Year of birth: 1954  
Education: LLM



## **Maire Laitinen**

Senior Legal Counsel, Fondia Ltd  
Board member since 2010  
Year of birth: 1953  
Education: LLM



## **Päivi Söderholm**

Senior Planning Officer,  
Centre for Maritime Studies  
Board member since 2010  
Year of birth: 1958  
Education: Master Mariner



# Management Team

**Tero Vauraste**  
President and CEO

Member of the Management Team since 2010  
Year of birth: 1967  
Education: Naval officer, MSc



**David Lindström**  
Senior Vice President, Human Resources

Member of the Management Team since 2012  
Year of birth: 1968  
Education: MSc (Econ.)



**Heli Lehtonen**  
CFO, Senior Vice President

Member of the Management Team since 2013  
Year of birth: 1963  
Education: MSc (Econ.)



**Hannu Ylärinne**  
Senior Vice President, Offshore

Member of the Management Team since 2015  
Year of birth: 1972  
Education: Sea Captain, MBA



**Tom Ekegren**  
Senior Vice President, Icebreaking

Member of the Management Team since 2016  
Year of birth: 1971  
Education: Sea Captain



**Petri Mikola**  
Senior Vice President, Technology

Member of the Management Team since 2017  
Year of birth: 1966,  
Education: MSc (Tech.)



**Pia Broumand**  
Senior Vice President, Security & HSSE,

Member of the Management Team since 2016  
Year of birth: 1975



**Eero Hokkanen**  
Communications Manager

Member of the Management Team since 2015  
Year of birth: 1985  
Education: MSc (Pol.)



# CORPORATE SOCIAL RESPONSIBILITY AS THE CORE VALUE

Arctia has defined company values that are implemented in the company's management and operations. The company values have become an established part of the shipping company's culture, having remained unchanged since 2009.

At Arctia, corporate social responsibility management is determined by meeting the stakeholders' expectations. Responsible management at Arctia means a dialogue on what responsibility means in individual situations and a good and responsible administrative culture in general. Almost all Arctia's stakeholders set requirements of responsibility.

Arctia's operating methods have been and will be developed by improving the quality and sustainability of everyday activities. The company's operations are based on various policies, such as the safety, environmental and sustainable development policies, and on a wider scale on the entire safety management system. Arctia also has ethical guidelines to help it especially in more complicated ethical situations and in their identification.

Where a company's culture is created and maintained by all employees, responsible management and its development are duties that are managed especially by the Board of Directors and the Group's Management Team. Their tools in the development of responsible culture and the management of operations include the policies, guidelines and the safety management system, as well as good governance and leadership practice. In addition to these practical tools, they direct operations on a wider level through strategy work that defines in which direction Arctia is going and by which means.

Reporting on the implementation of responsibility is part of social responsibility management. Social responsibility is dealt with as a separate item by the Management Team every month and by the

### COMPETENT

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We want to learn new things and share our expertise with our colleagues. Competence and commitment to goals are a requirement for our success.

### HELPFUL

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Cooperation with our clients forms the foundation of our operations. We aim to satisfy our customers; their needs guide our actions. We always provide good service to our clients and are proud of doing so.

### EFFICIENT

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We create a good working atmosphere by valuing our own work and that of others. We perform our duties professionally, safely and effectively. This guarantees the continuity of our operations.



Board of Directors on a regular basis. Furthermore, Arctia reports extensively on the implementation and targets of corporate social responsibility annually in connection with the annual report in accordance with the guidelines in Appendix 3 of the Government's decision-in-principle on state ownership policy (3 November 2011). More detailed information about reporting and the reporting principles is presented at the end of the annual report.

The **MATERIAL ASPECTS OF CORPORATE SOCIAL RESPONSIBILITY** at Arctia are brought up in the annual workshop of the Management Team on the basis of feedback, changes in the operating environment and Arctia's chances of influencing. Issues closest to Arctia's services have been identified as having the highest priority.

Icebreaking is necessary for Finnish maritime transport in the winter. Extending the operation of Arctia's icebreakers to cover the whole year ena-

bles work and a generation of income also in the summer. This has significant financial and social impacts on Arctia and its employees. Arctia's oil recovery services, on the other hand, contribute to reducing the risks involved in maritime transport. We seek to mitigate direct environmental impacts of Arctia's operations by improving the safety of our vessels and operations and by carrying out technical modernisations of the vessels.

The risks related to Arctia's long-term operations and, consequently, responsibility include the national transport policy and other outlines related to the use of icebreakers. Operation in Arctic marine areas is subject to various interests both nationally and internationally. Rapidly changing environmental regulations also pose their own challenges to the company's long-term operations, applying equally to Arctia's vessels and the ships assisted by them.

The traditional problem with the corporate social responsibility aspect of icebreaking has been the seasonal nature of the work. We have been able to mitigate this issue by extending our services. Nevertheless, success is still very much dependent on the market trends. It is challenging to increase flexibility in services in a rapidly changing operating environment and in a spirit of good cooperation with the employees. Operations in fragile marine areas and the related direct and indirect environmental risks also raise questions with regard to responsibility. That is when Arctia's strengths come to the fore: the technical capabilities of Polar-class vessels and the expertise of Arctia's competent and constantly improving personnel.

The following aspects were identified as material in the corporate responsibility workshop:

#### ICEBREAKER/FLEET AVAILABILITY AND ITS SAFEGUARDING

[More information in section](#) **Icebreaking services**

#### FOCUS AND RESPONSIBILITY OF OPERATIONS

[More information in section](#) **Service areas**

#### EXPANSION OF OUR CUSTOMER PORTFOLIO AND CUSTOMER SATISFACTION

[More information in section](#) **CEO's review**

#### COMPETITIVENESS/COST-EFFICIENCY

[More information in section](#) **Service areas**

#### TRUST AND COOPERATION WITH STAKEHOLDERS

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#### LEADERSHIP

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#### RISK MANAGEMENT

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## PROCEDURES OF THE BOARD OF DIRECTORS AND SENIOR MANAGEMENT FOR OVERSEEING CORPORATE SOCIAL RESPONSIBILITY MANAGEMENT

The materiality analysis of corporate social responsibility was updated in terms of stakeholder listing in late 2016. The materiality analysis was carried out in the form of a workshop, and the update was implemented in connection with the meeting of the Management Team. The workshop focused on the key questions related to Arctia's responsibilities and the concerns raised by stakeholders. The most significant concerns raised by our stakeholders were also discussed and targets set for them, along with indicators for following the achievement of the targets. The key areas raised were icebreaker availability and its safeguarding, the customers, cost-efficiency, trust and cooperation with stakeholders, and leadership.

In the course of the year, reporting settled to the monthly meetings of the Management Team, and the indicators were structured to enable their continuous follow-up. Both quantitative and qualitative meters are used in the indicators. Qualitative meters include, e.g. insurance cases, work orders and stakeholder meetings. Quantitative meters include vessel availability and poor signals from public and stakeholder sources.

A development project on a visually clear, quarterly set of responsibility indicators has also been launched at the request of Arctia's Board of Directors. These indicators are still finding their shape, and the next task required is the automation of the metering task. The Board of Directors discusses Arctia's success in CSR operations and the implementation of its material responsibilities in connection with the Board meetings.

## EXTERNALLY DEVELOPED PRINCIPLES OR OTHER INITIATIVES TO WHICH ARCTIA SUBSCRIBES OR WHICH IT ENDORSES

Arctia takes active part in the work of the Arctic Economic Council (AEC). The Council facilitates Arctic business-to-business activities and responsible economic development. CEO Vauraste has acted as Deputy Chairman of the Arctic Economic Council since it was established in 2014. Together with other Finnish company representatives in the Council, Arctia was an active participant in the Council in 2016 and promoted its themes in Finland and abroad. During the year, Arctia encouraged industry organisations to adopt a clearer role in representing the interests of Finnish companies and promoting exports in the Arctic region.

Arctia is a member of the Team Arctic Finland cooperation group. Other members of the team include the Finnish Meteorological Institute and the Finnish Institute of Occupational Health. Team Arctic is a dedicated group of companies with strong Arctic competences. It seeks growth opportunities and new customers for its members over a period of 1–3 years. The cooperation develops sustainable business operations and new solutions for the needs of demanding conditions. Team Arctic promotes Finnish expertise on a global scale. In 2016, the overall concepts were presented to a number of important investors, decision-makers and key companies in various sectors and countries. The team acts in close cooperation with the Finnish Marine Industries.

In October 2016, Arctia was the first Finnish shipping company to report that it will support the ban on heavy fuel oil in the Arctic. Arctia expressed its support to the Clean Arctic Alliance, a coalition of non-profit organisations which promotes the ban.

## ARCTIA'S MEMBERSHIPS OF ASSOCIATIONS AND ADVOCACY ORGANISATIONS

### Finland:

- Finnish Shipowners' Association
- Suomen Erikoisalusten työnantajaliitto ry
- Finnish Maritime Society
- Kotka Maritime Research Centre (Merikotka)
- Apprentice Mill
- Registered Association Finnish-Russian Chamber of Commerce (FRCC)
- Amcham Finland
- Team Arctic Finland

### International:

- Arctic Economic Council (AEC)
- World Ocean Council
- Association of Arctic Expedition Cruise Operators, AECO
- The European Community Shipowners' Associations, ECSA (through Finnish Shipowners' Association)

**RISK MANAGEMENT** is an integral part of shipping operations. Arctia carries out risk assessments ensuring that they also include risk assessment of corporate social responsibility. The Group's risk review was updated in November 2016. Short-term risks in icebreaking are related to, for example, damage to vessels. Longer-term risks, on the other hand, are related to, e.g. relatively rapid and radical changes in the winter fleet and its service needs, as well as in the development of local weather conditions. Arctia manages these risks with good shipping operations and active monitoring of changes.

The key risks in the offshore market are related to the challenging situation in the global economy

and to operations in fragile marine areas. Market risks are managed with active market monitoring and cooperation with our customers, the authorities and other stakeholders. Other operational risks are managed by monitoring of expenses and through extensive insurance cover. The technical capabilities of Arctia's Polar-class vessels and the expertise of our competent and constantly improving personnel play a key part in the management of environmental risks.

Arctia's most important operational risk is the ageing of the fleet. The technical reliability of the Group's vessels is maintained through servicing and maintenance in accordance with a long-term service plan and through new technological solutions. In 2016, Arctia took delivery of a new icebreaker, Polaris. Moreover, the programme to extend the life span of icebreakers was launched in summer 2016 with the life-span extension of IB Voima.

Development of the polar market as a whole presents both risks and opportunities to the company. The progress of Arctic and sub-Arctic energy projects is highly dependent on the global market price of oil and gas, political choices and the development of international relations. In addition to oil and gas projects, Arctia has experience, for example, in the construction of offshore wind power and the provision of marine services needed in the laying of submarine cables.

Research in the Arctic region and in Antarctica is active and of increasing importance, for example, in order to understand climate change. Cruise tourism is also expected to increase in these areas. In addition to various offshore services and the research and tourism sectors, state actors also have a need for icebreaking services. Arctia manages

market risks through alternative customer and service forms. A diverse fleet is a considerable strength.

Key business risks in harbour icebreaking and escort tug services consist of the fluctuation of demand due to varying winter conditions and the variation in towing needs, particularly in the summer season. These variations have a significant impact on the company's finances. The risks are managed through appropriate contract structures and cost management. Arctia Karhu Ltd has also succeeded in expanding its customer portfolio both geographically and in terms of its service provision.

When scrutinising key issues in corporate social responsibility in 2016, Arctia's Management Team also considered the **KEY CONCERNS RAISED THROUGH STAKEHOLDER ENGAGEMENT**. Feedback was collected directly and continuously. Stakeholder listing was updated in 2016, but the materiality analysis conducted in 2015 was still deemed to be valid. Concerns raised by stakeholders, such as safeguarding vessel availability, were used as elements in the materiality analysis of corporate social responsibility. By integrating the concerns in the materiality analysis we were able to gather them into the core of responsible operations to be measured.

Arctia carries out an image survey and a personnel survey every other year, the latest ones in 2015. The concerns raised in these surveys were discussed in Arctia's workshop on corporate social responsibility. The issues identified in the surveys were complemented with feedback received directly from customers and ownership steering. We performed a materiality analysis of this data to identify the factors most significant for Arctia and its strategy, on which Arctia also has a realistic chance of influencing.



That way, the concerns raised by stakeholders are also directly visible in the responsibility priorities, which are listed in the above table 'Material areas of corporate social responsibility'. In many respects, these priorities are central to Arctia's daily operations. However, we will make an effort to increasingly consolidate the role of these elements in our strategy and, above all, to discuss them more actively with our stakeholders.

Image: Patrik Raski

# CASH MANAGEMENT PLAYS A KEY PART

Arctia's task is the efficient and profitable provision of icebreaking services in accordance with the going concern principle. Arctia's icebreakers safeguard Finnish exports and imports in the winter season and guarantee economic viability also for the country's northern ports and businesses.

The Arctia Group's primary **FINANCIAL TARGETS** are the profitability of business operations, a positive operational cash flow, and covering the cost of maintenance investments with the company's own cash flow. Increasing the utilisation rate of Arctia's fleet is also one of the company's most important goals with regard to long-term profitability. Financial targets are set separately for each business unit and their realisation is monitored on a monthly basis. The most important financial indicators are turnover, operating profit, operating margin and cash flow, along with the return on equity, return on investment and solvency. The realised figures for these indicators are presented in the financial statements.

Arctia achieved its financial targets in 2016. The company's profitability and performance were solid and cash flow remained positive. Arctia is constantly maintaining its profitability and performance through active measures in order to fulfil the duties assigned to it by its customers. We are constantly monitoring costs through regular performance reviews and profit forecasts. During the period under review, the Arctia Group raised a new bank loan of EUR 112.5 million and invested in a new icebreaker. The balance sheet position changed considerably during 2016. The significance of cash flow management and long-term planning of investments will continue to grow.

Performance reviews must be reliable and kept up to date so that the company can make the required business decisions based on its results. During the financial year of 2016, particular attention was paid to profit forecasting and the accuracy of cost control. We aimed to carry out any remedial measures on the basis of cost control. Revision of the monitoring indicators and reporting was launched in the second part of the year. The objective is to create a reporting system that gives a quick but sufficiently extensive situation analysis of the company's key indicators to the management and employees. The purchase invoice processing system was upgraded in the second half of the year, after which only online invoices will be accepted. A forecasting tool enabled by the existing system will be introduced for drawing up cash flow forecasts.

The company must have sufficient solvency to enable investments in the fleet. Gross investment in 2016 totalled approximately EUR 131.6 million, of which maintenance investments accounted for EUR 3.5 million.

Arctia does not receive financial subsidies from the government. The state owner requires future investments to be financed with equity and loan capital obtained by the company itself.

Arctia's most significant financial impact, particularly in the northern regions of Finland, is securing the continuity of business activity by keeping the maritime shipping lanes open and safe during the winter season. A major part of Finland's imports and exports is transported by sea, which makes safeguarding the smooth flow of marine traffic round the year vital to the continuity of commerce.

## CHARITY AND SPONSORSHIP

A decision in principle made in 2013 specifies that Arctia does not support or sponsor sports or sign cooperation agreements related to sports. Arctia does not support religious organisations or political parties. In 2016, Arctia donated its Christmas gift funds to the Clean Baltic Sea projects of the John Nurminen Foundation (EUR 600) and to Satamajäänsärkijä S/S Turso Yhdistys (EUR 300).

CHARITY AND SPONSORSHIP, EUR	2016	2015	2014
Children and youth	0	200	1,000
Science, research and education	12,500	11,044	8,240
Arts	0	0	0
Sports and exercise	0	0	0
Political subsidies	0	0	0
Civic and environmental organisations	1,000	1,100	200



Image: Pekka Huovinen

## CASH FLOWS TO STAKEHOLDERS, MEUR

	2016	2015	2014
<b>CUSTOMERS</b>			
Operating income	60.8	68.5	61.7
Turnover	60.7	62.1	61.3
Other operating income	0.1	6.4	0.4
<b>GOODS AND SERVICE SUPPLIERS</b>	14.3	19.3	16.5
Material and service acquisitions	7.0	9.2	8.3
Other operating costs	7.3	10.1	8.2
<b>STAFF</b>	21.3	20.5	18.9
Personnel expenses	21.3	20.5	18.9
<b>PUBLIC SECTOR</b>	1.4	2.0	1.8
Taxes (income tax)	1.4	2.0	1.8
<b>NON-PROFIT ORGANISATIONS</b>	0.0	0.0	0.0
Sponsorship and donations	0.01	0.01	0.01
<b>SHAREHOLDERS</b>	7.5	7.9	0.0
Dividends paid to owners	7.5	7.9	0.0
<b>FINANCERS</b>	1.4	0.8	0.7
Financing costs (net)	1.4	0.8	0.7
<b>FUNDS RETAINED FOR THE DEVELOPMENT OF THE COMPANY'S OPERATIONS</b>	14.8	17.9	23.7
<b>INVESTMENTS</b>	131.6	14.8	15.6

The figures are reported according to the company's accrual accounting in millions of euros.

## TAX FOOTPRINT IN 2016

The tax footprint refers to the taxes and equivalent fees received by society from a company's operations. Arctia's tax footprint was EUR 12.9 million in 2016. The greatest part, EUR 6.2 million, resulted from withholding tax and employer's contributions.

The appropriate and timely management of matters related to taxation is of key importance to Arctia. As a rule, tax planning is carried out and the declarations and reports related to taxes are drawn up by the company's financial unit. External taxation specialists are consulted when necessary. Arctia engages in tax planning within the limits permitted by the Business Tax Act. The planning related to the depreciation of fixed assets is carried out with the aim of balancing taxable income over different fiscal periods. The payment of tax is based on the principle that taxes are paid to the country where the tax liability has arisen.

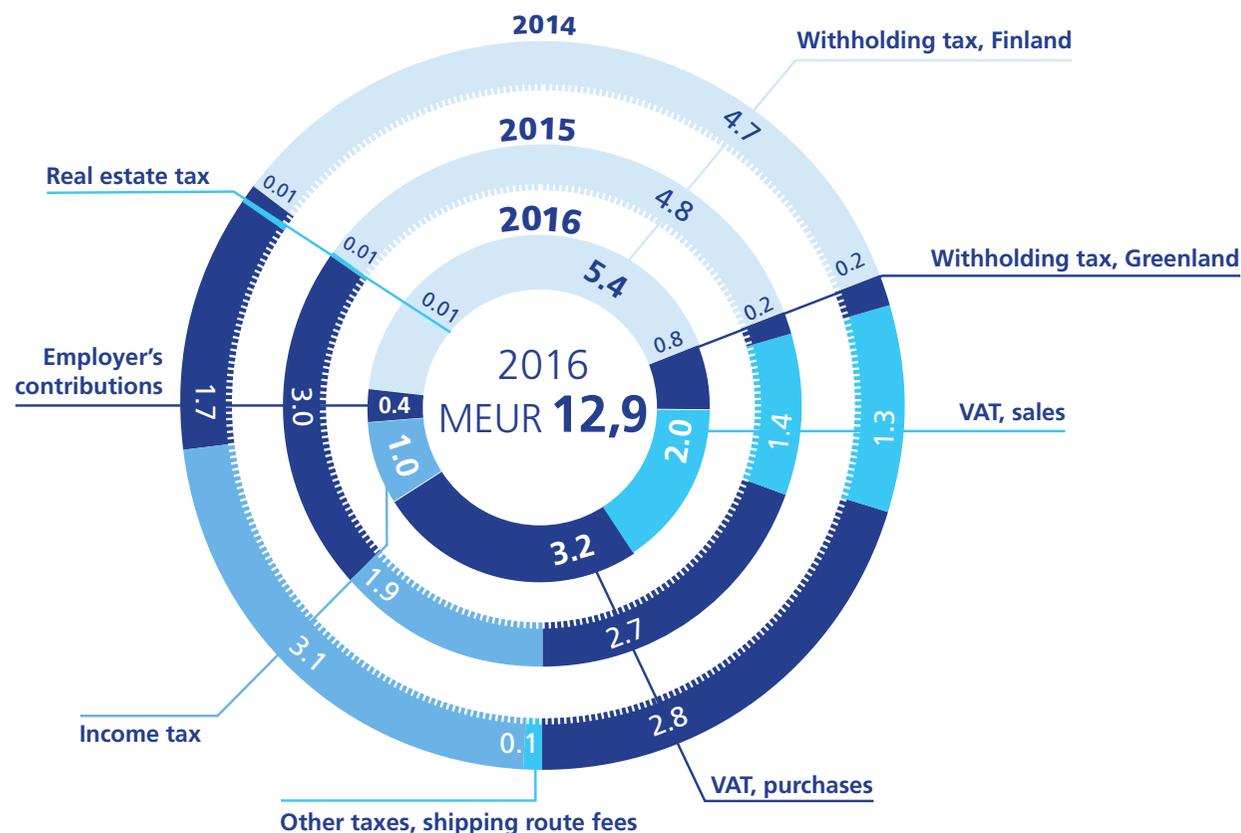
All Arctia Group companies are incorporated in Finland and pay their taxes primarily to Finland. Arctia has no branches in any other countries. The company also sold its services to Greenland in 2016. The taxes withheld from the salaries of personnel operating in Greenland (EUR 0.8 million) were paid to Greenland, since persons working in Greenland's economic area are subject to local withholding tax legislation.

In previous years, a report on Arctia's operations in US waters in 2012–2014 and a separate report on operations in 2015 were delivered to the US tax authority IRS (Department of the Treasury Internal

Revenue Services). In 2015, Arctia earned revenues from the United States, but had no operations in the US waters. A report on revenues for 2016 will also be delivered to the IRS.

IB Nordica's transit voyage for chartering started in late 2016, with its area of operation being Rus-

sia. Any obligation to pay tax was investigated, e.g. in terms of the establishment of a fixed place of business. The investigation was carried out with the assistance of external tax experts from Finland and Russia. It was concluded that the establishment of a fixed place of business is unlikely.



# SUSTAINABLE FAIRWAYS TO THE NORTH

Arctia enables winter navigation along the entire coast of Finland in collaboration with ports and other local operators. Arctia strengthens its own competence and contributes to building a sustainable future in the northern regions through research and training cooperation and in strategic partnership.

To Arctia, **LOCAL COMMUNITIES** mean, above all, the residents of the Bothnian Arc and the other coastal areas in Finland. In 2016, Arctia's personnel donated 100 blue and white hand-knitted hats to the maternity ward of the Oulu University Hospital. In Kemi, Arctia continued active cooperation with the Port of Kemi and the Emergency Service of Lapland.

As a company, Arctia sought to highlight Finland's Arctic expertise and questions related to the Northern Dimension at home and abroad in 2016. The new icebreaker *Polaris* provided an opportunity to showcase Finnish maritime expertise to the national and international media. In collaboration with the Ministry for Foreign Affairs and Finnish diplomatic and consular missions, *Polaris* and Finnish icebreaking expertise have won wide international attention, for example, in China and Japan.

In 2016, CEO Tero Vauraste acted as Lapland Ambassador, i.e. a partner of the region's joint marketing and communications body, the House of Lapland. Mr Vauraste was also Vice Chair of the Arctic Economic Council (AEC), an international cooperation organisation for enterprises operating in the Arctic. Members of the Council also include enterprises established by indigenous people, and one of its objectives is to support the operating preconditions of local SMEs and indigenous businesses. As a company, Arctia sought to highlight Finland's Arctic expertise and issues related to the Northern Dimension in 2016.

In Helsinki, Arctia acts locally in partnership with its neighbour, the Ministry for Foreign Affairs and Visit Helsinki, the Helsinki tourist information office. In 2016, Arctia provided the city's tourist guides with information about icebreaking and its

floating office. Arctia notifies of any exceptional noises and lights coming from the icebreaker base to the City of Helsinki and the Katajanokka Society. Arctia Karhu Ltd is domiciled in Kemi, and the company carries on cooperation especially with the Emergency Service of Lapland.

Arctia trains new mariners through the Harjoittelumylly Association. Arctia established Harjoittelumylly together with the Finnish Shipowners' Association and nine maritime institutes in 2015. The purpose of Harjoittelumylly is to coordinate and promote the efficient use of trainee posts on vessels. This supports Finnish maritime education through practical training on ships. In 2016, Arctia had a total of 93 trainees on its vessels.

Arctia also contributes to the future of Finnish navigation through research cooperation with universities of applied sciences, universities, and other organisations. In 2016, participation in individual theses and final year projects was reduced due to the huge number of requests in relation to Arctia's human resources.



Image: Tim Bird

Arctia pays attention to the **PREVENTION OF BRIBERY AND CORRUPTION**. The Arctia Group's Ethical Guidelines define the anti-bribery and anti-corruption principles applying to all Group personnel.

Arctia complies with national and international **REGULATIONS ON COMPETITION**. Arctia's Ethical Guidelines define procedures for matters such as the handling of confidential information.

**COMPLIANCE WITH LEGISLATION AND REGULATIONS** is monitored by the operative management, ships' masters and other supervisors. The Group's auditors monitor its compliance with legislation related to financial administration, such as the Accounting Act and Ordinance and the Limited Liability Companies Act. Arctia as a shipping company as well as its subsidiaries are audited annually by the authorities.

The success of service performance, realisation of the standard of services and the entity formed by these two have an impact on **CUSTOMER SATISFACTION**. In the long term, the replacement of fleet and keeping its maintenance and utilisation rate at a good level will maintain customer satisfaction and the customers' confidence in the availability of services. The Finnish Transport Agency has a direct agreement on icebreaking services with Arctia. From Arctia's viewpoint, the shipping companies that sail to and from Finland, including their crews, are also Arctia's direct customers. Arctia's end customers in Finland are the country's overseas trade and industry and therefore, in a broader

sense, the entire Finnish society. Our direct overseas customers are our international contract customers.

Arctia's performance in service provision is monitored in cooperation with the Finnish Transport Agency, which organises an annual stakeholder survey to assess the smooth operation of the winter navigation system. Arctia's service production is also monitored for each vessel in terms of every assistance, towing and transit task on a monthly basis.

Feedback on the quality of services is also received from customers and stakeholders in the annual closing meetings of icebreaking and harbour icebreaking, where a high number of stakeholders are present. Due to the small number of direct customers, Arctia communicates with its customers and receives feedback from them on a daily basis during operation seasons. In terms of its most important customers, Arctia's key indicators are the waiting times for icebreakers.

In 2016, Arctia met all of its service level requirements and received a high rating in the stakeholder survey, which is consistent with its objectives. Also direct feedback from international customers was mainly commendable.

**WINTER TRAFFIC INTO FINNISH PORTS\***

	2016	2015	2014
Percentage of vessels that entered port without waiting (%)	98.0	97.0	96.6
Number of vessels waiting	211	111	254
Average waiting time/vessel (h)	3.41	4.97	3.16

\*Total performance data for all icebreakers chartered by the Finnish Transport Agency

**SERVICE SAFETY**, and maritime safety in general, is the most important area of responsibility to Arctia. The safety of services is monitored as part of ship safety. Arctia continuously maintains and develops the safety management system of its ships and the entire shipping company. An extensive system update was implemented during 2016, in connection of which the personnel took part in a number of training events, and the transfer of the safety management system to a new platform was started. Non-conformities and observation reports, near misses, investigation of the root causes of non-conformities, and corrective measures are included in the system.

The users of icebreaking services provided by the states of Finland and Sweden are requested over the radio to confirm their compliance with the winter navigation rules. The rules include a detailed description of the responsibilities of the recipient and provider of the service.

Arctia respects **HUMAN RIGHTS** and takes them into consideration in its operations. Arctia has a sustainability policy in place, which clearly indicates the company's commitment to human rights. Arctia also has Ethical Guidelines in which human rights are addressed. Arctia seeks to take the rights of children into account, for example, by supporting family leave among personnel.

**FAMILY LEAVE**

	2016		2015		2014	
	persons	days	persons	days	persons	days
Men	13	341	10	235	7	262
Women	2	438	3	642	3	698



**SUPPLY CHAIN MANAGEMENT** was developed and the **PROCUREMENT PRINCIPLES** were complied with in 2016. Audits on subcontractors continued. Reporting practices were fine-tuned and specified further in order to meet the customers' needs. On the Subcontracting Day in 2016, we discussed with the subcontractors, e.g. on the change in Arctia's corporate structure, the reporting responsibilities of subcontractors, corporate social responsibility, safety, and the operating principles on Arctia's vessels. In 2017, all of the company's procurement will be transferred to an electronic enterprise resource planning system together with the service and maintenance department.

During 2016, Arctia put major product and service entities out to tender. The openness of procurement was increased. For example, the competitive tendering for waste and real estate maintenance was reported openly on the company's website. Arctia makes a constant effort to develop procurement and dialogue with significant subcontractors.

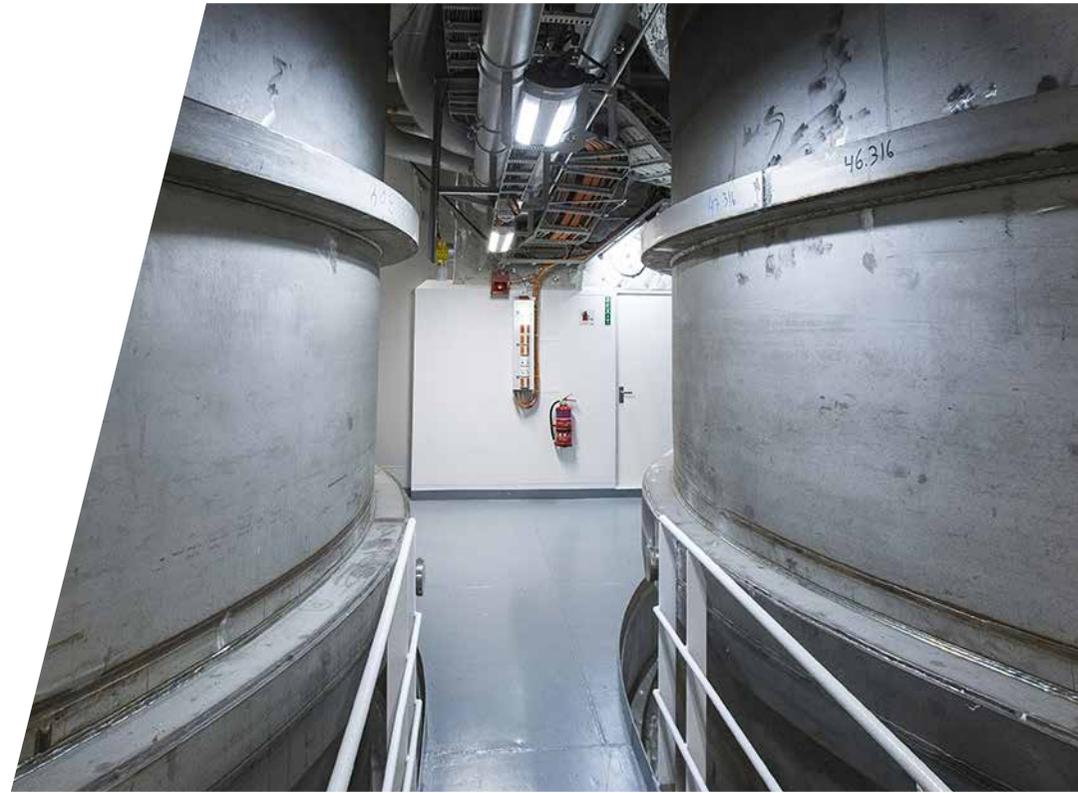
As a rule, Arctia performs its actual services itself and does not outsource these kinds of tasks. Specified subcontractors are used for carrying out repair and maintenance tasks and work requiring specialist expertise. All key subcontractors have been audited. The significance of subcontractors is determined on the basis of purchasing volumes.

Arctia seeks to prevent further outsourcing of services in the selection of suppliers and service providers and in the contract bases. A mandatory non-conformity report is required of any injuries to suppliers' personnel, and particular attention is paid to the supervision of subcontractors' work. Work permits, site meetings and work plans used at Arctia also apply to the subcontractors working on the vessel to provide for occupational safety of all those working on Arctia's ships.

Arctia supports its suppliers and subcontractors by opening up its requirements and providing guidance. We require that the suppliers and subcontractors are registered with the tilaajavastuu.fi service. Arctia also has a procurement policy in place, specifying aspects such as procurement thresholds.

# LNG IS THE FUTURE

From an environmental perspective, marine transport is a good means of transport. Arctia makes marine transport possible throughout the year. In September, the world's first LNG icebreaker *Polaris* joined our fleet.



Arctia takes the environment into account by targeting its consumption and operations to actual service events, i.e. assistance and towing. We also actively protect the environment by providing and developing services in oil spill prevention and response. In addition to the MARPOL Convention (International Convention for the Prevention of Pollution from Ships), Arctia complies with the national guidelines and regulations on ship emissions.

The operating profile of icebreakers consists of roughly two highly different aspects: actual operations, such as icebreaking, offshore tasks and transfer voyages, and periods spent docked or in maintenance, mostly during the open water season. By assigning the consumption and oper-

ation of its ships to service events, Arctia is able to maintain a high standard of services without burdening the environment.

The emissions generated by fuel consumption during the operational period are the most significant **ENVIRONMENTAL IMPACTS** of Arctia's operations. However, when the indirect positive environmental impact of icebreaking – securing environmentally friendly maritime transport also in winter – is taken into account, its benefits can be considered to outweigh the direct negative environmental impact.

Arctia always strives to operate in the most economical and fuel-efficient manner possible. Nevertheless, this is not done at the expense of the winter transport system as a whole. Reduc-

tion of the passive consumption of ships and the adjustment of the use of equipment to be as energy efficient as possible are our primary objectives. The solutions include, for example, various automation modifications and frequency converters. We have carried out these minor environmental investments annually within the vessel maintenance budgets. In 2016, we made the above-described changes especially in relation to ventilation. The changes were supported by the environmental review carried out in late 2015.

When the icebreakers are docked at the icebreaker base in Katajanokka, they are connected to municipal utilities. During such periods, the icebreakers obtain their water, district heating and electricity from shore and discharge their sew-

## Environmental targets for 2017

1. Arctia will draw up an emissions monitoring and reporting plan for each ship during 2017 in accordance with the EU MRV Directive and start emissions reduction on their basis. Year 1990 will be set as the base year for emissions, and the target is a 20 per cent saving during the first four years.
2. The use of tank water for drinking (tank water quality) will be promoted and bottled water will be phased out.
3. The oil of equipment that may leak into the water will be switched to biodegradable oils recommended by the device manufacturer in accordance with the maintenance programme.

age into the city network. When the harbour icebreaker Ahto is at pier, it is connected to shore power and its waste water is discharged into a collection vehicle.

The most significant new environmental initiative in 2016 was the acquisition and commissioning of icebreaker Polaris. As one of the first LNG operators in the Baltic Sea, Arctia develops and establishes practical use of this less harmful fuel technology. Our stakeholders' understanding of the principles of LNG is also growing. During the year, Arctia demonstrated the LNG use of Polaris to a number of different operators.

Arctia has also flown the flag for cleaner fuels more extensively since the presentation event of Polaris in October 2016: CEO Vauraste made a public statement on behalf of the ban on the use of heavy fuel oil in the Arctic. Heavy fuel oil in the fuel tanks of the ships directly damages the Northern environment due to its impure combustion and constitutes a risk of oil pollution as a result of the diverse vessel types.

**ENVIRONMENTAL TARGETS** were sharpened in late 2016 especially in terms of fuel reduction. The new fuel consumption savings target can be turned into a numerical value and the year 1990 has been set as the reference year. This will facilitate the monitoring and reporting of environmental targets. The set targets will be monitored and their achievement will be reported in the 2017 annual report. Although the EU MRV regulation (Monitoring, Reporting, Verification) basi-

cally does not require monitoring and reporting of fuel consumption on icebreakers, Arctia will join this development together with other European shipping companies.

### ELECTRICITY

During their maintenance period in the summer months, Arctia's conventional icebreakers are connected to the electricity network of the City of Helsinki and their engines are stopped to avoid emissions and noise. In order to reduce electricity consumption and improve energy efficiency, we have started to upgrade the electrical and automation systems on our conventional icebreakers. In 2016, the life span extension docking of IB Voima was completed. In the project, e.g. the electrical system of the ship's galley was replaced and two air source heat pumps were installed.

SHORE POWER USE (MWH)	2016	2015	2014
Katajanokka	2,810.85	2,700.36	2,602.64

### DISTRICT HEAT

When the ships are moored to the icebreaker dock in Katajanokka, they are heated from the City of Helsinki's district heating network. When ships arrive in port, they are connected to district heating and their boilers are shut down.

ENERGY CONSUMPTION (MWH)	2016	2015	2014
	4,911	5,808	5,430

In 2016, the SEEMP (Ship Energy Efficiency Management Plan) plans for controlling the consumption of fuel were in use for the fourth year at Arctia. The energy-saving project launched in 2013 with a focus on saving fuel continued. The multipurpose icebreakers Fennica and Nordica operated on a highly eco-efficient ultra-light fuel.

In 2014, the Arctia Group's icebreakers stopped using heavy fuel oil altogether, which decreased the company's sulphur emissions by a considerable degree. In accordance with its environmental pledge, Arctia will start to develop the monitoring of its fuel consumption in 2017 and set itself numerical fuel saving targets. The SEEMP plans of the ships will also be updated in connection with this task.

The emissions of the LNG consumption of our latest icebreaker Polaris are not included in the following figures. In 2016, IB Polaris used about 81.2 tonnes of LNG in Arctia's ownership.

FUEL OIL CONSUMPTION, (tonnes)	2016	2015	2014
Ultra-light	1,293.14	8,722.90	5,738.10
Light	7,967.73	4,194.24	4,160.87
Heavy	0	0	1,652.06

CARBON DIOXIDE EMISSIONS CREATED BY FUEL COMBUSTION, (tonnes*)	2016	2015	2014
	44,947.91	42,044.25	27,127.64

\*calculated according to IMO MEPC/Circ.471

## AERIAL EMISSIONS

OTHER AERIAL EMISSIONS (tonnes)	2016	2015	2014
CO <sub>2</sub>	42.1	59.6	45.4
HC	16.8	23.8	18.1
NO <sub>x</sub>	589.3	662.7	635.0
Particulates	12.6	16.6	13.6
CH <sub>4</sub>	2.1	3.0	2.3
N <sub>2</sub> O	0.7	1.0	0.8

Attention is given to the moderate consumption of fresh **WATER**. The environmental targets set in 2015 addressed the use of drinking water in particular. The quality of tank water is improved and the use of bottled water is being phased out. The results presented in the following table are based on the ships' own consumption tracking, which does not give a fully comprehensive report on water use while moored in Katajanokka.

WATER CONSUMPTION (m <sup>3</sup> )	2016	2015	2014
Multipurpose icebreakers	3,464.60	6,787.20	5,500.70
Conventional icebreakers	5,546.00*	4,660.00	5,688.00

\* incl. tugs

**WASTE** is collected and sorted on board Arctia's vessels. When ships arrive in port, they dispose of their waste into the collection containers provided by ports, from which the port then delivers the waste for recycling or to the landfill. In order to maintain the target level for sorting waste, Arctia's vessels have commissioned the collection of organic waste when necessary. When vessels are

operating outside specially protected areas, solid waste can be incinerated in the on-board incinerator within the limits of environmental legislation, where necessary.

Waste management was put out to tender in 2016. The objective is to improve the functioning of waste management at the base.

## Refrigerants

The refrigerants most commonly used in on-board refrigeration equipment are potent greenhouse gases that are harmful to the ozone layer. Arctia has given up the use of such gases and switched to alternative refrigerants. Arctia's refrigeration equipment is maintained by authorised maintenance companies.

## Waste management training and plans

New employees are introduced to the shipping company's waste management system during their general orientation.

When ships are at sea, they sort solid waste into the following dedicated receptacles:

- energy waste
- biowaste
- paper and cardboard
- mixed waste
- glass
- metal
- hazardous waste (paint pots, fluorescent lights, oily waste, etc.)
- PVC
- batteries.

WASTE	2016	2015	2014
<b>Sorted solid waste</b>	<b>m<sup>3*</sup></b>	<b>m<sup>3*</sup></b>	<b>t</b>
Biowaste	36.9	11.49	7.50
Plastic	37.7	5.52	3.28
Glass	4.5	1.36	1.88
Cardboard	73.5	3.20	3.39
Metal	54	60.06	15.80
Paper	39.2	5.60	5.10
Other	18.38	17.58	0.90
Mixed waste	450.75	41.67	80.8
<b>Hazardous waste</b>			
Oily waste (m <sup>3</sup> , t, t)	15.46	2.73	3.31
Batteries (pcs)	580	2,432	1,950
Lightbulbs, etc. (pcs)	584	1,275	1,745
Other (kg, pcs, pcs)	110	550	181
<b>Hazardous waste, liquid</b>			
Oils (m <sup>3**</sup> , l, l)	38.16**	277,000	328,441
Paint (m <sup>3</sup> , kg, kg)	20.26	284	387
Coolants (kg)	0	0	0.60
Refrigerants (kg)	645	0	26.60
Other (m <sup>3</sup> , kg, kg)	25.02	270.50	64.60
<b>Liquid waste (m<sup>3</sup>)</b>			
Processed bilge water and other oily water	480.34	1,107.85	764.70
Toilet waste water	5,617.7	1,961.45	865.60
Other	700	4,107.75	900.60

\* Unit change to cubic meters in 2015  
 \*\* Unit change to cubic meters in 2016

Arctia achieved its **COMPLIANCE** targets in 2016 and kept **ENVIRONMENTAL COSTS** at a reasonable level. Arctia did not cause any environmental damage in 2016.

With regard to the future development trends, the impacts of the Paris Climate Agreement on shipping are raising the most questions. The first emerging legislative change will be the obligation to record and report the fuel consumption of vessels within the EU, which may also be applied to icebreakers. These measures will not necessitate extensive investments, but they lay the ground for future emissions trading, which may possibly have a more extensive effect.

The environmental impact of the **TRANSPORT AND TRAVEL** required by Arctia's operations is minor in comparison to, for example, the carbon dioxide emissions released from the ships' fuel. Arctia nevertheless seeks to reduce unnecessary transport. The spare part situation of Arctia's vessels is monitored continuously, and the ships aim to carry a sufficient number of spare parts on board.

The travel resulting from the rotation of sea personnel contributes to the other carbon dioxide emissions caused by Arctia's operations. The number and length of rotation trips depend on the vessel's operating area and the number of annual operating days. Air travel and consequent carbon dioxide emissions in 2016 were lower than in the two previous years.

AIR TRAVEL	2016	2015	2014
All flights (kg CO <sub>2</sub> )	175,559	862,360	256,878

The **MATERIALS** used by Arctia for service provision are primarily related to ship maintenance, servicing and repairs, which require paint, solvents, detergents and cleaning agents each year. Material consumption has only been monitored at the cost centre level.

The purchasing programme to be introduced in 2017 will provide more tools for the monitoring of material consumption. The environmental targets were updated in late 2016 to also include the aim, with the equipment supplier's authorisation, to upgrade the deck engines to use biodegradable oil in areas with a risk of oil entering the sea.

**PREPARING FOR ENVIRONMENTAL RISKS** is an increasingly important factor in all responsible operations, particularly in the maritime sector. The Baltic Sea and Arctic areas are fragile ecosystems. Arctia's expertise contributes to ensuring the sustainable development and exploitation of these fragile areas.

The safety management system of every Arctia vessel includes an environmental section. The environmental section defines the most significant risks to the environment and includes instructions in case of environmental damage. The risk management frameworks of the safety management system also make sure that environmental risks are taken into account in the planning and execution of work. Arctia has secured its operations with

contractual arrangements based on risk assessments and with comprehensive insurance cover.

In 2016, Arctia's active environmental protection measures entered a new phase. The six-year agreement with the European Maritime Safety Agency (EMSA) expired after the options closed. In the new tendering process, the funding for the oil recovery readiness in the northern Baltic Sea, earmarked for procurement, did not enable sustainable operations for Arctia in terms of overall economy, and the tender submitted by Arctia did not fall within the budgetary limits. This was contributed to by

the rapid timetable of preparing the competitive tendering and the number of personnel reserved for the latest icebreaker.

Oil recovery in the Bay of Bothnia continued without interruption with the harbour icebreaker Ahto and the harbour tug Jääsalu. Ahto took part in the development work of oil recovery in icy conditions within the Ice Management & Oil Recovery (IMOR) project. In this Tekes project, Arctia develops oil recovery in icy conditions in cooperation with Lamor Oy. Arctia focused on so-called ice management, i.e. active manipulation of ice, ice cover,

the size and pressure of ice floes and the water flow to enable oil recovery in ice-covered waters.

A new generation in oil recovery was launched in 2016 with the delivery of the new icebreaker Polaris. Polaris is the first icebreaker in the world with an in-built oil recovery system. The equipment also includes a so-called storm boom. Polaris therefore significantly increases Arctia's ability to operate efficiently in oil recovery tasks also in more demanding weather conditions in the open sea. Polaris is also equipped for emergency towing, which further enhances Arctia's rescue abilities.

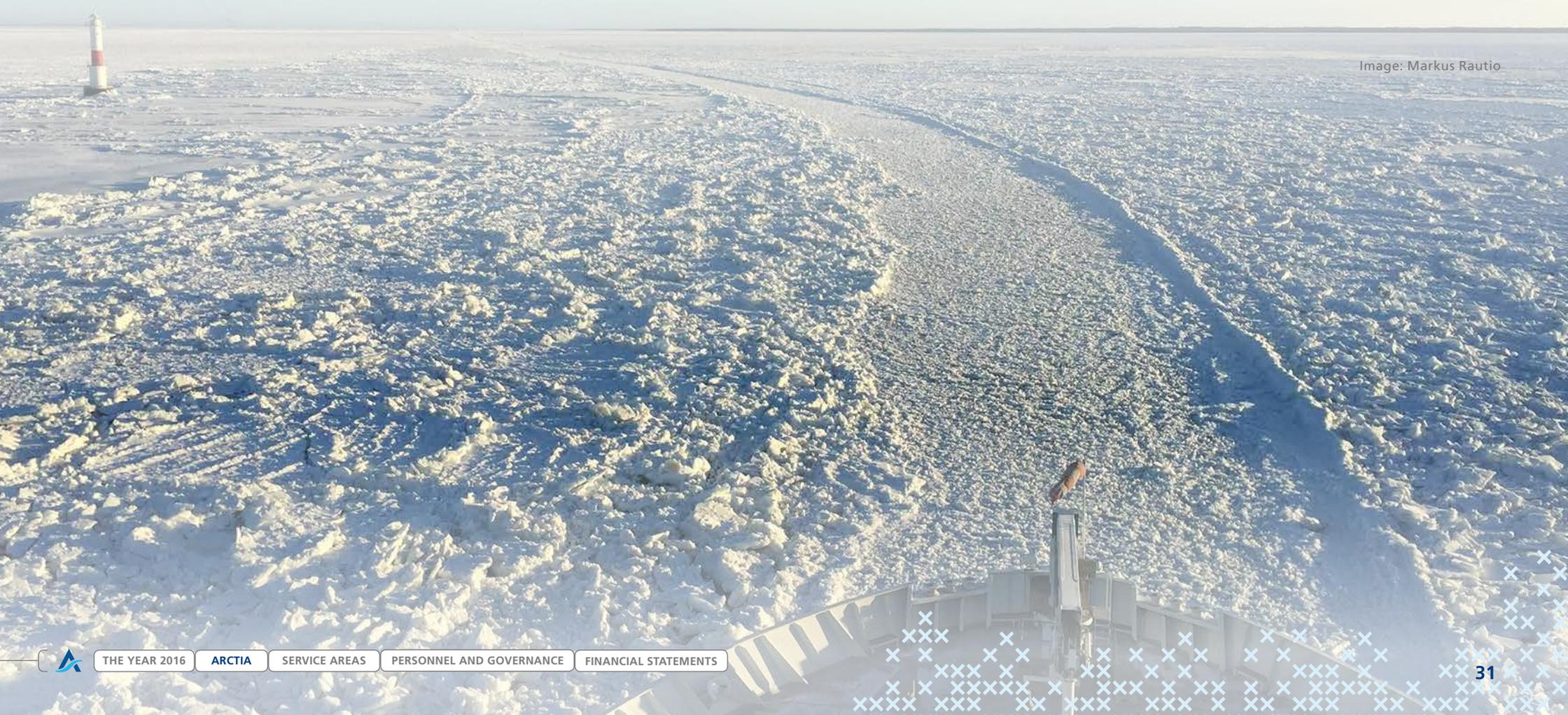


Image: Markus Rautio

# 03

## Service areas



### ICEBREAKING IN THE BALTIC SEA

The conditions and the extent of ice cover in the Baltic Sea vary from year to year. Finland's industry and commerce require regular and reliable shipping also in winter. Arctia's icebreakers assist merchant vessels in a diverse manner, ensuring the smooth flow of winter navigation in every respect.

### OIL RECOVERY SERVICES

IB Polaris is the first icebreaker in the world with an in-built oil recovery system. Arctia is also able to refit its other icebreakers into oil recovery vessels and, in our opinion, this would be sensible in order to safeguard sufficient oil recovery readiness in the Gulf of Finland and in the northern Baltic Sea.

### OFFSHORE SERVICES

The average utilisation rate of conventional icebreakers in the Baltic Sea is about 30 per cent, while that of multipurpose icebreakers may exceed 80 per cent as a result of international tasks. Utilisation of the excellence of multipurpose icebreakers on a global scale provides considerable support for Arctia's economically efficient operations and enables completion of the investment and refurbishment programme of the icebreakers.

### HARBOUR ICEBREAKING

Arctia offers harbour icebreaking services in the Bothnian Arc. The company's vessels operating in this area consist of the new-generation icebreaker Ahto and harbour tugs Ulla and Jääsalo. Ahto is also fitted with modern oil recovery equipment.

## Icebreaking services

# A WINTER OF FIVE ICEBREAKERS

The ice winter of 2015–2016 was very mild as was the previous winter, but the icebreakers were kept busy especially in the challenging conditions of the Bay of Bothnia. During the season, merchant vessels were assisted by Otso, Kontio, Sisu and Nordica in the Bay of Bothnia and by Voima in the Gulf of Finland.

The icebreaking season 2015–2016 in the Baltic Sea started on 29 December 2015 when icebreaker Kontio left Katajanokka for the Bay of Bothnia. Despite the warm autumn and early part of the winter, ice started to rapidly accumulate at the end of the Bay of Bothnia in late December, and the first icebreaker of the season took off at almost the usual time.

Multipurpose icebreaker Nordica replaced icebreaker Sisu in the Bay of Bothnia on 13 March 2016. Sisu returned to the icebreaker base in Katajanokka in Helsinki. The reason for the change were problems in Sisu's bow propeller shaft pressure seals. The two forethrusters of Sisu, which has four thrusters in all, operated normally, but the risks involved in the potentially decreased performance were eliminated by replacing the vessel.

In terms of the Finnish icebreakers, the icebreaking season ended on Saturday, 7 May 2016, when icebreaker Kontio returned from its duties in the Bay of Bothnia. Kontio's sister ship Otso had moved to Rauma already a few days earlier because the ice conditions in the Bay of Bothnia improved considerably in late April and early May. As a result of climate change, there will be increased variations in conditions also in the Baltic Sea.

There were a total of 385 operating days in 2016 in the period from 1 January to 8 May and from 7 December to 31 December. There were no off-hire days for technical reasons. During the icebreaking season, about 96 per cent of vessels did not have to wait for assistance as specified in the quality target, and the average waiting time target of less than four hours was met for those that did have to wait.



Image: Tim Bird

## FLEET MODERNISATION AND REPLACEMENT PROGRAMME UNDERWAY

The oldest icebreaker in the world still in operation, icebreaker Voima, was moved to the dock in Naantali at the beginning of June 2016. By the end of September, the steel structures on the vessel's hull, the machinery, cabins and the deck equipment were replaced. For example, 250 tonnes of bottom sheets, the navigation equipment on the bridge and the messroom were replaced. Docking, which is required by the authorities every five years, was carried out at the same time to ensure Voima's ability to perform at least for the next ten years. The life span extension is part of the WINMOS II project and it has received part-financing from the European Union's Connecting Europe Facility (CEF).

The inspection of icebreakers Sisu, Urho and Voima for international traffic in the Baltic Sea was started in 2016. After the inspections, all Arctia's icebreakers are registered either for traffic in the Baltic Sea or for unrestricted international traffic. The objective is to ensure that the vessels can also operate outside the exclusive economic zone of Finland when the ice conditions so require and operate in a manner required by the icebreaking agreements between states. Registering for international traffic also supports chartering in the summer season.

IB Polaris, the first LNG-powered icebreaker in the world, joined Arctia's fleet on 28 September 2016. This unique vessel is able to use both liquefied natural gas (LNG) and low-sulphur diesel oil as fuel. The use of LNG significantly reduces the vessel's emissions, also making Polaris the most environmentally friendly diesel electric icebreaker in the world. With its installed power of about 22 MW, it is also the most efficient icebreaker in Finland.

Icebreaker Polaris is a true masterpiece of Finnish shipbuilding expertise. Innovative design is used, for example, in the vessel's hull form and propulsion unit arrangement. The vessel is equipped with three Azipod propulsion units rotating 360 degrees, which enables excellent manoeuvring qualities. The icebreaking capacity of IB Polaris is 1.8 metres at a speed of 3.5 knots. The EU supported the construction of Polaris with TEN-T funding.

IB Polaris was presented to the national and international media on 31 October 2016, one day before the start of the icebreaking stand-by period

agreed between Arctia and the Finnish Transport Agency. IB Polaris started its operations in January 2017. As Finland celebrates its one hundred years of independence in 2017, Arctia and the builders and designers of Polaris decided to decorate the bow of Polaris with the Finland 100 logo in honour of the centenary year. Polaris continues the traditions of Finnish icebreaking expertise, which goes back even further than Finland's independence: the first icebreaker in Finland, IB Murtaja, started its work in 1890. Polaris is the eighth icebreaker of Arctia's current fleet. The previous Finnish icebreaker was commissioned in 1998.



Image:Markus Rautio

## Mild and short ice winter of 2015–2016

At the onset of winter, the sea water in the marine areas around Finland was warmer than average, varying between just over one degree and just over three degrees. First ice at the end of the Bay of Bothnia did not appear until in the last days of November. In the marine areas around Finland, December was clearly warmer than usual, with the deviation from the average temperatures varying between 4 and 5.5 degrees. In late December, the sea water was still warmer than average by about 1–3 degrees. At the turn of the year, the temperature dropped and ice started to form. On New Year's Eve, icebreaker Kontio started assistance operations in the Bay of Bothnia. At that time, the ice cover extended to an area of about 10,000 km<sup>2</sup>.

January started with cold weather, which continued for about three weeks. The air in sea areas was 2–5 degrees colder than average. On the other hand, January was divided in two in terms of its temperatures: the first three weeks of the month were quite cold in the main, but the weather turned considerably milder towards the end of the month, and the winds turned south-westerly. At the end of the cold period, on 22 January, the ice cover was at its widest in the ice season of 2015–2016. Ice covered an area of 110,000 km<sup>2</sup>, on the basis of which, statistically, the winter was mild with an emphasis on the first part of the winter.

At its most extensive, the ice covered all coastal areas of Finland, and the thickness of fast ice varied between 10 cm and 50 cm. The Bay of Bothnia was covered by very dense drift ice with a thickness of

10–25 cm almost throughout. The Northern Quark had very dense drift ice with a thickness of 5–25 cm, as well as new ice. Along the coast of the Bothnian Sea, there was fast ice in the archipelago and very dense drift ice further out at sea at a width of about ten nautical miles. The Archipelago Sea was covered with thin, even ice. There was fast ice in the archipelago in the Gulf of Finland and very dense drift ice mainly with a thickness of 5–15 cm in the open sea east of the line between the Hanko Peninsula and Bolshoy Tyuters. The Väinameri Sea has thick fast ice of 10–20 cm, and the eastern and northern parts of the Gulf of Riga were covered with thin, very dense drift ice. Elsewhere in the Baltic Sea, there was new ice in places along the coastal areas.

As in the previous year, February was exceptionally mild to a wide extent. Temperatures in the sea areas around Finland were higher than normal by three and a half to five and half degrees. All in all, the winter (December–February) was, on average, milder than usual. During the mild February, the frozen area did not expand much further, and on the last day of the month it extended to 62,000 km<sup>2</sup> while at the end of January it was 66,000 km<sup>2</sup>.

March was warmer than average in the sea areas with deviations of 2–3 degrees. During the first three weeks of March, the extent of frozen area hardly changed, but the ice began to shrink in the last week of the month. At the end of the month, the ice cover amounted to only 31,000 km<sup>2</sup>.

Overall, the frozen area during February–March remained more or less unchanged, varying between

70,000 km<sup>2</sup> and 55,000 km<sup>2</sup>. When the temperature dropped below zero, new ice formed in open sea areas and the southerly winds then packed the ice together. The ice was at its thickest in the north-easterly corner of the Bay of Bothnia off the coast of Finland at a thickness of mainly between 50 cm and 75 cm. The ice field in the open sea had become widely ridged, and the thickness of the even sheet of ice was 40–60 cm. In the Gulf of Finland, there was a little ice only in the sheltered bays along the coast and outside Vyborg and St Petersburg. Coastal ice started to weaken slowly.

As in the previous months, April was warmer than usual, and at the end of the month the ice cover extended only to an area of 16,000 km<sup>2</sup>. The Gulf of Finland was free of ice on 16 April when the last of the ice melted in the Vyborg Bay.

The warm weather in early May melted the last of the ice fairly quickly, and the last ice chart was published on 12 May when there was rotten ice only in an area of about 800 km<sup>2</sup> in central parts of the northern Bay of Bothnia. The Baltic Sea was completely free of ice on 14 May.

**Jouni Vainio**  
Ice Expert  
Finnish Meteorological  
Institute



## Offshore services

# CHALLENGING SEA AREAS AND A DIVERSE RANGE OF TASKS

In summer 2016, IB Otso, which has been converted for open sea conditions, was assisting seismic research on the seafloor northeast of Greenland for the second time.

In late 2015, Arctia's multipurpose icebreakers Nordica and Fennica returned from a client operation in the Chukchi Sea through the Canadian Arctic Archipelago via the Northwest Passage. The book *Luoteisväylä* was published on the voyage in October 2016. Arctia Offshore Oy agreed on the termination of a chartering agreement in the middle of the agreement period at the customer's initiative for the payment of a lump sum.

During the year, the number of operating days in offshore tasks totalled 61 (380 in 2015). Icebreaker Otso provided assistance in a seismic survey of the seafloor in the waters along the northeast coast of Greenland in August–September 2016. Converted into a polar icebreaker that is also able to operate in open sea conditions, the capabilities of Otso and the professional skills of its crew were praised by the customer and the cooperation partners. Otso is well suited for a variety of tasks in the polar and sub-polar regions.

From January to April, the multipurpose icebreakers carried out chartering for icebreaking in the Baltic Sea in accordance with the agreement with the Finnish Transport Agency. In 2016, the icebreaking operating days totalled 25 (0 in 2015). The operational capability of the vessels was maintained outside the icebreaking season. The 160-tonne crane on IB Nordica was upgraded and its life span was extended. Fennica's seacocks were replaced. The Interling system related to anti-heeling was upgraded in both vessels.

Arctia's ships are capable of carrying out many different kinds of offshore tasks. For example, Nordica assisted in the installation of a wind farm in the Irish Sea in 2011. Arctia is constantly seeking new opportunities for the multipurpose icebreakers to operate in different sectors of maritime services. In 2016, Arctia investigated the service needs of especially cruise and travel operators and operators carrying out scientific research in the Polar regions

or those interested in doing so. Arctia took the initiative of launching the Arctic 100 Expedition project.

### MULTIPURPOSE ICEBREAKERS ARE SUITABLE FOR RESEARCH ACTIVITIES IN ICY WATERS

Arctic 100 Expedition is an international research voyage to the Arctic region with a Finnish icebreaker. The purpose of the expedition is to gather new scientific knowledge and to deepen international Arctic research cooperation based on Finnish expertise. The project is supported by the Ministry for Foreign Affairs and the Ministry of Education and Culture.

During 2016, the research expedition project and the suitability of Arctia's icebreakers for scientific needs in the polar regions were presented throughout the world with the support of Finnish diplomatic and consular missions and other part-

ners. The project was promoted, for example, in the official visit of President Sauli Niinistö to Japan in March 2016 and in the World Ocean Council's Sustainable Ocean Summit in the Netherlands in December 2016. Arctia also approached over a hundred research institutes by letter.

According to the feedback received by Arctia, research expeditions carried out with various research vessels are sporadic and they are implemented with a varying schedule. Several research vessels also have no capability of operating in more challenging ice conditions. Regular research expeditions to the same regions would benefit the collection of reliable research data. They would also provide a basis for continuous cooperation between various participants and a cost-effective opportunity for research in the polar regions also for countries that have no icebreakers.

According to Finland's Strategy for the Arctic Region, 'Finland's ambition is to set an example as

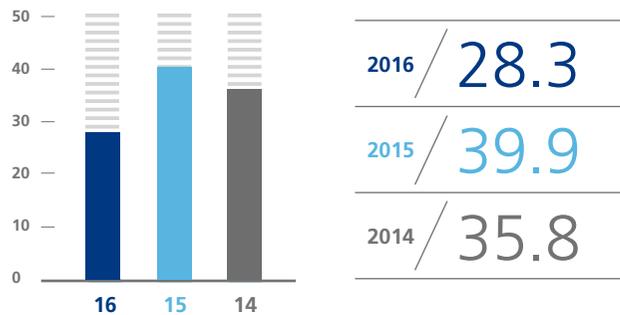


an Arctic expert both in research and in the responsible commercial exploitation of such expertise' (p. 17, Finland's Strategy for the Arctic Region 2013, Government resolution on 23 August 2013). In support of this target, Arctia offers its multipurpose icebreakers that are well suited for various research tasks in both of the polar regions of the globe.

The project did not receive enough funding in 2016 to be able to implement the project in summer 2017. However, the support already gained by Arctia for the project and the extensive international interest raised by it are strong reasons to continue with the project. Arctia hopes that the Finnish research bodies already involved in the project and the Finnish research community as a whole will continue to plan this internationally significant project together with Arctia.

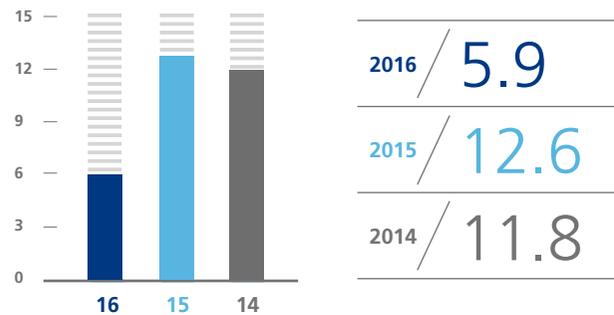
#### Turnover

MEUR



#### Profit

MEUR



## Oil recovery services

# NEW WAVE IN OIL RECOVERY

Icebreaker Polaris will offer substantial oil recovery capacity also in difficult open sea conditions.

The oil recovery agreement between Arctia and the European Maritime Safety Agency (EMSA) came to an end in spring 2016. The agreement duration was six years. It enabled the fitting out and conversion of IB Kontio into an oil recovery vessel and the training of over a hundred seamen in oil recovery tasks. Despite the termination of the agreement, Arctia is able to meet Kontio's tank capacity, i.e. the reception and discharge capacity, in oil recovery crisis situations.

The latest icebreaker in the fleet, Polaris, is especially equipped for oil recovery in open waters. Its collection capabilities in the open water are improved by its in-built collection equipment. That way, oil separation takes place inside the hull of the ship and is not quite as susceptible to the wave height. In a high swell, the vessel can be driven sideways against the wave, and the hull of the vessel together with a separate storm boom directs the oil into the collection area.

Thanks to Polaris, Arctia's oil recovery capability in the open sea will improve substantially.

Arctia continued the oil-recovery development project with harbour icebreaker Ahto. The objective of the IMOR (Ice Management & Oil Recovery) project is to improve oil recovery in icy conditions. In the tests of the project, the flow of ice and water is visualised by measuring and with the aid of tracers. Understanding the flow dynamics will enable the use of a vessel's machinery and propellers so that the oil in the ice is easier to direct to the collecting device. In 2016, tests were carried out from a moving ship and a ship driven into the middle of the ice field.

In addition to oil recovery tests, Arctia Karhu's vessels Ahto and Jääsalo were kept in oil-recovery readiness for the Emergency Service of Lapland throughout the year 2016. The vessels also took part in the joint oil spill prevention and response exercise Nuotta 2016. Vessels from other rescue services and the Finnish Border Guard and members of the WWF volunteer oil recovery forces took part in the exercise.

Arctia regards oil recovery as an important part of its service provision. All of Arctia's icebreakers can be fitted out for oil recovery duties in a cost-effective way, if required. In winter, icebreakers work at hubs of merchant vessel traffic, and equipping them to operate as oil recovery vessels would significantly enhance current oil spill response readiness. The icebreaker pier in Katajanokka, Helsinki, is situated close to the most significant oil transport lanes in the Baltic Sea.

Image: Patrik Raski

## Harbour icebreaking

# ESCORT TUG AND ICEBREAKING SERVICES THROUGHOUT THE BOTHNIAN ARC

In April 2016, Arctia Karhu Ltd expanded its operations to the entire Bothnian Arc when it signed a contract on escort tug services with the Port of Luleå.

Arctia Karhu Ltd is an enterprise jointly owned by Arctia (90%) and the Port of Kemi (10%). The company's field of operations includes harbour icebreaking, towing and assisting ships, cargo transport and other functions in support of navigation in Finland and abroad. Arctia Karhu Ltd offers harbour icebreaking services over the wide expanse of the Bay of Bothnia and in the entire area of the Baltic Sea.

Harbour icebreaker Ahto started its operation in Tornio already on 14 December 2015. At the same time, harbour icebreaker Jääsalo moved to Kemi where it assisted vessels during the winter season. In early 2016, the ice situation along the coast of

the Bay of Bothnia was challenging from time to time. The ships were kept busy with vessels to be assisted and in icebreaking tasks all the way to April. This is also seen in the trend in turnover in comparison with 2015.

In April 2016, Arctia Karhu Ltd agreed on escort tug services with the Port of Luleå during the open water season in 2016. The agreement was continued in the autumn to also cover year 2017. The agreement has a significant positive impact on the turnover and results of Arctia Karhu Ltd.

During the year, Arctia Karhu Ltd performed two ice tests related to the IMOR (Ice Management &

Oil Recovery) project. The tests were carried out in partnership with Lamor Corporation Ab, which develops oil spill response technologies and products. Tekes provides support for the joint project, which will end in spring 2017. In August, Arctia Karhu Ltd also took part in the Nuotta 2016 oil spill response exercise, which was directed by the Emergency Service of Lapland.

In summer 2016, the managers of harbour tugs together with the pilots of the Bay of Bothnia took part in simulator training in escort tug services in Denmark. The training is useful in the management of escort tug tasks and supports the prevention of accidents. In 2016, the other employees of Arctia Karhu Ltd took part in extensive training courses concerning the new MARPOL rules (International Convention for the Prevention of Pollution from Ships).

## Events services

# UNFORGETTABLE MEETING VENUE BY THE SEA

The icebreaker pier in Katajanokka provides possibly the most unique event venue in the whole of Helsinki. Icebreakers Urho and Sisu offer a fantastic setting for meetings, dinners and functions almost throughout the year.

An icebreaker is a unique and unforgettable venue for meetings. Get-togethers, parties and other functions held on the icebreaker are very popular. Two to five events were held on board the Urho each week in 2016. In addition, several ministerial and VIP visits were organised in cooperation with the Ministry for Foreign Affairs and public administration bodies. Icebreaking and Finland's Arctic expertise were also presented to the visitors in connection with the functions.

A large number of overseas press delegations and, e.g. Helsinki tourist guides were also intro-

duced to icebreaking and Finnish specialist expertise in 2016. Icebreakers are not only a part of Finland's country image, but also the urban landscape of Helsinki. Therefore, presentation of the fleet and expertise is an important part of Arctia's social responsibility.

### RECOGNITION FOR EVENTS ORGANISATION

In February 2016, Pia Broumand, who has for long been responsible for Arctia's Events operations, i.e.



the functions held in the icebreakers, was awarded the honorary title of Chef de Table at the official installation event of the gastronomy association Chaîne des Rôtisseurs, which promotes the culinary arts. The personal recognition to Broumand is an indication of the high standard of events held on Arctia's icebreakers and the food and drink provided.

The kitchen of icebreaker Urho was awarded the shield of the Chaîne des Rôtisseurs already in 2014. In addition, Cook Steward Mikko Ervast was awarded the title Maître Rôtisseur in 2014 and Head Waiter Juhani Luoto, who works at the Arctia events, won the title Sommelier.

### SLUSH STARTUP PROMOTION ON THE DECK OF URHO

In addition to meetings and dinners, the versatile facilities of the icebreakers are also an excellent setting for other events. Various product launches are particularly popular: the unique environment of the icebreakers makes the events even more interesting and, in itself, attracts media representatives.

In November 2016, the Slush side event Let's Break the Ice was organised for start-up entrepreneurs and financiers on IB Urho. In addition to networking, the participants were able to take in the wonderful Nordic seascape and root for the participants of the drone competition on the deck of Urho. The international guests in particular were greatly impressed by the unique environment of the icebreaker.

### WORKPLACE VISITS ON FAMILY DAY

One of Arctia's most popular events is the Family Day, which is an open day for all Arctia's employees and their family members. During the day, employees get to give a guided tour of their workplace and its operation to their nearest and dearest.

The traditional Family Day was held in December 2016 on the new icebreaker Polaris. Planned and implemented from start to finish by the ship's crew, the event was a great success with over a hundred participants. The little ones were also entertained by Santa Claus.



## Celebration of Finland's 100 years of independence on the icebreakers

The centenary year of Finland's independence is also celebrated on the icebreakers. The Finland 100 menu offered on all Events ships will play a key role in the festivities during the current year. The icebreaker fleet's flagship Polaris will sail throughout the year 2017 with a reminder of the 100th independence year to the assisted vessels and harbours: the bow of Polaris is prominently decorated with the Finland 100 logo. Arctia will also organise and take part in the organisation of various events related to the history, present day and future of icebreaking in the spirit of Finland 100.

# 04

## PERSONNEL AND GOVERNANCE



Image: Tim Bird



# SUCCESS IS BASED ON COMPETENT PEOPLE

Behind Arctia's operations, corporate culture and general attitude is a competent and motivated personnel committed to the common values. Arctia offers its employees a safe work environment and an opportunity to nurture their well-being and professional skills.

### HR MANAGEMENT

Maintenance and development of the competence and good working conditions of its employees play a strategically important role at Arctia. Investing in the development of employees' competence is as important as investing in the fleet. Investment in the fleet also requires the same level of investment in the development of the competence of personnel. During 2016, Arctia invested especially in professional skills, managerial skills and the general open culture.

The development of professional competence is even more structured than before. In 2016, competence was maintained, e.g. with the ice simula-

tor, in the development of which Arctia has participated, and by monitoring the work volumes and tasks carried out on icebreakers with the aid of manoeuvring operators' logs. Launched in 2013, the Arctia Academy training programme for managers continues. Members of the Group Management Team and the ships' management groups have taken part in the managerial and leadership training. The objective of the training programme is to train employees for future leadership roles. Planning work for the training programme starting in 2017 was carried out in 2016.

In addition to official channels, more non-formal contacts between the company's management and employees were increased in 2016. Meetings

with discussions on the budget, results and topical issues were organised almost every month. A messroom coffee event is held every other Thursday at the Katajanokka icebreaker base to inform all members of staff about current issues and to give everyone from deckmen to the CEO an opportunity to share their views. A total of 108 information bulletins were published on the intranet during the year.

Two personnel events, entitled Shipping Company Days, were held in 2016. The staff also spent time together by going to the cinema in connection with the Shipping Company Day in the autumn.

Arctia systematically monitors the retirement of personnel and prepares for it with recruitment and

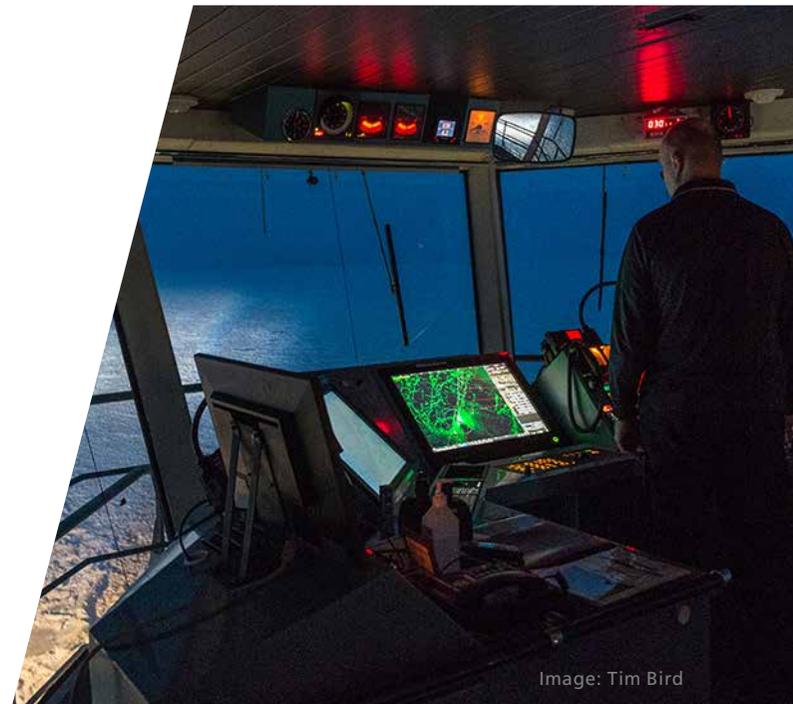
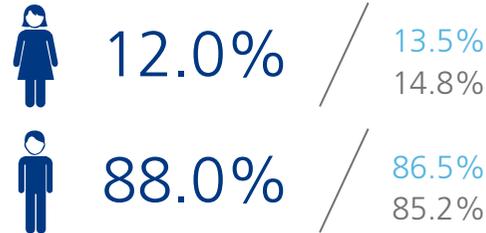


Image: Tim Bird

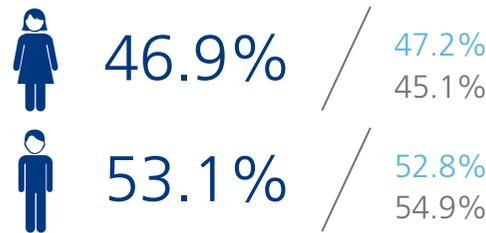


## GENDER DISTRIBUTION

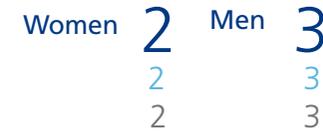
### Sea personnel



### Office personnel



### Board of Directors gender distribution



### Gender distribution in senior management (Management Team)



internal transfers. In 2016, employees who had left the company or had retired were replaced with new recruits. The Arctia Academy training programme also prepares for filling positions that are left vacant by leaving or retiring personnel.

The indicators on the **NUMBER AND STRUCTURE OF PERSONNEL** are presented in the annual report (p. 55). All personnel employed by Arctia in 2016 were Finnish nationals.

## EQUALITY

In its operations, Arctia follows an equality plan approved by the Ombudsman for Equality. No issues have been detected by the Ombudsman that would

suggest unjustified differences between men and women. The plan was updated in early 2016.

Arctia monitors the structure and salaries of its employees. A total of 12.0 per cent of sea personnel (233 persons in total) are women, while the corresponding figure in office personnel (32 persons in total) is 46.9 per cent. The ratio between the genders has remained at roughly the same level for the past few years. The salaries of sea personnel are based on collective bargaining agreements and the job title and salary categories defined in the agreements.

## REORGANISATION AND DISMISSALS

A total of 51 employment contracts ended at Arctia in 2016, and the number of new permanent employment contracts signed was six. All personnel with the exception of management are covered by collective bargaining agreements. Arctia applies the Seafarers' Employment Contracts Act, based on the International Labour Organisation ILO's convention on maritime work, to sea personnel and the Employment Contracts Act to office personnel. Arctia's interest group, the Federation of Finnish

Special-Purpose Ship Employers, has company-specific collective agreements with the trade unions representing sea personnel.

The co-operation procedure concerning fixed-term layoffs were carried out during the year. The procedure started on 9 September and ended on 23 September. Dismissals and layoffs were successfully avoided. The adjustments concerned the sea personnel so that holiday balance days are used for balancing the low availability of work. The working hours of office personnel were extended by applying the national Competitiveness Pact and by using any flexi-leave owed. With respect to the office, the use of external workforce was abandoned. The Group Management Team waived its performance bonuses for 2016.

The Group's Senior Vice President, Technology, moved to other duties and the recruitment of his successor started. He also acted as Managing Director of Arctia Management Services Oy. The Chairman of the company's Board of Directors will be acting as Managing Director until the appointment of his successor.

### THE FOLLOWING COLLECTIVE AGREEMENTS WERE IN FORCE IN 2016:

1. The collective agreement applying to the deck, engine and catering personnel of the Arctia Group
2. The collective agreement applying to the engineering officers of the Arctia Group's conventional icebreakers
3. The collective agreement applying to the engineering officers of the Arctia Group's multipurpose icebreakers

4. The collective agreement applying to the deck officers of the Arctia Group's conventional icebreakers
5. The collective agreement applying to the deck officers of the Arctia Group's multipurpose icebreakers
6. The collective agreement applying to the officers of harbour icebreakers
7. The collective agreement applying to the crews of harbour icebreakers
8. The collective agreement applying to the salaried employees of the Arctia Group.

### REMUNERATION SYSTEM AND PERFORMANCE BONUSES

#### OBJECTIVE AND PRINCIPLES

The objective of the performance bonus system is to commit the company's key personnel to improving Arctia's profitability and to keep the company's remuneration model competitive with those applied to comparable management personnel in other companies.

According to the remuneration guidelines for state-owned enterprises (Statement of the Cabinet Committee on Economic Policy issued on 13 August 2012), 'performance bonuses normally consist of one-year bonus programmes and long-term incentive programmes with a duration of no less than three years.' Arctia's model consists of the one-year bonus programme specified in the guidelines. Based on experiences of this model, Arctia may

consider expanding its remuneration systems and, for example, adopting a more long-term remuneration system in the future.

### STRUCTURE OF THE PERFORMANCE BONUS SYSTEM

In the 2016 fiscal period, the remuneration bonus programme applied to the CEO, Management Team and key personnel reporting to the CEO or a member of the Management Team as follows:

'GOOD PERFORMANCE' IN ACCORDANCE WITH THE REMUNERATION GUIDELINES	Maximum bonus	Number of personnel
CEO	3.6 kk	1
Management Team member	2 kk	5
Other key personnel reporting to the CEO	1–2 kk	1–5

'EXCEPTIONAL PERFORMANCE' IN ACCORDANCE WITH THE REMUNERATION GUIDELINES	Maximum bonus	Number of personnel
Bonus in addition to the 'good performance' bonus		
CEO	2.4 kk	1
Management Team member	1 kk	5
Other key personnel reporting to the CEO	0.5–1 kk	1–5

The performance bonus is tied to business targets defined on the basis of the strategy and budget (in the 2016 fiscal period EBIT excluding extraordinary items such as business acquisitions or divestments, or profits or losses from the sale of ships) and personal key targets derived from these.

The calculation basis for personal bonuses consists of the total value of the person's monthly salary and taxable perquisites (excl. IT equipment and connections) during the fiscal period. If these earnings change during the fiscal period, the monthly salary, which the personal bonus is based on, will be calculated by dividing the total annual salary income by 12.

The bonus will be paid if the operating profit (EBIT) of the Group is positive. If the Group makes a loss, no bonuses will be paid.

Personnel may become eligible for bonuses in the middle of a fiscal period, e.g., FF when a new person is hired or a member of Arctia's organisation is transferred to a position covered by the system, provided that a minimum of four (4) months remain in the fiscal period. In such cases, the amount of bonus paid will correspond to the ratio of the person's eligibility to the duration of the fiscal period. A month in which the person has been employed by Arctia for at least fourteen (14) working days or days equivalent to time at work is considered as a working month. Unpaid leave is not considered as a period of eligibility. Bonuses will not be paid for time spent on parental leave.

The achievement of targets is reviewed during the first quarter of 2017. The right to a performance bonus is created once the financial statements have been approved, achievement of personal targets have been reviewed with the person's immediate superior and his or her superior, and the Board of Directors of the Arctia Group has authorised the payment of the bonus. Depending on the approval date of the financial state-

ments and unless otherwise decided by the Board of Directors, the bonus will be paid in connection with the salary of February or March. It is a condition for the payment of the performance bonus that the person is employed by Arctia with an employment contract valid until further notice and that they have not resigned or are not working through their period of notice at the time of payment.

If a person within the scope of the system has his or her employment terminated or is dismissed due to negligence, misdemeanours or other comparable reasons before the payment of the bonus, the payment will be cancelled.

If a person within the scope of the system retires, dies, becomes incapable to work or is dismissed (or his or her executive employment contract is terminated) due to reasons other than those stated above, his or her bonus will be paid in proportion to actual working time (e.g. 8/12 of the annual level of bonus after working for 8 months), provided that his or her employment lasted a minimum of four (4) months during the fiscal period.

If a person changes duties in the middle of a fiscal period, his or her performance bonus will be calculated with regard to one (if one of the positions is not covered by the system) or both positions in proportion to the time of employment in each. In such cases, the person must have served for a minimum of four (4) months in a position eligible for a performance bonus.

Any changes in the Group's structure during the review period will be taken into consideration in the definition of performance bonus criteria. Such

changes can include the sale or termination of a business area, consolidations, mergers or other organisational arrangements.

In addition to the system described above, the Board of Directors may, at the proposal of the CEO, decide on a separate performance bonus for an exceptional work performance. The amount of the bonus may not exceed the amount of the person's bonus under this system.

The Board of Directors of the Arctia Group has approved these guidelines on 16 February 2016 acting on the Remuneration and Nomination Committee. The Board of Directors is free to make changes to these guidelines or discontinue the system at any time.

<b>KEY PERSONNEL REMUNERATION SYSTEM</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>
Key personnel subject to the remuneration system, percentage of total personnel	5.6 %	5.2 %	4.7 %
<b>Performance bonuses paid*</b>			
CEO (EUR)	0	36,634	100,585
rest of the Management Team (EUR)	0	40,117	97,318
others (EUR)	17,009	22,575	73,363
Performance bonuses including indirect costs	<u>20,635</u>	123,116	332,653

\*performance bonuses are paid in the year following the accumulation year

## Competence and expertise

# FOCUS ON THE DEVELOPMENT OF EXPERTISE

Icebreaking is not learnt from books, but through practical work. Therefore, Arctia plays a crucial role in the training of Finland's experts in icebreaking. In 2016, Arctia provided training on specialist expertise needed especially on LNG icebreaker Polaris. The entire sector invested in the reform of qualifications to meet the international requirements.

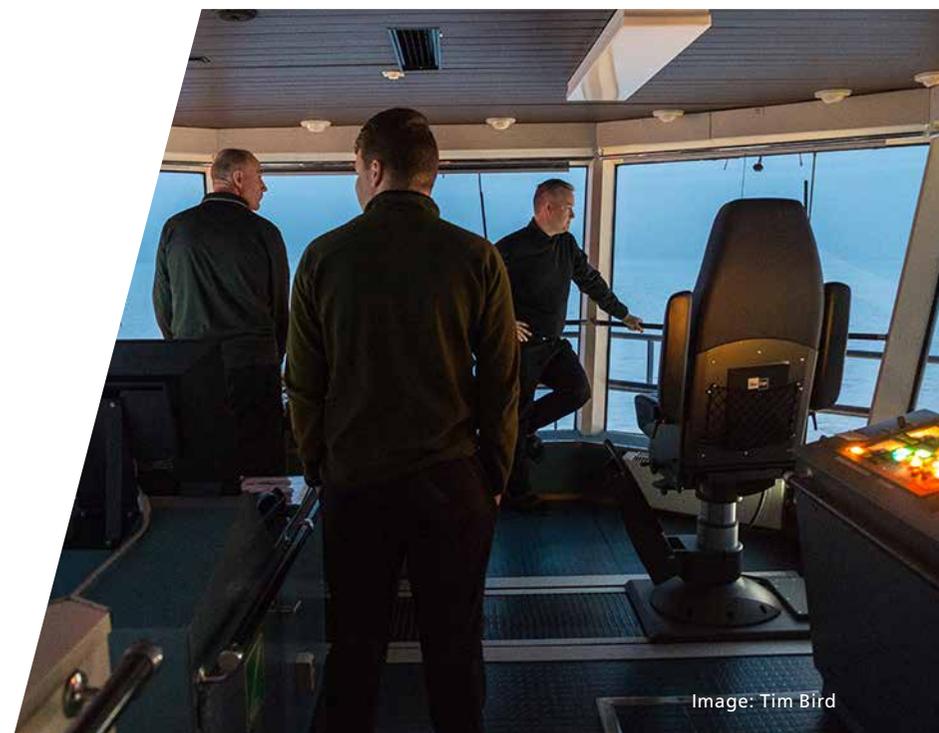
Arctia's personnel had a total of 1,395 training days in 2016 (1,133 in 2015). The majority of the training events were related to the renewal of qualifications. The transitional period for the STCW changes (Standards of Training, Certification and Watchkeeping for Seafarers) closed on 31 December 2016, by which time the qualifications of all sea personnel had to be renewed. STCW training for Arctia's catering personnel was implemented in early 2016. Other personnel was also trained in the course of the year. The training was carried out in accordance with personal study plans

in partnership with the Maritime Safety Training Centre Meriturva.

New-generation expertise was also developed in 2016. The personnel needed new skills when Polaris joined Arctia's fleet. A total of 32 people were trained in LNG expertise required on Polaris. During the year, systematic use of manoeuvring operator's logs was introduced on all vessels as part of the monitoring of competence development. Members of the personnel were also trained on an ice simulator located in the Aboa Mare Centre in Turku, in the development of which Arctia has

played a part. The simulator is used and developed in cooperation by several maritime enterprises and educational establishments.

The Arctia Academy training programme, which was suspended in 2016, will continue in 2017. Aimed at future managers, the programme will have a few dozen participants. The members of the Management Team have taken part in the so-called 360-degree appraisal for management to develop leadership skills and the work of the Management Team.



## PERFORMANCE REVIEWS

The performance reviews were unchanged in 2016. Arctia uses performance review guidelines and an evaluation form to provide a basis for discussion. The performance reviews of office personnel are conducted by their supervisors and those of ships' masters by the vice presidents of business units. The reviews are conducted at least once per year. The competence assessment system for sea personnel was developed in 2016.

Performance reviews and the competence assessment system enable managers to form a comprehensive picture of competence, task distribution and possible needs for change or development in their units. Employees, for their part, are given the opportunity to influence the development of their unit and their own tasks. Through performance reviews and competence assessment, managers also acquire information on the competence, tasks, personal goals and aspirations, as well as the capacity and ability to work of individual employees.

Managers assess whether the targets set in the performance reviews have been met. They also assess the capacity for achieving new targets. The employee's career development and job rotation are also discussed during the performance review and competence assessment. Employees are also given the chance to give feedback to their manager on the functioning of the cooperation between manager and subordinate. A personal training and development plan is drawn up on the basis of the performance review and competence assessment,

taking the employee's training and orientation needs into account. Managers are responsible for the implementation of the plans drawn up.

TRAINING	2016	2015	2014
Outside training days	1,395	1,133	779
EUR/person spent on training	1,205	1,194	1,649
Educational background of personnel			
Vocational studies	55	54	58
Bachelor's degree	41	43	39
Master's degree	4	4	3

Educational backgrounds have been estimated based on the positions occupied by employees.

## PERSONNEL SATISFACTION

Arctia carries out a personnel survey every other year. The last such survey was conducted in 2015 and the next will be carried out during 2017. In the previous survey, trust in the Group's management was weak and personnel felt that remuneration at Arctia is unfair. However, positive feedback was given on aspects such as the availability of appropriate tools and cooperation between departments.

Lists of activities were drawn up on the basis of the survey, and these were implemented in 2016 in a more systematic way than in previous years. In 2016, we focused especially on leadership and the development of managers.

A well-being group was established in 2014 to support the overall well-being of Arctia's personnel.

The group includes representatives of the employer and employees. The group convenes on a regular basis and has implemented, e.g. Terveystori (Health Market) events and well-being programmes for personnel in cooperation with outside experts.

A survey on internal communications within Arctia was also conducted in early 2016. Based on the survey, we started to develop the company's internal communications in the form of, e.g. a new intranet system and more participatory communication methods. The current intranet does not meet the needs of the very mobile personnel of Arctia, and the vessels and functions have not been given responsibility for updating its information. The objective is to have every Arctia employee take responsibility for passing on, updating and verifying the validity of information and for making sure that information reaches all parts of the organisation in an efficient way. Information displays were installed on the vessels during the year, and their efficient use as a tool of internal communications is still in progress.

## OCCUPATIONAL HEALTH AND SAFETY

A total of seven occupational accidents resulting in absence from work occurred in 2016 (12 in 2015). A two-year project in safety communications was launched in 2015 to encourage project safety thinking and to develop the safety management skills of managers. Safety issues were also discussed in 2016, and Arctia handed out safety awards to deserving employees.

Trafi audited Arctia's safety and management documentation in 2015. Arctia was issued with a temporary safety management system certificate valid until the end of November 2016. The validity of the certificate was continued until the end of April 2017.

The 'Terveenä työssä' programme on healthy employees was launched in 2016. The Terveystori (Health Market) event organised by Arctia's well-being group is part of the programme with an objective of reducing absence due to sickness. The event was organised in cooperation with Suomen Terveystalo Oy, and it included lectures and physical activities, as well as taking blood pressure measurements. About 30 people took part in the programme in 2016, over half of whom found that

their health had improved during the programme. The programme had the biggest impact on reducing cholesterol levels, losing weight and increasing exercise.

In addition to statutory preventative occupational health care, Arctia offers its employees GP-level medical care, including treatment by occupational physicians and nurses, the required laboratory tests and imaging examinations, and consultation by occupational health care experts and specialists. The company has taken out a Hoitoturva Extra health insurance policy to complement occupational health care. Arctia's national occupational healthcare partner is Suomen Terveystalo Oy.

Arctia supports its employees' leisure activities with sports and arts vouchers. Every Arctia

employee is entitled to receive vouchers worth 200 euros each year.

<b>NUMBER OF ACCIDENTS</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>
Accidents resulting in absence from work	7	12	13
Other accidents	4	16	6
Accident frequency / million working hours	24.71	23.54	38.02

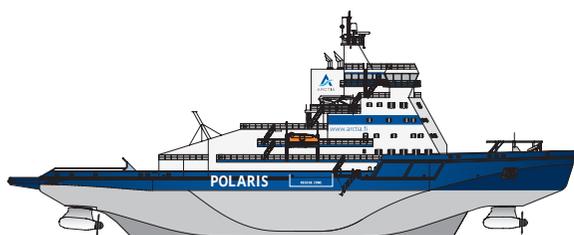
  

<b>ABSENCE DUE TO SICKNESS</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>
Absence rate due to illness, all personnel			
Short-term (%)	8.9	7.5	7.5
Including long-term absences (%)	13.6	10.4	10.9
Number of suspected cases of occupational illness	2	0	1

Image: Tim Bird

# ICEBREAKERS AND MULTIPURPOSE ICEBREAKERS

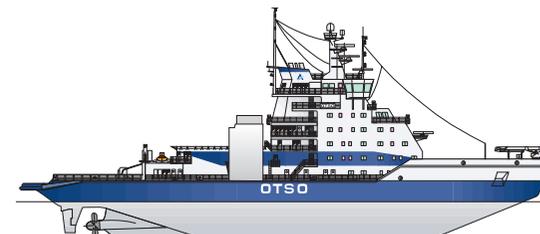
Length, m / Beam, m / Draught, m / Power, kW



**IB POLARIS** 110 / 24 / 8.0 / 22,000



**IB KONTIO** 98.6 / 24.2 / 8.0 / 15,000



**IB OTSO** 98.6 / 24.2 / 8.0 / 15,000



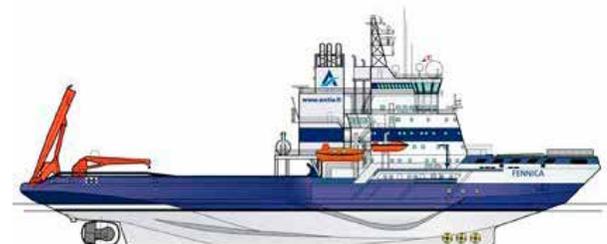
**IB SISU** 106.6 / 23.8 / 8.3 / 16,200



**IB URHO** 106.6 / 23.8 / 8.3 / 16,200



**IB VOIMA** 83.5 / 19.4 / 7.0 / 10,200



**MSV FENNICA** 116.0 / 26.0 / 8.4 / 15,000



**MSV NORDICA** 116.0 / 26.0 / 8.4 / 15,000



**Tug AHTO** 40.0 / 12.8 / 5.5 / 3,600

# 05

## FINANCIAL STATEMENTS 2016



Image: Patrik Raski



THE YEAR 2016

ARCTIA

SERVICE AREAS

PERSONNEL AND GOVERNANCE

FINANCIAL STATEMENTS

Arctia Ltd

# ANNUAL REPORT FOR THE PERIOD 1 JAN.–31 DEC. 2016

## MARKET DEVELOPMENT

The Baltic Sea market is expected to grow moderately in the next few years. The logistics network will develop to meet the needs of industry. The engine power of new customer vessels will be reduced due to new environmental regulations. These factors are expected to increase the demand for icebreaking assistance in the Baltic Sea in the future. Furthermore, it is anticipated that the icebreaking treaty signed between Finland and Russia will improve the opportunities for icebreaking cooperation in the Baltic Sea area.

The North-American market changed considerably due to the energy and climate policy changes taking place in the United States and Canada. There is no foreseeable need for ice management services in the next few years due to the restric-

tions on marine energy production in the Arctic region. On the other hand, the Coast Guards have a growing need to replace their icebreaking capacity, and the passenger ship traffic will also increase, bringing even more widespread demand for icebreaking services in the region.

Energy production in the Arctic and Sub-Arctic regions of Russia continued. Demand for icebreaking, ice management and oil recovery services in the region increased. As Arctic research in Asian countries increases, the research organisations will need icebreaking and research ship services. As a result of climate change, Arctic research will expand also on the international scale, creating new service needs.

Research activities in the marine areas of Greenland created a demand for icebreaking services, and the need for these services is expected to continue at a moderate level.

## MAJOR EVENTS DURING THE FISCAL PERIOD

The contract between Arctia and Shell was terminated in the first quarter after Shell suspended its project in the Alaskan waters in autumn 2015. Offshore's operating result was positive despite the loss of income of about six million euros in the fiscal year as a result of the termination of the contract.

In the summer, icebreaker Voima underwent a major life span extension, in which the operating life of the vessel was extended by at least ten years. The ship was commissioned in 1954. The life span extension received support from the EU's WINMOS II project (Winter Navigation Motorways of the Sea).

At the end of the third quarter, Arctia Icebreaking Ltd took delivery of icebreaker Polaris, which is the first LNG-powered icebreaker in the world. A separate ten-year service contract was signed with the Finnish Transport Agency on Polaris and, according to the contract, Polaris is available for icebreaking duties between 1 November and 31 May each year.

## FINANCIAL KEY FIGURES DESCRIBING THE OPERATIONS OF THE ARCTIA GROUP

	2016	2015	2014	2013	2012
Turnover, MEUR	60.7	64.4	61.7	63.7	76.9
Operating profit/loss, MEUR	12.9	18.1	16.8	17.5	44.6
% of turnover	21.2	28.1	27.2	27.5	58.0
Profit/loss for the fiscal period, MEUR	9.1	14.6	12.9	13.4	39.9
% of turnover	15.1	22.7	20.9	21.0	51.9
Equity, MEUR.	143.2	141.6	134.8	121.4	108.0
Equity ratio, %	49.9	73.4	72.7	70.7	69.2
Gearing, %	62.5	-16.9	-15.6	-12.0	-0.9
Interest-bearing liabilities, MEUR	124.2	36.1	34.7	33.2	27.6
Return on capital invested, %	5.7	11.8	11.3	12.5	32.3
Return on equity (ROE), %	6.4	10.6	10.0	11.7	44.6
Gross investment, MEUR	131.6	14.8	15.6	17.8	16.0
% of turnover	216.9	23.0	25.3	27.9	20.9
Balance sheet total, MEUR	287.4	193.9	185.7	175.6	157.0

The sale of fixed assets contributed to the increase in other operating income in 2012. In addition, through a sale decided upon on 31 May 2012, Arctia sold all of its holdings in Arctia Saaristovarustamo Ltd to Suomen Lauttaliikenne Ltd. Excluding Saaristovarustamo, the Group's 2012 turnover amounted to EUR 71.9 million. Operating profit in 2012 stood at EUR 19.7 million after profits from the sale of fixed assets and Saaristovarustamo's contribution were deducted.

### GROUP PERFORMANCE AND FINANCIAL KEY FIGURES

Arctia Group's turnover for the period under review was slightly lower than last year, being EUR 60.7 million (EUR 64.4 million). Operating profit stood at EUR 12.9 million (EUR 18.1 million). Profit for the fiscal period amounted to EUR 9.1 million (EUR 14.6 million).

### ICEBREAKING

Winter 2016 was mild, but slightly colder than the previous winter. Icebreakers Voima, Sisu, Kontio, Otso and Nordica assisted merchant vessels, and Urho was on stand-by for icebreaking duties in Helsinki throughout the season. A total of 385 (175) icebreaking days accumulated in 2016 in the period from 1 January to 8 May and from 7 December to 31 December.

The 2015–2016 icebreaking season began on 29 December 2015 and ended on 8 May 2016 with the arrival of Kontio in Helsinki. A total of 349

(182) operating days were accumulated during the icebreaking season. There were 0 (0) off hire days for technical reasons. A total of 46 off hire days accrued due to strikes in the reference year.

Icebreaker Polaris joined the fleet at the end of September. Polaris was ready for icebreaking duties as from 1 November 2016, and it set off from Helsinki to the Bay of Bothnia on 10 January 2017. Polaris performed its first assistance task on 12 January 2017.

In the second quarter of the year, a multiannual agreement on oil recovery readiness with the European Maritime Safety Agency EMSA came to an end. The termination of the agreement had no significant financial impact.

The turnover of Icebreaking amounted to EUR 39.0 million (EUR 24.3 million) and operating profit to EUR 6.3 million (EUR 6.0 million). Arctia has separate icebreaking service agreements with the Finnish Transport Agency on the so-called conventional icebreakers, multipurpose icebreakers and the new icebreaker Polaris. The agreement on the multipurpose icebreakers was transferred from Arctia Offshore Ltd to Arctia Icebreaking Ltd from the beginning of 2016, which will increase both turnover and icebreaking costs. The growth in costs is also contributed to by the increase in indirect employee costs as the pension insurance contributions of the sea personnel rose from 11.4 per cent to 16.7 per cent from the beginning of 2016. The Seamen's Pension Act was amended to correspond with the benefits and insurance contributions in accordance with the Employees Pensions Act as (TyEL) from 1 January 2016.

## OFFSHORE

In January–April, the multipurpose icebreakers Fenica and Nordica carried out chartering for icebreaking in the Baltic Sea in accordance with the agreement with the Finnish Transport Agency. Nordica took part in icebreaking operations between 12 March and 6 April 2016. A total of 25 (0) icebreaking days were accumulated in 2016. After the icebreaking season, the vessels have been stationed in Rauma.

Arctia Offshore Ltd continued summer chartering in ice management tasks in the Greenland region for the third year running. Icebreaker Otso operated in the area in August and September.

Multipurpose icebreaker Nordica started its transit voyage for chartering in the last few days of the year under review. The area of operation is in the Sea of Okhotsk, and chartering is estimated to last until the end of April 2017 at the latest. Nordica's discharge from icebreaking duties was agreed on with the Finnish Transport Agency. The fixed-term suspension of Nordica's contractual obligation was also agreed with the Finnish Transport Agency.

The number of operating days totalled 61 (380). Shell's activities in the Alaskan waters ended in 2015, which was the reason for the low number of operating days in the period under review.

The turnover of Offshore amounted to EUR 28.3 million (EUR 39.9 million) and operating profit EUR 5.9 million (EUR 12.6 million). The strong fall in turnover and operating profit was influenced by the end of chartering for Shell, the transfer of the icebreaking contract to Arctia Icebreaking Ltd and the shorter period of summer chartering in Greenland than last year.

## HARBOUR ICEBREAKING

Although the winter of 2016 was mild, as was winter 2015, harbour icebreaking was carried out in the ports of Tornio and Kemi with harbour icebreakers Ahto and Jääsalo. Harbour icebreaker Ulla served as a backup vessel. Jääsalo and Ulla were chartered from Port of Kemi Ltd.

Arctia Karhu Ltd also participated in Arctia's development work on oil prevention and response under the IMOR project in 2016. The project was launched in summer 2014 and its purpose is to improve oil recovery procedures from ice. The project focuses especially on the use of vessels for ice management in oil recovery scenarios. The project duration is three years and it will end in spring 2017.

In the open water season, the vessels of Arctia Karhu Ltd carried out several harbour towing operations and some longer chartering operations in Finland and Sweden.

Negotiations on the provision of escort tug services in the Port of Luleå were launched with the Port of Luleå in late winter 2016. There is an increased need for assistance in Luleå. The port had already decided to acquire its own escort tug, and it was seeking a solution for the transitional period. The negotiations were successful, and a contract for one optional season was concluded for the summer season. Arctia provided assistance in Luleå about ten times during the summer, and the service was a success.

The turnover of Harbour Icebreaking totalled EUR 2.3 million (EUR 2.0 million) and operating profit EUR 0.2 million (EUR 0.2 million).

## STAFF

An extensive training programme for the sea personnel was carried out in 2016 in relation to the qualifications reform. The qualifications reform is based on changes in international regulations.

Considerable effort was invested in occupational well-being during the period. Measures to reduce absence due to illness were reviewed. Particular attention was paid to the model for early intervention, which aims to reduce long-term absence due to illness. Supervisory work and leadership were also addressed on the basis of the personnel satisfaction survey carried out in 2015. The Group's management took part in a so-called 360 degree appraisal, in which personal development targets were drawn up for the participants.

The leadership and supervisor training programme continued. The planning of the so-called Talent programme on the training of future managers was completed with an objective of carrying out the programme during 2017.

The Arctia Group's membership in the Finnish Shipowners' Association became effective in spring 2015, and the association acted as negotiator and participant in collective bargaining for the first time in 2016. During the year, new collective agreements were drawn up with the Finnish Seafarers' Union FSU and the Finnish Ship's Officers' Union. The agreement with the Finnish Seafarers' Union is valid until 28 February 2019 and that with the Finnish Ship's Officers' Union until 28 February 2018.

The Board for the Ratification of Validity of Collective Agreements and the Labour Court are processing the claim by the Finnish Seafarers' Union

## KEY FIGURES, GROUP PERSONNEL

	2016	2015	2014	2013	2012
<b>AVERAGE NUMBER OF PERSONNEL DURING THE FISCAL PERIOD</b>	272	270	273	278	323
Icebreaking	141	138	141	147	134
Offshore	86	90	94	98	155
Harbour icebreaking	11	9	8	2	0
Office personnel	34	33	30	32	33
<b>NUMBER OF PERSONNEL (31 DEC.)</b>					
Office personnel	32	36	31	31	32
Sea personnel	233	237	230	236	254
<b>EMPLOYMENT CONTRACT DISTRIBUTION (31 DEC.)</b>					
Office personnel, permanent	29	33	31	31	33
Sea personnel, permanent	209	213	204	220	250
Temporary	27	27	26	16	22
<b>SHARE OF FULL-TIME AND PART-TIME EMPLOYMENT CONTRACTS (%)</b>					
Office personnel, part-time	8.7	2.8	6.5	6.5	0
Sea personnel, part-time	0	0.4	0.4	0.4	0.7
<b>LEAVING RATE (31 DEC.)</b>					
Total personnel / leaving and part-time employees (%)					
Office personnel	13.9	9.7	6.5	18	9.3
Sea personnel	11.8	14.5	23.3	35	34

	2016	2015	2014	2013	2012
<b>AVERAGE LENGTH OF EMPLOYMENT CONTRACT / YEARS (31 DEC.)</b>					
All employees	13.5	13.9	15.3	16.4	17
<b>AVERAGE AGE OF PERSONNEL / YEARS (31 DEC.)</b>					
All employees	49	48.3	47.5	48.5	48.6
Sea personnel, men	49.3	49	48.5	48.2	49.2
Sea personnel, women	47.5	46.4	48.5	47.7	46.1
Office personnel	46	45.2	46	46.7	45.7
Retired employees	12	14	10	15	
Average age of retirement (years)	61.5	60.5	60.5	60.6	
<b>GENDER DISTRIBUTION OF PERSONNEL (31 DEC.) ALL EMPLOYMENT CONTRACTS (%)</b>					
Women, sea personnel	12.0	13.5	14.8	14.8	14.2
Women, office personnel	46.9	47.2	45.1	45.4	39.4
<b>BOARD OF DIRECTORS GENDER DISTRIBUTION</b>					
Women	2 *	2 *	2	2	3
Men	3 *	3 *	3	2	3
<b>GENDER DISTRIBUTION IN SENIOR MANAGEMENT (MANAGEMENT TEAM)</b>					
Women	2 *	1 *	1	1	0
Men	6 *	6 *	5	5	6

\* members at the turn of the year

and the Finnish Engineers' Association concerning the general applicability of collective agreements complied with in Arctia's icebreaking operations. The collective agreements are not generally applicable on the basis of the decision by the Board for the Ratification of Validity of Collective Agreements and the Labour Court.

Due to the poor chartering situation at Arctia Offshore Ltd, a co-operation procedure concerning the entire group was carried out in order to lay off personnel. The planned lay-offs would have lasted a maximum of 90 days. However, lay-offs were averted by using the sea personnel's accrued days off as an alternative adaptation method. Flexible hours accumulation of office personnel was also reduced for the office personnel. The Group's directors waived their performance bonuses for 2016.

## FINANCING

The Group's cash assets at end of year totalled EUR 34.5 million (EUR 60.0 million). The key areas of spending cash assets were investment and the payment of dividends. The majority of cash assets were invested in low-risk bond funds. Cash assets are maintained in preparation for the maintenance of Arctia's ageing fleet, renovation investments, and for extensive future replacement investments across the entire fleet.

At the end of the year, the Group had EUR 121.2 million of long-term debt (EUR 11.2 million) wholly acquired from external financial institutions. The

Group had EUR 2.9 million of short-term debt from financial institutions (EUR 24.8 million). A new loan of a total of EUR 112.5 million was taken out to cover the cost of investments. The loan terms do not include covenants relating to profitability or solvency. The interest rates of the loan are tied to market rates. The market rates are hedged with interest rate derivatives with respect to the loan of EUR 10.8 million. An expense entry of EUR 120,000 was recognised through profit or loss of the interest rate hedging according to the market value at the turn of the year.

## INVESTMENT

The Group's gross investment in 2016 totalled EUR 131.6 million (EUR 14.7 million), with maintenance investments representing EUR 3.5 million of the total (EUR 9.1 million).

The most significant investments consisted of the acquisition of icebreaker Polaris and the docking and life span extension of icebreaker Voima, a total of EUR 129.1 million.

Icebreaker Polaris was purchased from the Finnish Transport Agency at a sale price of EUR 128 million, deducted by amounts agreed in the contract. As the original purchaser of the vessel, the Finnish Transport Agency received EUR 25 million in EU subsidy from the WINMOS I project for acquiring the icebreaker. The life span extension of Voima has received EU subsidy from the WINMOS II project, a total of EUR 0.7 million in the year under review. The subsidy has been registered to reduce

investment. Other significant investments were the modernisation of Nordica's crane system and the docking of Fennica. The rest of the investments constituted normal maintenance investment.

## SAFETY

Ship safety is monitored by the Group through regular internal audits. The Finnish Transport Safety Agency Trafi inspects Arctia's vessels each year. Action and repair plans have been drawn up on the basis of the observations made during the audits and inspections, and the plans have been implemented as far as possible. No serious non-conformities were identified in audits or inspections during the fiscal period.

Certifications for the shipping company's new icebreaker Polaris were applied for from Trafi and it was classed as a vessel complying with the International Ship and Port Facility Security (ISPS) Code.

At the end of the year, the project to convert Urho, Sisu and Voima into vessels for international traffic was launched. The safety and rescue equipment of the vessels will be changed to meet the requirements in the area of operation.

A total of 7 (12) occupational accidents occurred in the Group in 2016. A new occupational safety campaign with a different theme for each quarter kicked off in 2016. Arctia also continued active communications on safety issues and the handing out of safety awards.

The introduction of the new safety management system software and the related training in the entire Group was the biggest change project during the year. The new software enables improved management of the instructions and reporting of the vessels, both on the ships and in the safety unit. In November, Trafi issued a certificate on Arctia's safety management system.

The Arctia Group always considers the environment in its operations and complies with the regulations of the International Maritime Organization's (IMO) Internal Safety Management Code (ISM Code) and the International Convention for the Prevention of Pollution from Ships (MARPOL Convention), along with national guidelines and regulations.

## ENVIRONMENT

As a result of the addition of icebreaker Polaris to the fleet in September, Arctia became one of the new LNG operators in the Baltic Sea. Eco-efficiency was a key factor in the design of the new icebreaker. Thus, Arctia has been able to foster the deployment of more environmentally friendly fuel technology. Arctia has also promoted general LNG awareness by demonstrating the vessel to various parties.

In 2016, harbour icebreakers Ahto and Jääsalo continued uninterrupted oil recovery operations in the Bay of Bothnia. IB Kontio's six-year agreement with the European Maritime Safety Agency (EMSA) on oil recovery readiness in the northern Baltic Sea ended in April at the end of the option period. Icebreaker Polaris is fitted out with oil recovery equipment and a separate storm boom. This considerably increases Arctia's preparedness to act in oil recovery operations also in more difficult open sea conditions. Polaris is also equipped for emergency towing, which further improves Arctia's rescue capacity.

Future legislative changes are monitored closely. Based on the monitoring, we will assess the impacts of international agreements and national regulations on the Group's guidelines and fleet. The Paris Climate Agreement is likely to have extensive social impacts, which also apply to the shipping industry. The first legislative amendment to arise will be the EU's internal obligation to measure the fuel consumption of vessels and to report the measurement results. The reporting is expected to underpin and direct the contents of IMO's future decisions. The obligations will possibly also be applied to icebreakers. However, the measurement and reporting will probably not give rise to any significant investments.

The Group's environmental targets for 2017 were updated at the end of the year 2016. Especially the target of fuel consumption reduction was specified further.

## DEVELOPMENT WORK AND RESEARCH

The research projects launched in the previous year continued in 2016. The most important project was TEKES's Ice management in Oil Recovery (IMOR) project, implemented in partnership with Lamor Oy. The goal of the project is to develop oil recovery in icy conditions and the icebreaking and ice management procedures required in oil recovery.

The project has significantly boosted Arctia's competence in ice management in oil recovery operations, and it has also attracted international interest. In the winter, harbour icebreaker Ahto took part in ice test runs, which were observed by visitors from the Swedish and Norwegian Border Guards. The research results are due to be presented to stakeholders at a seminar during 2017.

Other research projects Arctia has participated in have dealt with the use of bio-based chemicals in oil recovery, the effect of materials in mechanical oil recovery, ice modelling and ice loads, and routing in ice. Moreover, invention regulations are being established for the Group to provide further support for the development work.

Arctia's research expenses amounted to EUR 0.1 million in 2016 (EUR 0.1 million).

## CORPORATE RESPONSIBILITY

At Arctia, responsible operations mean economically viable business operations with sufficient investment capacity, as well as fulfilment of its social commitments. They mean taking account of the environment by reducing consumption, and active protection of the environment by developing the oil recovery business. Arctia shoulders its social responsibilities by taking care of the safety and training of its employees and, in a wider sense, the safety of winter navigation. Arctia is committed to taking human rights into account in its ethical guidelines, human resources policy and choice of supplier. Responsibility as a whole is observed in strategy work and in everyday work of the Management Team and line management.

Arctia also plays a role as Finland's representative and advocate of Arctic expertise in Finland and abroad. This role is emphasised further when Finland takes over the chairmanship of the Arctic Council and the CEO assumes the chairmanship of the Arctic Economic Council in spring 2017.

The success and development of responsibility were monitored in 2016 in the monthly meetings of the Management Team with the aid of meters in the materiality analysis.

## COMPANY ORGANISATION, MANAGEMENT AND AUDITORS

As from 1 January 2016, the Arctia Group has operated according to a new organisation structure,

and the name of the parent company was changed to Arctia Ltd at the same time. The new Group company, Arctia Management Services Ltd, started providing management shipping company services from the beginning of the year. The Group's HR administration, safety unit, technical unit and crewing functions were transferred from Arctia Ltd to Arctia Management Services Ltd by way of an asset deal. The parent company continues to take care of the Group's financial administration, ICT functions and communications.

The Annual General Meeting of 21 March 2016 appointed Christer Granskog as Chairman of the Board of Directors of Arctia Ltd, and Maire Laitinen, Ilpo Nuutinen, Antti Pankakoski and Päivi Söderholm as members. The Board of Directors elected Ilpo Nuutinen as Vice-Chairman in accordance with the proposal of the Annual General Meeting. The Board of Directors convened 11 times in 2016, with an attendance rate of 100.0 per cent. The Annual General Meeting decided to increase the attendance allowance of the Board of Directors from 500 euros to 600 euros per meeting. The other attendance allowances remained unchanged.

In its meeting on 21 March 2016, the Board of Directors elected Christer Granskog as the Chairman of the Remuneration and Nomination Committee and Maire Laitinen, Antti Pankakoski and Ilpo Nuutinen as members of the Committee. The Committee convened twice (2) in 2016, with an attendance rate of 100.0 per cent.

The auditor of the Arctia Group is Ernst & Young Ltd, Corporation of Certified Public Accountants, with Mikko Ryttilahti, Authorised Public Account-

ant, Chartered Public Finance Auditor, as chief auditor.

The CEO of Arctia Shipping Ltd in 2016 was Tero Vauraste. In addition to the CEO, the following persons were members of the Group Management Team during the fiscal period:

- Markus Aarnio, Senior Vice President, Security & HSSE, until 15 April 2016
- Pia Broumand, Safety Manager, as of 21 September 2016
- Tin Ekegren, Senior Vice President, Icebreaking, as of 22 January 2016
- Eero Hokkanen, Communications Manager
- Markus Karjalainen, Senior Vice President, Icebreaking, until 22 January 2016
- Heli Lehtonen, Chief Financial Officer, Senior Vice President
- David Lindström, Senior Vice President, HR
- Kai Lindström, Senior Vice President, Technology, as of 18 September 2016
- Kari Patrakka, Senior Vice President, Technology, until 16 September 2016
- Hannu Ylärinne, Senior Vice President, Offshore

## SHARES

	2016	2015
Equity capital, EUR	18,700,000.00	18,700,000.00
Share nominal value, EUR	25.00	25.00
Number of shares, pcs.	748,000	748,000

The entire share capital of the parent company is owned by the state of Finland.

## ESTIMATE OF KEY RISKS AND UNCERTAINTIES

The ageing of the company's fleet increases the risk of technical problems and a rise in maintenance costs. The risk of non-availability of spare parts for old vessels is also growing. Technical reliability plays a significant role during operations in demanding conditions. Arctia seeks to manage this risk through long-term maintenance programmes and annual maintenance plans.

In order to ensure undisturbed operations when operating in distant areas, particular attention is paid to the serviceability, spare parts needs and crew rotation of vessels, along with the availability of maintenance.

Increasing requirements are being set for operating in Arctic regions, particularly with regard to safety and environmental conservation. Arctia's vessels ensure the safety of operations in these regions. Operators in the Arctic marine areas need an appropriately equipped fleet and specialist expertise in shipping and on Arctic conditions. The principal criteria for vessels are eco-efficiency and a sufficient polar ice class.

The development of the Arctic market constitutes a business environment risk to Arctia. The progress of Arctic projects largely depends on developments in environmental legislation and other official regulations and on the world market price of oil. Environmental regulation also increases the growth risk of operating costs. Arctia hedges against these risks through insurance and contractual arrangements.

## RISKS RELATED TO PERSONNEL

Arctia Group will experience a large turnover in personnel in the next few years due to ageing. This turnover increases the risk of not being able to maintain the current level of professional competence. Arctia seeks to mitigate this risk through pre-emptive HR planning and sufficient training.

## FINANCING AND ACCIDENT RISKS

The risks related to the Group's chartering and financing are mitigated through contractual arrangements and, if necessary, currency and interest rate derivatives. At the turn of the year, the Group had interest rate swap agreements in place, converting variable interest rates into fixed rates. More detailed information on derivatives is provided in the notes to the financial statements.

Credit-loss risks involved in chartering are managed by determining the credit ratings of customers and use of payment terms based on the customer's credit rating and, possibly, sufficient securities. Arctia has protected itself against property damage and disruptions of business through extensive insurance cover.

## BOARD OF DIRECTORS' PROPOSAL ON THE USE OF RETAINED EARNINGS

The company's distributable assets total EUR 92,291,648.08, of which EUR 3,904,163.93 consists of the operating profit for the fiscal period. The Board of Directors proposes the payment of a dividend of EUR 6.15 per share, EUR 4,600,200.00 in total. The payment of dividend will not jeopardise the company's solvency.

## SIGNIFICANT EVENTS AFTER THE FINANCIAL PERIOD AND THE OUTLOOK FOR FUTURE DEVELOPMENT

This year, the company's fleet is utilised in chartering duties in the icebreaking season in accordance with existing contracts.

The exploitation of Arctic and Subarctic natural resources and the charting of unexploited reserves are expected to continue to a lesser degree than in the previous years. Research in the polar regions is estimated to increase. The replacement of national icebreakers and the need for additional capacity will create demand in North America. Arctia believes that the increased growth in passenger transport services and the demand for ice management and other ship services will create new business opportunities.

## INCOME STATEMENT (EUR)

	Appendix	GROUP		PARENT COMPANY	
		2016	2015	2016	2015
<b>TURNOVER</b>	1	<b>60,693,627.62</b>	<b>64,396,009.74</b>	<b>2,970,527.99</b>	<b>4,301,626.23</b>
<b>OTHER OPERATING INCOME</b>	2	83,607.08	4,103,806.06	1,519.55	19,042.35
<b>Materials and services</b>					
Raw materials, consumables and supplies					
Purchases		-2,137,383.36	-3,325,678.34	-169.51	-2,298.99
Inventories, increase (-) or decrease (+)		-858,645.89	69,878.51	0.00	0.00
Purchased services		-3,963,955.69	-6,750,564.98	-28,991.01	0.00
<b>Materials and services, total</b>		<b>-6,959,984.94</b>	<b>-10,006,364.81</b>	<b>-29,160.52</b>	<b>-2,298.99</b>
<b>Personnel expenses</b>	3				
Wages and salaries		-17,135,697.84	-17,148,278.22	-923,894.39	-1,759,810.85
Personnel-related expenses					
Pension costs		-3,119,034.15	-2,247,316.48	-104,718.63	-349,340.61
Other personnel-related expenses		-1,004,952.01	-1,068,948.32	-30,984.38	-60,664.31
<b>Personnel expenses, total</b>		<b>-21,259,684.00</b>	<b>-20,464,543.02</b>	<b>-1,059,597.40</b>	<b>-2,169,815.77</b>
<b>Depreciation and reduction in value</b>					
Depreciation according to plan		-12,376,443.82	-10,628,176.04	-358,494.74	-347,042.00
<b>Depreciation and reduction in value, total</b>		<b>-12,376,443.82</b>	<b>-10,628,176.04</b>	<b>-358,494.74</b>	<b>-347,042.00</b>
<b>Other operating costs</b>		<b>-7,302,468.74</b>	<b>-9,315,268.63</b>	<b>-1,459,398.53</b>	<b>-2,961,549.39</b>
<b>OPERATING PROFIT (LOSS)</b>		<b>12,878,653.20</b>	<b>18,085,463.30</b>	<b>65,396.35</b>	<b>-1,160,037.57</b>
<b>Financial income and expenses</b>	5				
Other interest and financial income					
From group companies		0.00	0.00	364,999.04	361,500.00
Short-term, from other sources		64,016.97	2,407,361.44	63,205.86	2,406,824.79
Reduction in value of non-current asset investments		-5,000.00	0.00	0.00	0.00
Interest and other financial expenses					
To others		-1,492,858.84	-2,262,925.63	-1,102,941.92	-2,016,790.31
<b>Financial income and expenses, total</b>		<b>-1,433,841.87</b>	<b>144,435.81</b>	<b>-674,737.02</b>	<b>751,534.48</b>
<b>PROFIT (LOSS) BEFORE APPROPRIATIONS AND TAXES</b>		<b>11,444,811.33</b>	<b>18,229,899.11</b>	<b>-609,340.67</b>	<b>-408,503.09</b>
<b>Appropriations</b>					
Increase (-) / decrease (+) in depreciation difference		0.00	0.00	0.00	-26,300.00
Group contribution		0.00	0.00	5,500,000.00	11,400,000.00
<b>Appropriations, total</b>		<b>0.00</b>	<b>0.00</b>	<b>5,500,000.00</b>	<b>11,373,700.00</b>
<b>Income taxes</b>					
Taxes during the financial year		-1,028,573.03	-2,228,807.08	-986,495.40	-2,206,249.94
Deferred taxes		-1,291,808.17	-1,370,826.81	0.00	0.00
<b>Income taxes, total</b>		<b>-2,320,381.20</b>	<b>-3,599,633.89</b>	<b>-986,495.40</b>	<b>-2,206,249.94</b>
Minority interest		15,297.77	1,182.89	0.00	0.00
<b>NET PROFIT (LOSS) FOR THE FINANCIAL YEAR</b>		<b>9,139,727.90</b>	<b>14,631,448.11</b>	<b>3,904,163.93</b>	<b>8,758,946.97</b>

## BALANCE SHEET (EUR)

	Appendix	GROUP		PARENT COMPANY	
		12/31/2016	12/31/2015	12/31/2016	12/31/2015
<b>ASSETS</b>					
<b>NON-CURRENT ASSETS</b>					
Intangible assets	7				
Intellectual property rights		215,799.41	267,232.84	196,877.82	266,161.94
Other long-term expenses		167,110.86	0.00	0.00	0.00
<b>Intangible assets, total</b>		<b>382,910.27</b>	<b>267,232.84</b>	<b>196,877.82</b>	<b>266,161.94</b>
Tangible assets					
Land and water		175,535.71	175,535.71	175,535.71	175,535.71
Buildings and constructions		4,006,809.03	4,040,769.84	4,006,809.03	4,040,769.84
Vessels		232,237,129.27	112,774,541.21	0.00	0.00
Other machinery and equipment		2,559,463.62	2,888,066.24	475,871.87	565,581.01
Other tangible assets		86,386.67	86,386.67	86,386.67	86,386.67
Advance payments and construction in progress		848,779.52	815,835.80	0.00	180,734.21
<b>Tangible assets, total</b>		<b>239,914,103.82</b>	<b>120,781,135.47</b>	<b>4,744,603.28</b>	<b>5,049,007.44</b>
Investments					
Shares in group companies		0.00	7,500.00	81,897,048.40	81,897,048.40
Other unquoted shares		0.00	5,000.00	0.00	0.00
Shares in associated companies		3,200.00	3,200.00	0.00	0.00
<b>Investments, total</b>		<b>3,200.00</b>	<b>15,700.00</b>	<b>81,897,048.40</b>	<b>81,897,048.40</b>
<b>NON-CURRENT ASSETS, TOTAL</b>		<b>240,300,214.09</b>	<b>121,064,068.31</b>	<b>86,838,529.50</b>	<b>87,212,217.78</b>
<b>CURRENT ASSETS</b>					
Inventories					
Raw materials and consumables		1,013,755.83	1,872,401.72	0.00	0.00
<b>Inventories, total</b>		<b>1,013,755.83</b>	<b>1,872,401.72</b>	<b>0.00</b>	<b>0.00</b>
Long-term receivables					
Receivables from group companies		0.00	0.00	118,050,000.00	8,050,000.00
Imputed tax receivables		30,595.54	36,403.71	0.00	0.00
<b>Long-term receivables, total</b>		<b>30,595.54</b>	<b>36,403.71</b>	<b>118,050,000.00</b>	<b>8,050,000.00</b>
Short-term receivables					
Receivables		9,169,032.14	4,321,714.69	1,619.14	4,476.40
Receivables from group companies	8	0.00	0.00	14,896,632.14	11,507,822.30
Other receivables		475,427.97	1,312,859.19	397.30	0.00
Accruals	9	1,874,100.40	5,237,604.37	616,287.61	4,684,921.60
<b>Short-term receivables, total</b>		<b>11,518,560.51</b>	<b>10,872,178.25</b>	<b>15,514,936.19</b>	<b>16,197,220.30</b>
Financial securities	10				
Other securities		18,088,279.39	43,025,103.32	18,088,279.39	43,025,103.32
<b>Financial securities, total</b>		<b>18,088,279.39</b>	<b>43,025,103.32</b>	<b>18,088,279.39</b>	<b>43,025,103.32</b>
<b>Cash and cash equivalents</b>		<b>16,414,759.42</b>	<b>17,024,022.60</b>	<b>16,414,759.36</b>	<b>17,024,022.54</b>
<b>CURRENT ASSETS, TOTAL</b>		<b>47,065,950.69</b>	<b>72,830,109.60</b>	<b>168,067,974.94</b>	<b>84,296,346.16</b>
<b>ASSETS, TOTAL</b>		<b>287,366,164.78</b>	<b>193,894,177.91</b>	<b>254,906,504.44</b>	<b>171,508,563.94</b>

## BALANCE SHEET (EUR)

	Appendix	GROUP		PARENT COMPANY	
		12/31/16	12/31/15	12/31/16	12/31/15
<b>EQUITY AND LIABILITIES</b>					
<b>EQUITY</b>					
Share capital	7	18,700,000.00	18,700,000.00	18,700,000.00	18,700,000.00
Other reserves		66,780,736.91	66,780,736.91	66,780,736.91	66,780,736.91
Retained earnings from previous years		48,609,940.56	41,458,492.45	21,606,747.24	20,327,800.27
Net profit (loss) for the financial year		9,139,727.90	14,631,448.11	3,904,163.93	8,758,946.97
<b>EQUITY, TOTAL</b>		<b>143,230,405.37</b>	<b>141,570,677.47</b>	<b>110,991,648.08</b>	<b>114,567,484.15</b>
<b>MINORITY INTEREST</b>					
		174,265.67	189,563.44	0.00	0.00
<b>APPROPRIATIONS</b>					
Depreciation difference		0.00	0.00	290,966.30	290,966.30
<b>PROVISIONS</b>					
Other provisions		0.00	293,401.20	0.00	0.00
<b>LIABILITIES</b>					
<b>Long-term liabilities</b>					
Loans from financial institutions		121,386,159.03	11,250,000.00	110,000,000.00	0.00
Deferred tax liabilities		7,901,363.78	6,615,363.78	0.00	0.00
<b>Long-term liabilities, total</b>		<b>129,287,522.81</b>	<b>17,865,363.78</b>	<b>110,000,000.00</b>	<b>0.00</b>
<b>Short-term liabilities</b>					
Loans from financial institutions		2,800,000.00	24,825,654.14	2,500,000.00	24,034,334.00
Payables	8	1,650,224.41	1,734,264.37	54,954.32	237,451.72
Liabilities to group companies		0.00	0.00	30,469,892.62	30,725,756.82
Other liabilities		1,283,971.91	960,341.45	349,318.44	151,745.82
Accruals	9	8,939,774.61	6,454,912.06	249,724.68	1,500,825.13
<b>Short-term liabilities, total</b>		<b>14,673,970.93</b>	<b>33,975,172.02</b>	<b>33,623,890.06</b>	<b>56,650,113.49</b>
<b>LIABILITIES, TOTAL</b>		<b>143,961,493.74</b>	<b>51,840,535.80</b>	<b>143,623,890.06</b>	<b>56,650,113.49</b>
<b>EQUITY AND LIABILITIES, TOTAL</b>		<b>287,366,164.78</b>	<b>193,894,177.91</b>	<b>254,906,504.44</b>	<b>171,508,563.94</b>

## FINANCIAL STATEMENT (EUR)

	GROUP		PARENT COMPANY	
	2016	2015	2016	2015
<b>OPERATIONAL CASH FLOW</b>				
Profit/loss for the financial period	9,139,727.90	14,631,448.11	3,904,163.93	8,758,946.97
Adjustments				
Depreciation according to plan	12,376,443.82	10,628,176.04	358,494.74	347,042.00
Other items not involving payments (net)	0.00	19,050.00	0.00	19,050.00
Financial income and financing costs	1,433,841.87	875,367.52	674,737.02	268,268.85
Group contributions	0.00	0.00	-5,500,000.00	-11,400,000.00
Income tax	2,320,381.20	3,599,633.89	986,495.40	2,206,249.94
Appropriations	0.00	0.00	0.00	26,300.00
Change in provisions	-293,401.20	-181,319.76	0.00	0.00
Minority share	-15,297.77	-1,182.89	0.00	0.00
Other adjustments	0.00	-19,050.00	0.00	-19,050.00
<b>Cash flow before change in working capital</b>	<b>24,961,695.82</b>	<b>29,552,122.91</b>	<b>423,891.09</b>	<b>206,807.76</b>
Change in working capital				
Increase (-) / decrease (+) in inventories	858,645.89	-69,878.51	0.00	0.00
Increase (-) / decrease (+) in non-interest-bearing receivables	-4,583,510.10	406,815.26	-6,752,049.89	-1,066,657.08
Increase (+) / decrease (-) in non-interest-bearing loans	3,620,749.80	2,249,118.47	-225,410.64	1,818,524.75
Operational cash flow before financial items and taxes	24,857,581.41	32,138,178.13	-6,553,569.44	958,675.43
Interest paid and payments for other financial expenses	-1,612,265.95	-879,326.74	-1,343,354.74	-633,191.42
Interest received for business operations	504.44	548.11	365,028.83	361,511.46
Direct taxes paid	-1,839,156.30	-2,054,242.04	-1,695,260.52	-2,096,238.48
Loans granted	0.00	0.00	-112,500,000.00	0.00
<b>OPERATIONAL CASH FLOW</b>	<b>21,406,663.60</b>	<b>29,205,157.46</b>	<b>-121,727,155.87</b>	<b>-776,051.59</b>
<b>Investment cash flow</b>				
Investments in material and immaterial goods	-131,617,589.60	-16,985,317.56	15,193.54	-391,717.03
Purchased shares in subsidiaries	0.00	0.00	0.00	-7,500.00
Repayments of loan receivables	0.00	0.00	0.00	0.00
<b>INVESTMENT CASH FLOW</b>	<b>-131,617,589.60</b>	<b>-16,985,317.56</b>	<b>15,193.54</b>	<b>-399,217.03</b>
<b>Cash flow from financing activities</b>				
Short term loans, increase	0.00	191,320.14	0.00	4,756,107.12
Short term loans, repayment	-20,191,320.14	0.00	-20,254,124.78	0.00
Long term loans, increase	112,500,000.00	0.00	112,500,000.00	0.00
Long-term loans, bank account limit	136,159.03	0.00	0.00	0.00
Repayment of long-term loans	-300,000.00	-160,512.96	0.00	0.00
Paid dividends	-7,480,000.00	-7,891,400.00	-7,480,000.00	-7,891,400.00
Group contributions received and paid	0.00	0.00	11,400,000.00	9,303,000.00
<b>CASH FLOW FROM FINANCING ACTIVITIES</b>	<b>84,664,838.89</b>	<b>-7,860,592.82</b>	<b>96,165,875.22</b>	<b>6,167,707.12</b>
<b>CHANGE IN AVAILABLE ASSETS</b>	<b>-25,546,087.11</b>	<b>4,359,247.08</b>	<b>-25,546,087.11</b>	<b>4,992,438.50</b>
Available assets at the beginning of the financial period	60,049,125.92	55,689,878.84	60,049,125.86	55,689,878.78
Available assets at end of the financial period	34,503,038.81	60,049,125.92	34,503,038.75	60,049,125.86

# Notes to the financial statements

## 1. ACCOUNTING PRINCIPLES OF THE FINANCIAL STATEMENTS

### 1.1 VALUATION PRINCIPLES

#### ITEMS IN FOREIGN CURRENCIES

Receivables and debts in foreign currencies have been converted into euros using the currency rate on the date of the drawing up of the financial statements.

#### INVENTORIES

Inventories include the fuel and lubricant stocks of vessels. Inventories are valued at acquisition expenses or at lower net realisable value.

#### FIXED ASSETS

Intangible and tangible assets are marked as acquisition expenses on the balance sheet with depreciation according to plan. Depreciations according to plan are calculated as straight line depreciations based on the target's economic duration. Depreciations are calculated from the month of the asset's application.

Depreciation times:	Years
Intangible assets	3–5
Buildings	10–20
Vessel stock	
Icebreakers	30–50
Docking of vessels	5
Communications and navigation equipment	3–5
Computers and related devices	3
Other plants and machinery	5–15

Expenses from repair and maintenance during vessel docking are capitalised and entered as expenses according to the economic working life of the docking (5 years). Residual value has been taken into account in the fleet depreciation plan.

Repair and maintenance expenses with effects of less than three years and a maximum sum of EUR 50,000 of are entered as annual expenses.

The depreciation time of the new icebreaker Polaris is 50 years.

### 1.2 DEFERRED INCOME TAX

The imputed tax liability and receivable have been calculated for the temporary differences between taxation and the financial statements, using the tax rate valid at the time of drawing up the financial statements. The entire imputed tax liability and receivable are included in the balance. Imputed tax liability is related to the depreciation differences recorded for subsidiaries. These differences have been divided into equity and imputed tax liability in the consolidated financial statements. The imputed tax receivable is connected to the confirmed loss of a subsidiary.

### 1.3 PENSIONS

The statutory pension schemes for personnel are managed by external insurance companies. Pension costs are entered as expenses for the year during which they were incurred.

### 1.4 COMPARABILITY OF INFORMATION FROM PREVIOUS FISCAL PERIODS

Turnover has been presented by line of business in the notes, with the domestic icebreaking performed by Arctia Offshore Ltd included in icebreaking turnover.

Turnover for the fiscal period includes rental and service income. These items have been recognised in other operating income. Turnover for the previous fiscal period has been made comparable by transferring the rental and service income to turnover.

### 1.5 ASSETS

Cash assets invested in low-risk bond funds have been included in the assets. The bond fund investments can be realised at short notice.

### 1.6 ACCOUNTING POLICIES OF THE CONSOLIDATED FINANCIAL STATEMENTS

The consolidated financial statements have been drawn up using the acquisition cost method. All subsidiary companies have been founded independently. Business transactions, receivables and debts between group companies have been eliminated. Minority shares have been separated from group equity and the profit for the fiscal period, and are presented as their own item. The Group has a consolidated account system in place. Changes to the consolidated account are presented in the financing cash flow items of the individual companies' financial statements.

### 1.7 MEASUREMENT OF FINANCIAL INSTRUMENTS AND DERIVATIVES

Measurement in accordance with chapter 4, section 2 of the Accounting Act shall be applied in the accounting of financial instruments. Securities held as financial assets and other similar financing reserves are valued at the acquisition expense or, if their probable fair market price is lower on the balance sheet date, at that value. Financial derivatives are valued at the market prices on the balance sheet date. The company does not apply hedge accounting. Negative value adjustments of financial derivatives are recorded in the income statement. The current values of the interest rate derivatives are presented in section 6 of the notes to the financial statements.

## 2. NOTES TO THE INCOME STATEMENT (EUR)

2.1. TURNOVER BY MARKET AREA AND LINE OF BUSINESS	Appendix 1	GROUP		PARENT COMPANY	
		2016	2015	2016	2015
<b>BY MARKET AREA</b>					
Finland		38,450,016.70	27,833,134.43	2,970,527.99	4,301,626.23
EU countries		432,209.89	759,733.48	0.00	0.00
Countries outside the EU		21,811,401.03	35,803,141.83	0.00	0.00
		<b>60,693,627.62</b>	<b>64,396,009.74</b>	<b>2,970,527.99</b>	<b>4,301,626.23</b>
<b>BY LINE OF BUSINESS</b>					
Icebreaking		38,688,738.79	27,975,887.93	0.00	0.00
Offshore		21,818,601.03	35,803,141.83	0.00	0.00
Oil spill response		186,287.80	616,979.98	0.00	0.00
Internal administration services		0.00	0.00	2,970,527.99	4,301,626.23
		<b>60,693,627.62</b>	<b>64,396,009.74</b>	<b>2,970,527.99</b>	<b>4,301,626.23</b>
<b>2.2. OTHER OPERATING INCOME</b>					
Insurance indemnities received	2				
Strike insurance		0.00	3,234,525.00	0.00	0.00
Ship insurance		0.00	841,884.87	0.00	0.00
Other insurance		0.00	859.35	0.00	859.35
Other		83,607.08	26,536.84	1,519.55	18,183.00
<b>Total</b>		<b>83,607.08</b>	<b>4,103,806.06</b>	<b>1,519.55</b>	<b>19,042.35</b>
<b>2.3. NOTES ON PERSONNEL</b>					
<b>AVERAGE NUMBER OF PERSONNEL DURING FISCAL PERIOD</b>					
Clerical employees	3	34.0	32.8	10.3	24.3
Sea personnel		237.5	237.2	0	0
<b>Total</b>		<b>271.5</b>	<b>270.0</b>	<b>10.3</b>	<b>24.3</b>
<b>MANAGEMENT SALARIES AND REMUNERATIONS</b>					
CEO		285,684.12	263,641.13	285,684.12	263,641.16
Board members		100,200.00	108,300.00	91,200.00	108,300.00
Managing Directors of subsidiaries		176,081.84	120,905.84	0.00	0.00
		<b>561,965.96</b>	<b>492,846.97</b>	<b>376,884.12</b>	<b>371,941.16</b>

The CEO's salary is a total salary that includes car and telephone benefits.  
The CEO's retirement age is 63.  
Pension benefits are provided by the statutory TyEL pension insurance.

2.4. OTHER OPERATING COSTS	Appendix 4	GROUP		PARENT COMPANY	
		2016	2015	2016	2015
<b>OTHER OPERATING COSTS</b>					
Voluntary personnel costs		2,072,606.47	2,397,299.03	56,017.38	409,556.72
Rents		33,396.70	8,118.82	0.00	0.00
Telephone, IT, vehicle and office expenses		1,445,929.44	1,878,442.72	532,574.72	874,139.52
Marketing costs		108,466.86	153,377.64	49,971.36	85,612.84
Other research and product development costs		109,827.07	142,139.93	14,421.57	142,139.93
Travel expenses		776,806.70	1,719,861.58	76,542.27	150,039.15
Administrative expenses		2,667,426.86	2,924,377.53	581,580.38	1,214,486.22
Credit losses and recovery		0.00	19,050.00	0.00	19,050.00
Other operating costs, intra-group		0.00	0.00	127,941.72	45,699.34
Other operating costs		88,008.64	72,601.38	20,349.13	20,825.67
<b>Other operating costs, total</b>		<b>7,302,468.74</b>	<b>9,315,268.63</b>	<b>1,459,398.53</b>	<b>2,961,549.39</b>
<b>AUDITORS' FEES</b>					
Audit		50,600.00	35,341.00	21,583.10	17,385.00
Taxation advice		7,542.00	15,073.00	7,542.00	11,823.00
<b>2.5. FINANCIAL INCOME AND EXPENSES</b>	5				
Other interest income					
From group companies		0.00	0.00	364,999.04	361,500.00
From other sources		504.44	548.11	29.79	11.46
Interest income, total		504.44	548.11	365,028.83	361,511.46
Other financial income					
From other sources		63,512.53	2,406,813.33	63,176.07	2,406,813.33
Other financial income, total		63,512.53	2,406,813.33	63,176.07	2,406,813.33
<b>Financial income, total</b>		<b>64,016.97</b>	<b>2,407,361.44</b>	<b>428,204.90</b>	<b>2,768,324.79</b>
<b>Reduction in value of non-current asset investments</b>		<b>5,000.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
Interest expenses					
To others		1,242,503.22	875,574.08	852,786.92	629,635.42
Interest expenses, total		1,242,503.22	875,574.08	852,786.92	629,635.42
Other financial expenses					
To others		250,355.62	1,387,351.55	250,155.00	1,387,154.89
Other financial expenses, total		250,355.62	1,387,351.55	250,155.00	1,387,154.89
<b>Financial expenses, total</b>		<b>1,497,858.84</b>	<b>2,262,925.63</b>	<b>1,102,941.92</b>	<b>2,016,790.31</b>
<b>Financial income and expenses, total</b>		<b>-1,433,841.87</b>	<b>144,435.81</b>	<b>-674,737.02</b>	<b>751,534.48</b>
<b>2.6. APPROPRIATIONS</b>	6				
Group contribution		0.00	0.00	5,500,000.00	11,400,000.00
		<b>0.00</b>	<b>0.00</b>	<b>5,500,000.00</b>	<b>11,400,000.00</b>

### 3. NOTES ON BALANCE SHEET ASSETS (EUR)

#### 3.1. NON-CURRENT ASSETS, GROUP

Appendix

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INTANGIBLE ASSETS 2016	Intellectual property rights	Other intellectual property rights	Total
Acquisition costs 1 Jan.	513,394.92	0.00	513,394.92
Increases	21,420.81	223,047.36	244,468.17
Decreases	0.00	0.00	0.00
Transfers between items	0.00	0.00	0.00
<b>Acquisition costs 31 Dec.</b>	<b>534,815.73</b>	<b>223,047.36</b>	<b>757,863.09</b>
Accumulated depreciations 1 Jan.	-246,162.08	0.00	-246,162.08
Transfers between items	0.00	0.00	0.00
Depreciations for the fiscal period	-72,854.24	-55,936.50	-128,790.74
<b>Accumulated depreciations 31 Dec.</b>	<b>-319,016.32</b>	<b>-55,936.50</b>	<b>-374,952.82</b>
<b>Book value 31 Dec.</b>	<b>215,799.41</b>	<b>167,110.86</b>	<b>382,910.27</b>

TANGIBLE ASSETS 2016	Land and water areas	Buildings and constructions	Vessels	Other plants and machinery	Other tangible assets	Advance payments and construction in progress	Total
Acquisition costs 1 Jan.	175,535.71	4,485,673.90	222,113,226.65	6,620,114.88	86,386.67	815,835.80	234,296,773.61
Increases	0.00	173,040.67	131,132,637.04	42,000.00	0.00	32,943.72	131,380,621.43
Increases (interest and management fees)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sale of subsidiaries	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Decreases	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reduction in value	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Transfers between items	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Acquisition costs 31 Dec.</b>	<b>175,535.71</b>	<b>4,658,714.57</b>	<b>353,245,863.69</b>	<b>6,662,114.88</b>	<b>86,386.67</b>	<b>848,779.52</b>	<b>365,677,395.04</b>
Accumulated depreciations 1 Jan.	0.00	-444,904.06	-109,338,685.44	-3,732,048.64	0.00	0.00	-113,515,638.14
Accumulated depreciations for divestments	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Accumulated depreciations of deductions and transfers	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Depreciations for the fiscal period	0.00	-207,001.48	-11,670,048.98	-370,602.62	0.00	0.00	-12,247,653.08
Reductions in value	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Accumulated depreciations 31 Dec.</b>	<b>0.00</b>	<b>-651,905.54</b>	<b>-121,008,734.42</b>	<b>-4,102,651.26</b>	<b>0.00</b>	<b>0.00</b>	<b>-125,763,291.22</b>
<b>Book value 31 Dec.</b>	<b>175,535.71</b>	<b>4,006,809.03</b>	<b>232,237,129.27</b>	<b>2,559,463.62</b>	<b>86,386.67</b>	<b>848,779.52</b>	<b>239,914,103.82</b>

### 3.1. NON-CURRENT ASSETS, GROUP

INTANGIBLE ASSETS 2015	Intellectual property rights	Total
Acquisition costs 1 Jan.	222,727.75	222,727.75
Increases	290,667.17	290,667.17
Decreases	0.00	0.00
Transfers between items	0.00	0.00
<b>Acquisition costs 31 Dec.</b>	<b>513,394.92</b>	<b>513,394.92</b>
Accumulated depreciations 1 Jan.	-185,917.51	-185,917.51
Transfers between items	0.00	0.00
Depreciations for the fiscal period	-60,244.57	-60,244.57
<b>Accumulated depreciations 31 Dec.</b>	<b>-246,162.08</b>	<b>-246,162.08</b>
<b>Book value 31 Dec.</b>	<b>267,232.84</b>	<b>267,232.84</b>

TANGIBLE ASSETS 2015	Land and water areas	Buildings and constructions	Vessels	Other plants and machinery	Other tangible assets	Advance payments and construction in progress	Total
Acquisition costs 1 Jan.	175,535.71	4,485,673.90	203,866,852.02	6,325,444.39	86,386.67	4,806,530.53	219,746,423.22
Increases	0.00	0.00	18,246,374.63	294,670.49	0.00	87,122.66	18,628,167.78
Increases (interest and management fees)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sale of subsidiaries	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Decreases	0.00	0.00	0.00	0.00	0.00	-4,077,817.39	-4,077,817.39
Reduction in value	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Transfers between items	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Acquisition costs 31 Dec.</b>	<b>175,535.71</b>	<b>4,485,673.90</b>	<b>222,113,226.65</b>	<b>6,620,114.88</b>	<b>86,386.67</b>	<b>815,835.80</b>	<b>234,296,773.61</b>
Accumulated depreciations 1 Jan.	0.00	-252,322.66	-99,345,522.87	-3,349,861.14	0.00	0.00	-102,947,706.67
Accumulated depreciations for divestments	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Accumulated depreciations of deductions and transfers	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Depreciations for the fiscal period	0.00	-192,581.40	-9,993,162.57	-382,187.50	0.00	0.00	-10,567,931.47
Reductions in value	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Accumulated depreciations 31 Dec.</b>	<b>0.00</b>	<b>-444,904.06</b>	<b>-109,338,685.44</b>	<b>-3,732,048.64</b>	<b>0.00</b>	<b>0.00</b>	<b>-113,515,638.14</b>
<b>Book value 31 Dec.</b>	<b>175,535.71</b>	<b>4,040,769.84</b>	<b>112,774,541.21</b>	<b>2,888,066.24</b>	<b>86,386.67</b>	<b>815,835.80</b>	<b>120,781,135.47</b>

### 3.1. NON-CURRENT ASSETS, ARCTIA LTD

<b>INTANGIBLE ASSETS 2016</b>	<b>Intellectual property rights</b>	<b>Total</b>
Acquisition costs 1 Jan.	505,862.92	505,862.92
Increases	0.00	0.00
Transfers between items	0.00	0.00
<b>Acquisition costs 31 Dec.</b>	<b>505,862.92</b>	<b>505,862.92</b>
Accumulated depreciations 1 Jan.	-239,700.98	-239,700.98
Depreciations for the fiscal period	-69,284.12	-69,284.12
<b>Accumulated depreciations 31 Dec.</b>	<b>-308,985.10</b>	<b>-308,985.10</b>
<b>Book value 31 Dec.</b>	<b>196,877.82</b>	<b>196,877.82</b>

<b>TANGIBLE ASSETS 2016</b>	<b>Land and water areas</b>	<b>Buildings and constructions</b>	<b>Other plants and machinery</b>	<b>Other tangible assets</b>	<b>Advance payments and construction in progress</b>	<b>Total</b>
Acquisition costs 1 Jan.	175,535.71	4,485,673.90	941,183.83	86,386.67	180,734.21	5,869,514.32
Increases	0.00	173,040.67	0.00	0.00	0.00	173,040.67
Decreases	0.00	0.00	-7,500.00	0.00	-180,734.21	-188,234.21
Transfers between items	0.00	0.00	0.00	0.00	0.00	0.00
<b>Acquisition costs 31 Dec.</b>	<b>175,535.71</b>	<b>4,658,714.57</b>	<b>933,683.83</b>	<b>86,386.67</b>	<b>0.00</b>	<b>5,854,320.78</b>
Accumulated depreciations 1 Jan.	0.00	-444,904.06	-375,602.82	0.00	0.00	-820,506.88
Depreciations for the fiscal period	0.00	-207,001.48	-82,209.14	0.00	0.00	-289,210.62
<b>Accumulated depreciations 31 Dec.</b>	<b>0.00</b>	<b>-651,905.54</b>	<b>-457,811.96</b>	<b>0.00</b>	<b>0.00</b>	<b>-1,109,717.50</b>
<b>Book value 31 Dec.</b>	<b>175,535.71</b>	<b>4,006,809.03</b>	<b>475,871.87</b>	<b>86,386.67</b>	<b>0.00</b>	<b>4,744,603.28</b>

<b>INVESTMENTS 2016</b>	<b>Shares in group companies</b>	<b>Total</b>
Acquisition costs 1 Jan.	81,897,048.40	81,897,048.40
Increases	0.00	0.00
Decreases	0.00	0.00
Revaluation (net)	0.00	0.00
Transfers between items	0.00	0.00
<b>Acquisition costs 31 Dec.</b>	<b>81,897,048.40</b>	<b>81,897,048.40</b>
<b>Book value 31 Dec.</b>	<b>81,897,048.40</b>	<b>81,897,048.40</b>

### 3.1. NON-CURRENT ASSETS, ARCTIA LTD

	Intellectual property rights	Total
<b>INTANGIBLE ASSETS 2016</b>		
Acquisition costs 1 Jan.	215,195.75	215,195.75
Increases	290,667.17	290,667.17
Transfers between items	0.00	0.00
<b>Acquisition costs 31 Dec.</b>	<b>505,862.92</b>	<b>505,862.92</b>
Accumulated depreciations 1 Jan.	-179,456.41	-179,456.41
Depreciations for the fiscal period	-60,244.57	-60,244.57
<b>Accumulated depreciations 31 Dec.</b>	<b>-239,700.98</b>	<b>-239,700.98</b>
<b>Book value 31 Dec.</b>	<b>266,161.94</b>	<b>266,161.94</b>

	Land and water areas	Buildings and constructions	Other plants and machinery	Other tangible assets	Advance payments and construction in progress	Total
<b>TANGIBLE ASSETS 2015</b>						
Acquisition costs 1 Jan.	175,535.71	4,485,673.90	927,256.63	86,386.67	93,611.55	5,768,464.46
Increases	0.00	0.00	13,927.20		87,122.66	101,049.86
Transfers between items	0.00	0.00	0.00	0.00	0.00	0.00
<b>Acquisition costs 31 Dec.</b>	<b>175,535.71</b>	<b>4,485,673.90</b>	<b>941,183.83</b>	<b>86,386.67</b>	<b>180,734.21</b>	<b>5,869,514.32</b>
Accumulated depreciations 1 Jan.	0.00	-252,322.66	-281,386.79	0.00	0.00	-533,709.45
Depreciations for the fiscal period	0.00	-192,581.40	-94,216.03	0.00	0.00	-286,797.43
<b>Accumulated depreciations 31 Dec.</b>	<b>0.00</b>	<b>-444,904.06</b>	<b>-375,602.82</b>	<b>0.00</b>	<b>0.00</b>	<b>-820,506.88</b>
<b>Book value 31 Dec.</b>	<b>175,535.71</b>	<b>4,040,769.84</b>	<b>565,581.01</b>	<b>86,386.67</b>	<b>180,734.21</b>	<b>5,049,007.44</b>

	Shares in group companies	Total
<b>INVESTMENTS 2015</b>		
Acquisition costs 1 Jan.	81,889,548.40	81,889,548.40
Increases	7,500.00	7,500.00
Decreases	0.00	0.00
Revaluation (net)	0.00	0.00
Transfers between items	0.00	0.00
<b>Acquisition costs 31 Dec.</b>	<b>81,897,048.40</b>	<b>81,897,048.40</b>
<b>Book value 31 Dec.</b>	<b>81,897,048.40</b>	<b>81,897,048.40</b>

	Appendix	GROUP		PARENT COMPANY	
		2016	2015	2016	2015
<b>3.1.2 GROUP SUBSIDIARIES</b>				Share of ownership	Share of ownership
Arctia Icebreaking Ltd				100%	100%
JM Voima Ltd				100%	100%
Arctia Offshore Ltd				100%	100%
Arctia Karhu Ltd				90%	90%
Arctia Management Services Ltd				100%	100%
Arctia Icebreaking Investment Ltd				100%	100%
Arctia Offshore Investment Ltd				100%	100%
<b>3.1.3 ASSOCIATED COMPANIES</b>					
<b>Ice Advisors Ltd, Helsinki</b>					
Share of ownership		40%	40%		
Equity		67,083.48	70,397.98		
Profit for the fiscal period		-6,338.95	-349.51		
<b>3.2. SHORT-TERM ASSETS</b>					
<b>3.2.1. ASSETS FROM GROUP COMPANIES</b>	8				
Accounts receivable				0.00	2,198.10
Loan receivables				2,500,000.00	0.00
Group account receivables				6,896,632.14	105,624.20
Group contribution assets				5,500,000.00	11,400,000.00
				<b>14,896,632.14</b>	<b>11,507,822.30</b>
<b>3.2.2. RELEVANT ITEMS IN DEFERRED RECEIVABLES</b>	9				
Interest receivables		0.00	4,034,334.00	0.00	4,034,334.00
Tax receivable		119,091.16	21,885.00	0.00	0.00
Personnel expenditure		790,493.93	751,248.99	610,619.38	643,721.99
Other deferred receivables, from expenses		964,515.31	430,136.38	5,668.23	6,865.61
		<b>1,874,100.40</b>	<b>5,237,604.37</b>	<b>616,287.61</b>	<b>4,684,921.60</b>
<b>3.2.3. LIQUID SECURITIES</b>	10				
Book value		18,088,279.39	43,025,103.32	18,088,279.39	43,025,103.32
Market value		18,222,287.00	43,164,914.00	18,222,287.00	43,164,914.00

#### 4. NOTES ON BALANCE SHEET LIABILITIES (EUR)

##### 4.1. EQUITY INCREASE AND DECREASE

###### Restricted equity

Share capital 1 Jan.

Share capital 31 Dec.

###### Unrestricted equity

Reserve for invested unrestricted equity

Reserve for invested unrestricted equity 1 Jan.

Reserve for invested unrestricted equity 31 Dec.

Profit from previous fiscal periods 1 Jan.

Payment of dividends

Adjustment of the profit/loss from previous fiscal periods

Profit from previous fiscal periods 31 Dec.

Profit for fiscal period

Unrestricted equity, total

Equity, total

Distributable assets

##### 4.2. OTHER PROVISIONS

Crane leasing

The group's and subsidiary's expense and decrease in provisions for 2016 was recorded as EUR 293,401.20.

##### 4.3. IMPUTED TAX LIABILITIES AND RECEIVABLES

Imputed tax receivables

For confirmed losses

Imputed tax liabilities

For depreciation differences

In the consolidated financial statements, the depreciation difference has been divided into a part comparable to equity and imputed tax liability.

Appendix  
11

#### GROUP

2016

2015

#### PARENT COMPANY

2016

2015

	2016	2015	2016	2015
Share capital 1 Jan.	18,700,000.00	18,700,000.00	18,700,000.00	18,700,000.00
Share capital 31 Dec.	18,700,000.00	18,700,000.00	18,700,000.00	18,700,000.00
<b>Unrestricted equity</b>				
Reserve for invested unrestricted equity				
Reserve for invested unrestricted equity 1 Jan.	66,780,736.91	66,780,736.91	66,780,736.91	66,780,736.91
Reserve for invested unrestricted equity 31 Dec.	66,780,736.91	66,780,736.91	66,780,736.91	66,780,736.91
Profit from previous fiscal periods 1 Jan.	56,089,940.55	49,349,892.44	29,086,747.24	28,219,200.27
Payment of dividends	-7,480,000.00	-7,891,400.00	-7,480,000.00	-7,891,400.00
Adjustment of the profit/loss from previous fiscal periods	0.00	0.00	0.00	0.00
Profit from previous fiscal periods 31 Dec.	48,609,940.55	41,458,492.44	21,606,747.24	20,327,800.27
Profit for fiscal period	9,139,727.90	14,631,448.11	3,904,163.93	8,758,946.97
Unrestricted equity, total	124,530,405.36	122,870,677.46	92,291,648.08	95,867,484.15
Equity, total	143,230,405.36	141,570,677.46	110,991,648.08	114,567,484.15
Distributable assets	124,530,405.36	122,870,677.46	92,291,648.08	95,867,484.15
Crane leasing	0.00	293,401.20	0.00	0.00
Imputed tax receivables				
For confirmed losses	30,595.54	36,403.71	0.00	0.00
Imputed tax liabilities				
For depreciation differences	7,901,363.78	6,615,363.78	0.00	0.00

		GROUP		PARENT COMPANY	
		2016	2015	2016	2015
<b>4.4. LONG-TERM LIABILITIES</b>	14				
Loans from financial institutions		121,386,159.03	11,250,000.00	110,000,000.00	0.00
		121,386,159.03	11,250,000.00	110,000,000.00	0.00
<b>4.5. SHORT-TERM LIABILITIES</b>	15				
Loans from financial institutions		2,800,000.00	24,825,654.14	2,500,000.00	24,034,334.00
		2,800,000.00	24,825,654.14	2,500,000.00	24,034,334.00
<b>4.5.1. LIABILITIES TO GROUP COMPANIES</b>	16				
Accounts payable				14,163.46	15,902.88
Group account liabilities				30,455,729.16	30,709,853.94
				30,469,892.62	30,725,756.82
<b>4.5.2. RELEVANT ITEMS INCLUDED IN DEFERRED LIABILITIES</b>	17				
Personnel expenditure		5,251,884.77	5,354,584.15	168,741.18	407,487.62
Income tax		81,436.28	794,813.39	80,983.50	789,748.62
Interest liabilities		122,594.88	305,514.52	0.00	303,588.89
Other deferred liabilities		3,483,858.68	0.00	0.00	0.00
		8,939,774.61	6,454,912.06	249,724.68	1,500,825.13

## 5. NOTES ON SECURITIES AND CONTINGENT LIABILITIES

	GROUP		PARENT COMPANY	
	2016	2015	2016	2015
<b>RENT/LEASING AGREEMENTS</b>				
To be paid during subsequent fiscal period				
Leasing agreements	66,625.21	69,622.78	12,470.04	53,229.93
Rent liabilities	302,064.00	302,064.00	0.00	0.00
	<b>368,689.21</b>	<b>371,686.78</b>	<b>12,470.04</b>	<b>53,229.93</b>
Due at a later date				
Leasing agreements	60,907.67	69,955.91	5,784.71	62,710.91
Rent liabilities within 1–5 years	679,644.00	981,708.00	0.00	0.00
	<b>740,551.67</b>	<b>1,051,663.91</b>	<b>5,784.71</b>	<b>62,710.91</b>
The sums are presented with VAT included.				
<b>CONTINGENT LIABILITIES</b>				
<b>GUARANTEES</b>				
For group companies	10,800,000.00	10,800,000.00	10,800,000.00	10,800,000.00
Together with Port of Kemi Ltd, the parent company has issued an absolute joint and several guarantee of EUR 10,800,000.00 to Nordea Pankki Plc for the bank loan taken out by Arctia Karhu Ltd. On 31 December 2016, the loan capital was EUR 11,550,000.				
Issued on behalf of the parent company	0.00	20,000,000.00	0.00	20,000,000.00
The amount of the parent company's loan for which it has issued an absolute guarantee was EUR 20,000,000.00 in 2015.				
<b>OTHER CONTINGENT LIABILITIES</b>				
The group account receivables act as a general guarantee to the bank for all loan balances, interest, penal interest, costs and remunerations on valid group accounts linked to the Group Accounts Agreement, as well as for the bank's debt-collection costs.				
<b>CUSTOMS GUARANTEE</b>	8,400.00	8,400.00	0.00	0.00
<b>INVESTMENT COMMITMENTS</b>				
In the next fiscal period	670,000.00	128,223,700.00	0.00	147,700.00
<b>RESIDUAL VALUE LIABILITIES (INCL. REPURCHASE COMMITMENT)</b>				
In the next fiscal period	0.00	348,489.88	0.00	348,489.88

## 6. DERIVATIVES (EUR)

### OPEN

#### Currency swaps

Value of underlying commodities

Market value of agreements

#### Interest rate swaps

Value of underlying commodities

Market value of agreements

	GROUP		PARENT COMPANY	
	0.00	20,000,000.00	0.00	20,000,000.00
	0.00	3,731,537.00	0.00	3,731,537.00
	10,800,000.00	21,400,000.00	0.00	10,000,000.00
	-120,718.00	-455,343.00	0.00	-232,233.00

The interest rate swaps have been made to hedge a long-term subsidiary loan.

The parent company's currency swap fell due in 2016, at which time the currency hedging agreements also expired.

No items with an impact on profit were realised on the termination of the hedging agreement.

#### Current account facilities

Total amount of the facility

In use

	250,000.00	250,000.00	0.00	0.00
	136,159.03	191,320.14	0.00	0.00

#### VAT refund liabilities

The VAT refund liability on real estates in 2016 totalled EUR 582,704.17 (EUR 679,821.53 in 2015).

## SIGNATURES TO THE FINANCIAL STATEMENTS AND ANNUAL REPORT

Helsinki, 16 February 2017

Christer Granskog  
*Chairman of the Board of Directors*

Tero Vauraste  
*CEO*

Maire Laitinen

Ilpo Nuutinen  
*Vice Chairman*

Antti Pankakoski

Päivi Söderholm

## AUDITORS' REPORT

A report on the audit of accounts has been issued today.

Helsinki, 16 February 2017

Ernst & Young Ltd  
*Authorised Public Accountants*

Mikko Rytilahti  
*Authorised Public Accountant, Chartered Public Finance Auditor*

## LIST OF ACCOUNTING BOOKS, RECORD TYPES AND STORAGE MEDIA

Balance sheet book  
Daybook and general ledger  
Purchase invoices  
Payment receipts  
Sales invoices  
Transaction receipts  
Bank receipts  
Memo receipts  
Payroll accounting receipts  
Intangible asset transactions  
Cash vouchers  
Travel expense receipts  
Notes vouchers

# Auditor's report

## REPORT ON THE AUDIT OF FINANCIAL STATEMENTS

### OPINION

We have audited the financial statements of Arc-tia Oy (business identity code 2302573-7) for the year ended 31 December, 2016. The financial statements comprise the balance sheets, the income statements, cash flow statements and notes for the group as well as for the parent company.

In our opinion, the financial statements give a true and fair view of the group's and the company's financial performance and financial position in accordance with the laws and regulations governing the preparation of financial statements in Finland and comply with statutory requirements.

### OTHER OPINIONS

We support the adoption of the financial statements. The proposal by the Board of Directors regarding the treatment of distributable funds is in compliance with the Limited Liability Companies Act. We support that the Board of Directors of the parent company and the President and CEO be discharged from liability for the financial period audited by us.

## To the Annual General Meeting of Arctia Ltd

### BASIS FOR OPINION

We conducted our audit in accordance with good auditing practice in Finland. Our responsibilities under good auditing practice are further described in the Auditor's Responsibilities for the Audit of Financial Statements section of our report. We are independent of the parent company and of the group companies in accordance with the ethical requirements that are applicable in Finland and are relevant to our audit, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

### RESPONSIBILITIES OF THE BOARD OF DIRECTORS AND THE MANAGING DIRECTOR FOR THE FINANCIAL STATEMENTS

The Board of Directors and the Managing Director are responsible for the preparation of financial statements that give a true and fair view in accordance with the laws and regulations governing the preparation of financial statements in Finland and comply with statutory requirements. The Board of Directors and the Managing Director are also responsible for such internal control as they determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the Board of Directors and the Managing Director are responsible for assessing the parent company's and the group's ability to continue as going concern, disclosing, as applicable, matters relating to going concern and using the going concern basis of accounting. The financial statements are prepared using the going concern basis of accounting unless there is an intention to liquidate the parent company or the group or cease operations, or there is no realistic alternative but to do so.

### AUDITOR'S RESPONSIBILITIES FOR THE AUDIT OF FINANCIAL STATEMENTS

Our objectives are to obtain reasonable assurance on whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with good auditing practice will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

As part of an audit in accordance with good auditing practice, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the parent company's or the group's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of the Board of Directors' and the Managing Director's use of the going concern basis of accounting and based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the parent company's or the group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions

are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the company to cease to continue as a going concern.

- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events so that the financial statements give a true and fair view.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

## OTHER REPORTING REQUIREMENTS

### OTHER INFORMATION

The Board of Directors and the Managing Director are responsible for the other information. The other information comprises information included in the report of the Board of Directors. Our opin-

ion on the financial statements does not cover the other information.

In connection with our audit of the financial statements, our responsibility is to read the information included in the report of the Board of Directors and, in doing so, consider whether the information included in the report of the Board of Directors is materially inconsistent with the financial statements or our knowledge obtained in the audit, or otherwise appears to be materially misstated. Our responsibility also includes considering whether the report of the Board of Directors has been prepared in accordance with the applicable laws and regulations.

In our opinion, the information in the report of the Board of Directors is consistent with the information in the financial statements and the report of the Board of Directors has been prepared in accordance with the applicable laws and regulations requirements.

If, based on the work we have performed, we conclude that there is a material misstatement in the information included in the report of the Board of Directors, we are required to report this fact. We have nothing to report in this regard.

Ernst & Young Ltd  
Authorized Public Accountant Firm

Helsinki, 16/02/2017

Mikko Rytilahti  
Authorized Public Accountant

# Principles of CSR reporting

This corporate social responsibility report included in the annual report has been drawn up in accordance with the applicable guidelines provided in Appendix 3 'Corporate responsibility reporting model for state-owned enterprises' to the Government decision-in-principle (3 November 2011) on state ownership policy. In order to avoid interruptions in reporting, this corporate responsibility report also includes all sections of the Climate Policy Report (ILPO) previously required by the Ministry of Transport and Communications. The contents of the human resources accounts are also discussed in this corporate social responsibility report. The annual report includes and replaces these earlier reports.

Arctia's Communications Manager was responsible for compiling the annual report, and the Chief Financial Officer was responsible for the financial statements and annual report. Arctia's Development Manager was responsible for the compilation and coordination of the sections on corporate social responsibility.

Each part of the Group delivered the monitored indicator data to Arctia's Development Manager, who then compiled and edited the sections of the report. In practice, this means that the ships mostly monitor and report on environmental aspects such as consumption and waste amounts. Annual reports of these figures are delivered to the Development Manager. Aerial emissions are calculated from the fuel consumption of vessels by the technology and maintenance management of the shore organisation.

Financial figures are reported by financial management and are generated in the same process as

the annual report and financial statement information. The HR department constantly monitors the personnel situation and work-related travel. The data in the report represent the situation on a certain day (31 December 2016). The Safety Manager produces the information related to occupational safety and environmental damage. Senior management then supplements the report where required.

The corporate social responsibility report integrated into the annual report is discussed by Arctia's Management Team and Board of Directors. The report is published on Arctia's website.

## PERSONNEL INDICATORS

The reported figures represent the situation on the indicated date (31 December 2016). The total number of personnel also includes part-time employees and fixed-term employees with valid employment contracts on the date in question.

## ACCIDENT FREQUENCY

All accidents resulting in a minimum of one day of inability to work have been included in the number of workplace accidents. The accident frequency was calculated by dividing the above-mentioned number of Lost-Time Injuries (LTI) by the working hours and multiplying the result by one million. A daily working time of eight hours was used in the formula. Accidents sustained by both shore and sea personnel are included in occupational accidents, and the total number of working hours in the organisation was used as the basis of division. The international term for this accident frequency calculation principle is lost-time injury frequency (LTIF).

## CARBON DIOXIDE EMISSIONS

The carbon dioxide emissions of Arctia's vessels have been calculated according to the formula presented in the IMO publication MEPC/Circ.471, 29 July 2005; 'Interim Guidelines for Voluntary Ship CO2 Emission Indexing for Use in Trials.' The carbon dioxide emissions of air traffic have been calculated on the basis of flight kilometres, using the following coefficients:

- less than 950 km 0.15 kg CO2/km
- more than 950 km 0.11 kg CO2/km.

## PARTICULATE EMISSIONS

The particulate emissions of icebreakers were calculated using the emission coefficients presented in VTT's research report (VTT-R-08702-09) Calculation system for Finnish waterway traffic emissions MEERI 2008. However, the research report has defined the engines of icebreakers as slow two-stroke engines [sic] instead of four-stroke engines (p. 11 of the report).

## WASTE AMOUNTS

The vessels monitor waste amounts by volume, whereas the receivers of waste charge by weight. By way of departure from the statutory monitoring of the waste generated by ships (waste and oil logs), waste amounts have been reported by weight in earlier reports. In connection with the development of reporting, Arctia decided to standardise the reporting of waste amounts. In earlier years, the amounts reported by ships had to be converted to weights using coefficients such as those provided in the Waste Tax Act (495/1996).

# Key stakeholders and their expectations

STAKEHOLDER		EXPECTATIONS
<b>OWNER</b>	Government Ownership Steering Department	Investment capacity, meeting qualitative icebreaking targets
<b>DIRECT CUSTOMERS</b>	Finnish Transport Agency / Ministry of Transport and Communications Oil and energy industry operators Offshore construction companies European Maritime Safety Agency (EMSA) Towing and marine rescue customers The Port of Oulu Ice Advisors customers Events customers The Ports of Kemi, Tornio and Luleå Cruise and passenger ship companies Research communities and companies	High-quality services corresponding to service descriptions and agreements, responsible operations, cost-effective pricing
<b>END CUSTOMERS</b>	Finland's export and import trades Industry Shipping companies	Quick, reliable and high-quality service
<b>OWN PERSONNEL</b>	Office personnel Sea personnel	Solvency, long-term and high-quality HR policy
<b>OTHER STAKEHOLDERS</b>	Winter navigation operators Veeteede Amet (EMA) Sjöfartsverket Rosmorport Ministry of Transport of the Russian Federation Finnpilot VTS Regional operators Ports Local authorities	Information flow, cooperation, maintenance of own service level  Understanding of regional operations, cooperation, maintenance of own service level, development

STAKEHOLDER		EXPECTATIONS
<b>TOWING OPERATORS</b>	Port of Kemi	Information flow, cooperation, development
<b>OIL SPILL RESPONSE AND THE ENVIRONMENT</b>	Ministry of the Environment Finnish Environment Institute SYKE Lamor	Information flow, cooperation, development
<b>MARITIME AUTHORITIES, INTERNATIONAL ORGANISATIONS</b>	Finnish Transport Safety Agency IMO IMCA HELCOM EMSA Police of Finland Finnish Border Guard Finnish Shipowners' Association The European Community Shipowners' Associations, ECSA	Responsibility, information flow, cooperation, development
<b>ARCTIC STAKEHOLDERS</b>	Ministry for Foreign Affairs Arctic Council Finnish Meteorological Institute Arctic Economic Council	Solvency, responsibility, information flow, cooperation, development
<b>OTHER STAKEHOLDERS</b>	Journalists, teachers, scientists Dockyards Suppliers and service providers Trade unions and other labour market organisations Maritime colleges Maritime research institutes Classification societies Insurance companies Financiers, banks	Solvency, responsibility, information flow, cooperation, development

# List of requirements for CSR reporting

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