

IB

Otso



Vessel specification



ARCTIA OFFSHORE – POWER AT SEA

Offshore services are needed in demanding operations, for example in oil and gas fields, offshore wind plant construction and polar research expeditions. Arctia's offshore services include, but are not restricted to, ice management, pipe and cable laying, towing, service work for production platforms, and the installation and maintenance of underwater structures. We can also offer various custom-made service solutions in harsh conditions.

Arctia Offshore Ltd. has experience from both the Northern Sea Route and the Northwest Passage, as well as offshore operations in Alaska, Greenland and elsewhere in the Arctic. We always strive to operate in the most economical and fuel-efficient way possible.

The services of Arctia Offshore Ltd. are performed by the company's multipurpose icebreakers, the Fennica and the Nordica, and the converted polar icebreaker Otso. Arctia's ships have operated on the North Sea, Gulf of Mexico, Beaufort Sea and Mediterranean, as well as in the waters off West Africa and Greenland.

We are specialized in Arctic and sub-Arctic regions. Ice management services ensure that ice formations are kept at a safe distance from offshore installations. Securing traffic in the operation area is also an important aspect of the service



MSV OTSO SHORT VESSEL DESCRIPTION

Thanks to its machinery and the design of its hull, the Otso has a lower fuel consumption than older and larger icebreakers. The vessel has four Wärtsilä 16V32 diesel engines with a combined power output of nearly 22 megawatts. Each engine powers a 6,000 V/50 Hz AC generator with a power output of six megawatts. The two rear thrusters are each powered by a dedicated engine, with a shaft power of 2 × 7.5 MW, i.e. 15 megawatts in total.

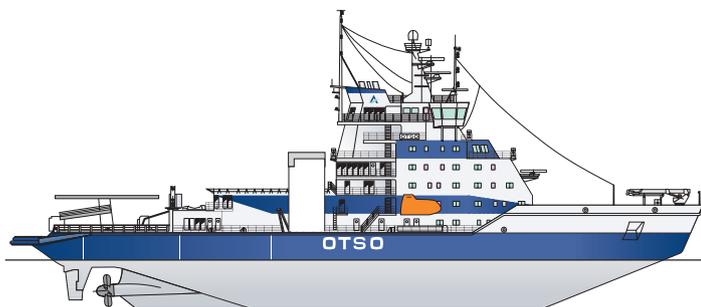
The shiny band at the waterline of the blue-and-white Otso is a belt made of stainless steel plates, which help to reduce the friction between the hull and the ice. The unpainted belt is two metres in height. Active cathode protection at the junction of steel plates of different chemical composition prevents galvanic corrosion.

CONVERSION

Icebreaker Otso was originally designed and classed to operate in the Baltic Sea in first year ice conditions and was not designed to do ocean passages. Using Otso in the Arctic was restricted mainly by open water characteristics and ice class. In 2015, the following modifications were performed to convert Otso to a polar class icebreaker:

- New Flume tank to reduce rolling effect in open water conditions
- Steel work in the hull, ice class upgraded
- New lifeboats installed for worldwide operations standards
- New helicopter deck for client use
- New hospital for worldwide operations standards
- SOLAS and 5 years docking according to the class regulations
- Mezanine deck above the Flume tank was installed
- Recycling station installed on Mezanine deck

After the conversion IB Otso has proven effective in various maritime services in the Arctic. In 2015 and 2016 it worked on the Northeastern coast of Greenland.



VESSEL DETAILS

IMO No	8405880
Call Sign	OIRT
MMSI	230 252 000
Type of Vessel	Ice Breaker
Flag State	Finland
Port of Registry	Helsinki
Owners	Arctia Icebreaking Oy
Built	1985
Lightweight	5958 T
Deadweight	-
Displacement	9222T
Gross tonnage	7189 T
LOA	99 m
LWL	92.27 m
Breadth Moulded	24,2 m
Depth Moulded	11,3 m
Draught (Scantling)	8.0 m
Airdraft	37 m

CLASSIFICATION

Trafi, (Hull PC4, Bureau veritas)

HELIDECK

Helideck 'D' Value	12,2 m / 2,9t
HMS	Vaisala HMS
Weather station	Vaisala AWS 430

CAPACITIES AND CONSUMABLES

Fuel Oil (Dual Fuel)	2068m ³ HFO / DO
Lubricating Oil	41 m ³
Fresh Water	336 m ³
Water Ballast	2390 m ³
F.W. Making Capability	9 T / day

CONSUMABLES, 8.0 M DRAUGHT:

Type of Fuel (Dual Fuel)	HFO / DO
Fuel Consumption,	13 knots abt. 25 T / day
Fuel Consumption,	11 knots abt. 21 T / day
Duration, 13 knots	abt. 80 days
Duration, 11 knots	abt. 98 days

Otso

PROPULSION

Power	4 x Wärtsilä 16 V 32 / 5460 kW
Propeller Type	Fixed
El.Prop Motor	2 x ABB/Strömberg
Rating	Both rated at 7500 kW

BOW THRUSTERS

Number	1
Make	Jastram/ABB
Power	1720 kW
Propeller Type	Fixed, Variable Speed Drive

SWITCHBOARDS

Make	Strömberg
Type	Mete-Marine 6,3kV lth 31,5kA
Transformers	2 x 1500 kVA 6300 / 400 V 50 Hz

ENVIROMENTAL

GENERATORS (MAIN)

Number	4
Make	Strömberg
Rating	7540 kVA / 6.3 kV / 750 rpm

GENERATORS (HARBOUR SET)

Number	1
Make	Wärtsilä
Type	VASA 4R22/26
Rating	560kW/ 750 rpm
Generator	Marelli Motori S.r.l M7BM400 MC.8
Rating	640 kVA / 1400V

GENERATORS (EMERGENCY)

Number	1
Make	M.A.N
Type	D2542 MLE
Rating	330kW / 1500 rpm / 400 v / 50 Hz

BOLLARD PULL

Bollard pull	160t
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ROLL REDUCTION

Passive antirolling tank:	Hoppe Flume 400m ³
Ice-Heeling	1250 m ³

AIR BUBBLING SYSTEM

Reduces friction between hull and ice	
2x compressor total power	1100kW



BRIDGE EQUIPMENT

THE VESSEL'S INTEGRATED NAVIGATION SYSTEM IS EQUIPPED WITH

- Multi-Sensor radar and positioning system
- Type approved Dual ECDIS system

SYSTEM PROVIDES

- Flexible route planning, steering and monitoring
- Continuous calculations of own position and display on ECDIS
- Continuous target tracking by radars and AIS
- Continuous target presentation by ECDIS
- Multi colour radar pictures

EXTERNAL COMMUNICATION SYSTEM

COMPRISING

GMDSS A4 radio station
Iridium (voice)
2 VOIP telephones
Aviation VHF 1 fixed 3 portables

SEARCHLIGHT

The following Xenon remote controlled search lights are provided:
2 x 3000 W (BOW)
2 x 1000 W (BOW)
1 x 3000 W (AFT)

INTERNAL COMMUNICATION SYSTEM

AUTOMATIC TELEPHONE SYSTEM

The telephone system consists of automatic exchange and phone sets. In addition to the land lines there are mobile cellular and ship's satellite communication system connected to the PABX. All cabins fitted with telephones.

Outside telephone lines available for Project / Client
Radio / TV cable network

Radio / TV cable network receives terrestrial radio / TV broadcasts as well as satellite broadcasts, which are further distributed to the ship's cable network and TV sets.

DATA NET (CLIENT)

The Data Network is a cat. 5 10 / 100 TX Ethernet with WiFi in common areas

Communications via Marlink VSAT,
256kbps and 4G GSM in coastal operations

DECK LAYOUT

Air on Deck	5 connecting points, 300 m ³ / h, 7 bar
Air Receiver	1000 l
Sea Water	4 connecting points, 40 m ³ / h, 7 bar
Fresh Water	1 connecting point, 5 m ³ / h, 4 bar

ELECTRICITY ON DECK

Power Outlets 400 V 3-phase (± 10%) / 50 Hz

1 pcs	32A
1 pcs	16A

Power Outlets 230 V 3-phase (± 5%) / 50 Hz

1 pcs	16 A Plug connection
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DECK CRANES

MAIN CRANE

Manufacturer	Bronto
Main hook	5 T / 7,5 m radius
	1,5 T / 20 m radius
	0,5 T / 32 m radius

PILOT CRANE

2 person

WINCHING CAPACITIES

MAIN TOWING WINCH

Rauma-Repola TW 600 H
1000 kN (100 t)
200 m, Y 63 mm

ACCOMMODATION

Total Accommodation 35 persons incl. crew (max 12 client beds)

Day Room / Mess for client:

Day Room	upper deck
Messroom and cafeteria	Upper deck
Laundry Room	2nd deck (+ Laundry stations on different decks)
Gym	2nd Bridge deck
Sauna	2nd deck
Kiosk	Upper deck
Saloon Room	4th Bridge deck
Hospital	2nd Bridge deck

MANNING

Master	1
Chief Officer	1
First Officer	1
Second Officer	2
Chief Engineer	1
1st Engineer	1
2nd engineer	1
Electrical Engineer	1
Electrician	1
Boatswain	1
AB	3
Engine Repairman	1
Motorman	2
Chief Steward	1
1st Cook	1
Catering Assistant	1
Total Marine Crew	20–22 persons depending on projects

LIFE SAVING, FIREALARM AND RESCUE EQUIPMENT

Lifeboats	2 pcs, 35 persons each
Type	Hatecke GSL 5,5C
Dimensions	L 5.61 m / B 2.80 m / draught 1.20 m
Weight including Equipment	2460 kg
Engine	Bukh DV 24 RME (17.7kW)
Liferafts	4 x 25 persons
Type	Viking Life -saving
Fire Alarm system	1 pc Consilium year 2017



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Power at Sea

