

Call for Purchase Proposals No. EMSA/SA/1/2026

Sale of Assets: Sale of Assets: Oil pollution response equipment

Appendix I.B Description of the Assets located in Ravenna, Italy – Lot 2

Type of equipment	Item	No. of items	First delivery	Description	EMSA ID
1.Desmi Tarantula Skimmer	Skimmer frame/weir module	1	15/07/2010	Skimmer frame/weir module with 2 x thrusters, 2 x PDAS DOP 250 pumps and Set of hydraulic hoses	CMPI312201
	Disc and brush module	1	15/07/2010	4 discs / 4 brushes	CMPI311901
	Remote Control	1	15/07/2010	Wireless radio remote control box	CMPI291301
	Control desk	1	15/07/2010	Control panel/hydraulic box adaptor	CMPI111301
	Storage reel in a 10' ISO container	1	15/07/2010	Reel for hose storage including the 50m umbilical cord	CMPI353401
	Spare pump	1	15/07/2010	Desmi PDAS DOP 250	CMPI283203

Type of equipment	Item	No. of items	First delivery	Description	EMSA ID
2. Markleen DHPP 60 Power Pack	Power Pack	1	28/02/2009	DHPP 60 Diesel engine	0753

Type of equipment	Item	No. of items	First delivery	Description	EMSA ID
3. Booms (Desmi Ro-Boom)	Segment	2	17/07/2007	Desmi. Heavy duty, total 250 mt, section 4.5mt	0860,0861
	Towing lines set	2	17/07/2007	Desmi. Towing set	0862,0863
	Power pack	1	17/07/2007	Desmi. Diesel	0864
	Air blower	1	17/07/2007	Remote control stand & blower	0866
	Storage reel	2	17/07/2007	10' iso flat cont. reel	0867,0868
	Storage container	1	17/07/2007	10' storage container	0869
	Towing bridle	set	12/11/2021	Tow bars, typhoon wires, cross bars, steel shackles	-

Type of equipment	Item	No. of items	First delivery	Description	EMSA ID
4. HC Skimmer (Normar 200 Ti)	Frame	1	12/06/2008	Norene. High capacity, 2 thrusters	0871
	Brush module	1	12/06/2008	Norene. Brush cassette	0872
	Weir module	1	12/06/2008	Norene. Weir cassette	0873
	Pump	2	12/06/2008	Pdas	0874,0875
	Power pack	1	12/06/2008	hyd. pressure 210 bar, oil flow 260 l/m, diesel engine	0877
	Storage reel	1	12/06/2008	hydraulic driven reel with 360 degrees turntable and integrated crane 6 tons at 5 m	0878
	Control desk	1	12/06/2008	Remote and local control by cable	0879
	Umbilical hoses	set	12/06/2008	Including hydraulic and oil hoses 50 meters	0880,0881

Type of equipment	Item	No. of items	First delivery	Description	EMSA ID
5. Communications (2VHFs)	VHF transceiver	2	17/07/2007	VHF aeronautical band; two-way transceiver	0905,0906

Type of equipment	Item	No. of items	First delivery	Description	EMSA ID
6. Cleaning (Cleaning machines)	Cleaning machines	3	2015	High pressure cleaning machines	0908,0909,0910

Equipment description

1. Desmi Tarantula Skimmer

Manufacturer:

RO-CLEAN DESMI A/S
Hestehaven 21 B
DK-5260 Odense S
Phone: +45 6591 0201
Fax: +45 6590 8877
e-mail: roclean-desmi@desmi.com

Purchase year: 2010

The DESMI-TARANTULA combination skimmer system is the new generation of DESMI's vertical Archimedes' screw skimmers.

The DESMI-TARANTULA combination skimmer is a high-capacity light-weight ocean skimmer which skims 250 m³/h with up to 200 mm automatic weir lip adjustment. It works efficiently in waves heights up to 3 metres.

The skimmer combination skimmer system consists of a WEIR skimmer, a BRUSH DRUM skimmer and a DISC skimmer which means that the skimmer is very efficiency in all kinds of oil spills. It is very easy to change between the different type of skimmers. The use of only a few parts makes it a simple skimmer, easy to assemble and easy to maintain, resulting in low weight and high buoyancy/seaworthiness.

Using two DESMI modified positive displacement Archimedes' screw pumps in vertical design, type DOP-250, the DESMI-TARANTULA combination skimmer is able to efficiently recover light as well as heavy oil, also when mixed with debris normally found in connection with oil spills. The skimmer is fitted with a flotation system to provide the necessary buoyancy.

Hydraulic power to the skimmer pumps is supplied through hydraulic hoses connected to the power supply or remote-control box. A discharge hose connects the skimmer to the storage tank. The hoses will not affect the buoyancy of the skimmer as they are equipped with their own floats.

The DESMI-TARANTULA skimmer is designed as an advancing skimmer to operate in conjunction with a floating containment boom. The DESMI-TARANTULA skimmer is provided with two thrusters to secure the best recovery position in the floating containment boom. The thrusters are hydraulically driven and controlled from the remote-control box.



Tarantula Skimmer. Weir module

The skimmer set consists of:

- Skimmer frame weir module with 2 thrusters, 2 pumps and set of hydraulic hoses
- Disc and brush modules
- Remote control
- Control desk
- Storage reel in a 10' ISO container

1.1 Skimmer frame/weir module with thrusters, pumps and set of hydraulic hoses

Specification:

Dimensions:

Length	2450 mm
Width	2450 mm
Height	1550 mm

Draft: 950 mm

Weight (dry): 520 kg incl. thrusters
490 Kg excl. Thrusters

Skimmer pump: 2 pcs. DOP-250 DUAL vertical positive displacement Archimedes' screw type. (100 m3)

Max. recovery rate: 250 m³/h at 1 bar

Max. pressure: 10 bar

Hydraulic connections
Quick coupling 1" TEMA
Quick coupling 1½" TEMA
Quick coupling 3/8" TEMA
Quick coupling 3/8" TEMA

Hydraulic Thrusters

Power output thrusters	2x800 N (2X 80 kgf)
Propeller pipe housing	Seawater resistant aluminium
Dimensions (LxW)	240x440 mm approx.
Propeller housing diameter	243 mm
Housing flange material	Bronze
Bolts and nuts	Stainless steel
Propeller diameter	184 mm
Propeller speed	0-3000 rpm.
Zinc anodes	2 pcs each thruster
Weight	17 kg/each approx
Thrusters hydraulic motor	Hydromatik or equivalent
Lubricating system	Oil sump in gear box
Hydraulic hose connections	2x 1/2" pressure and return, 1x3/8" drain

Pumps DESMI DOP-250 Dual

The DESMI TARANTULA skimmer incorporates two DESMI DOP-250 pumps which deliver a maximum capacity of 200 m³/h and can develop discharge pressures up to 10 bar while maintaining nearly maximum flow.

Specification:

Length:	720 mm
Width:	390 mm
Height:	670 mm
Weight:	78 kg
Max. pressure:	10 bar
Max. capacity:	100 m ³ /h
Viscosity range:	1 to > 1 million cSt

Material

Screw:	Double-curved Archimedes' screw in cast stainless steel (Ni-Resist), machined in a 5-axis CNC centre.
Casing:	Casing in seawater resistant aluminium, cast iron, or stainless steel. Standard is aluminium. Replaceable polyethylene sealing ring.

Hydraulic system

Prime mover:	Danfoss hydraulic motor, type OMTS 160
Max. speed:	800 rpm continuously
Max. input power:	47 kW continuously
Max. output power:	38 kW continuously
Max. oil flow:	160 l/min. continuously
Max. inlet pressure:	210 bar continuously

Hydraulic connections

Pressure line: 3/4" - 1" quick coupling male

Return line: 3/4" - 1" quick coupling male

Drain line: 3/8" quick coupling male



DESMI DOP 250 PDAS Pump

Set of Hydraulic hoses set

It should be noted that the hydraulic hoses are old and show signs of wear and tear, and they may need to be replaced.

1.2 Disc and brush modules**Specification:****Disc Skimmer Head**

No. of disc banks: 4 banks

No. of discs per bank: 15

Disc size: 495 mm dia. x 5 mm thick

Disc bank assembly: "Easy-drop-in-module" construction

Disc material: POM AH ELS (Anti-static)

Scrapers: Replaceable stainless-steel blades

Brush Drum Skimmer Head

No. of brush drums: 4 drums

No. of disc sprockets per drum: 8

Drum diameter 500mm

Brush drum: Easy “drop in module” construction

Disc material: Aluminium AlMg3

Comb: Stainless steel/nitrile rubber

Disc/Brush drive:

Independent hydraulic drive to each bank, using 200cc

hydraulic motors on a ring supply.

Hydraulic demand: Brush drive: Max. 20 litres, min. 100 bar. (50 rpm)

Disc drive: Max. 20 litres, min. 100 bar. (100 rpm)

Main frame: Robust marine grade aluminium structure to fit the Tarantula skimmer head, drive motors and disc/brush banks support.

Weight: With disc banks: 280 kg, and with brush drums: 260 kg.

Dimensions: L x W x H: 2100 x 2100 x 800 mm approx. (without skimmer floats)

Hydraulic hoses: Hydraulic hoses P/R:(2 x 1/2”) and drain 1 x 3/8”.



Brush Drum/ Disc Skimmer Head

1.3 Remote Control for the skimmer / thrusters

Manufacturer:

Cavotec Micro-control as

Boks 284 - Tangen - NO-7501

Stjørdal - Norway

Tel: +47 74 83 98 60

Fax: +47 74 83 01 50

E-mail: microcontrol@cavotec.com.

Purchase year:

2010

The DESMI TARANTULA skimmer system is designed for deployment from a vessel into an area where oil has been contained. The skimmer system is fitted with two hydraulic thrusters, allowing the operator to manoeuvre the system to where oil is most heavily concentrated. The remote-control system is included in the skimmer set.



Radio Remote Control

1.4 Control desk

The control stand is developed for operation of:

- DESMI Terminator skimmer with thrusters and DBD140 module
- Hose reels
- Boom winders (if applicable)
- Water injection pump (if applicable)
- Air compressor (if applicable)

The control stand is operated with the Cavotec MC3000 remote control systems and connected to the hydraulic power supply through the hydraulic quick connectors
Pressure 1 1/4" Female / Return 1 1/2" Male / Drain 3/8" Male and Load sense 3/8" Female.

Specification:

Dimensions: Length: 0.8 m

Width: 0.8 m

Height: 1.20 m

Control valve: 2 x Danfoss PVG 32 proportional valve

Max. hydr. flow: 320 l/min.

Max. hydr. pressure: 210 bar

Relief valve setting: 240 bars

Hydr. connections: Tema stainless steel couplings

Power supply: Constant flow – 320 l/min.

Inlet (pressure): 1 1/4" female

Return: 1 1/2" male

Drain: 3/8" male

Load sense 3/8" Female

Skimmer connections:

Skimmer pump 1: 0-160l/min - 1" male/female 3/8" Female Drain

Skimmer pump 2: 0-160l/min - 1" male/female 3/8" Female Drain

Thruster 1: 0-25l/min - 1/2" male/female

Thruster 2: 0-25l/min - 1/2" male/female

Disc/brush drive: 0-5 l/min - 1/2" male/female

Water injection pump: 0-25l/min - 1/2" male/female

Hose reel 1: 0-25l/min - 1/2" male/female

Air compressor: 0-50l/min - 1/2" male/female

Boom winder 1: 0-35l/min - 1/2" male/female

Boom winder 2: 0-35l/min - 1/2" male/female



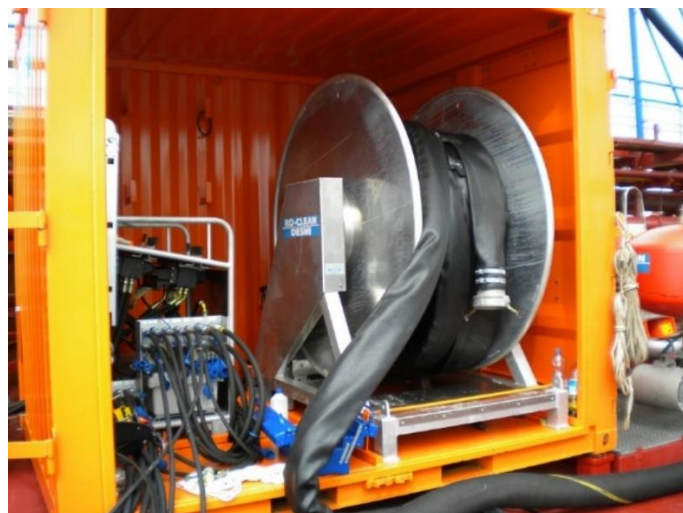
Control desk

1.5 Storage reel for umbilical hydraulic/oil hose in a 10' ISO container

The RO-CLEAN DESMI Reel is designed to store the umbilical hose of the TARANTULA Skimmer. The reel is sea water resistant aluminium. The frame is equipped with 4-point lifting points and forklift channels. The reel is split in two parts, one for the hydraulic hoses and other for the oil hoses.

Specifications:

Length	1800 mm
Diameter of the reel	1700 mm
Height	1869 mm
Width	1195 mm
Weight	647,4 kg
Length	50m



Reel with the umbilical hose and 10' container

2 Markleen DHPP60 Power Pack

Manufacturer:

MARKLEEN TERRA, S.L.U.

Polígono Río Gállego, calle E, 22

50840 San Mateo de Gállego

Zaragoza (Spain)

Tel. +34 976 683 000

Fax +34 976 683 001

e-mail: markleen@markleen.com

Purchase year: 2009

The Markleen Hydraulic Power Pack is a unit for marine applications. It is ideal for running equipment such as boom reels, skimmers and pumps. The Power pack is a compact and robust unit provided with forklift tunnels and lifting points and protected with marine grade paints to resist corrosion.

This unit is driven by a diesel engine which moves a hydraulic gear pump. The pump will be coupled to the motor using an integral close coupled configuration, delivering variable flow. This hydraulic power unit consists of two vertical reservoirs (hydraulic oil and fuel). The hydraulic tank incorporates sump drain, oil level gauge, filler/breather assembly and return connections.

The fuel tank incorporates drain and fuel level indicator. It is provided with an ergonomic control panel that makes possible the operator controls the principal operational parameters from the engine.



Power pack

The Power pack is provided with an ergonomic control panel that makes possible the operator controls the principal operational parameters from the engine.

Model	DHPP 60 EX ZONE II
Construction	Frame: Steel protected with marine grade paints Tanks: Stainless Steel AISI 304 Bodywork: Stainless Steel AISI 304
Engine	JCB PP 854 Ex-Proof
Start	Manual
Max. rated power	63 kW to 2200 rpm
Hydraulic Pump	Variable displacement pump
Heat exchanger	Air/Oil
Máx. hidráulic oil flow [l/min]	150
Max. hydraulic output [bar]	225
Number of hydraulic circuits	1
Fuel tank [litres]	95
Hydraulic oil tank [litres]	265
Hydraulic quick couplings (*)	Pressure: Male quick coupling 1" Return: Female quick coupling 1" Drain: Female quick coupling 3/8"
Controls	Start/ Emergency Stop lever Stop Accelerator Hydraulic ball valve for start and decompression
Gauges	Engine control box: Oil pressure, water temperature, exhaust temperature and tachometer Manometer Hydraulic oil level and oil temperature Fuel level
Handling and transport	4 hoisting points Forklift tunnels
Measurements (L x W x H) (mm)	2010 x 1160 x 1673
Weight (empty tanks / full tanks)	1500 / 1810

3 Boom set

3.1 Desmi Ro-Boom 2000, 250 meters

Manufacturer:

Ro-Clean Desmi A/S

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DK-5260 Odense S

Denmark

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Email: info@ro-cleandesmi.com.

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Desmi Ro-boom 2000

Description

The Ro-boom 2000 oil containment boom is a heavy-duty boom. It is moulded in a composite of Du Pont Hypalon and neoprene rubber and reinforced with two plies of polyester fabric. The unique construction ensures complete cross vulcanization of the composite materials resulting in a product with high abrasion resistance, peel resistance and tensile strength. The Ro-boom 2000 lies completely flat when deflated allowing easy cleaning, storage, recovery and maintenance. Individual air chambers provide high integrity. Even if one air chamber is deflated the freeboard is maintained by the adjacent air chambers. The Ro-boom 2000 is fitted with stainless steel fittings and hot galvanized ballast/tension chain, secured with reinforced chain attachment points. Internal fibre glass rods with stainless steel brackets ensure optimum skirt profile under tow.

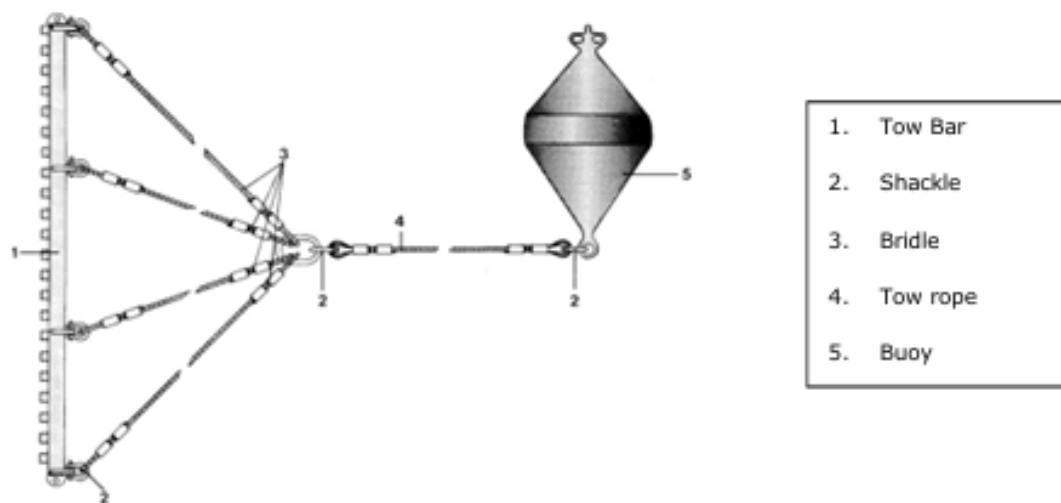
The space required on deck to deploy the boom will be minimum 6 meters. In addition, rollers and guides will be needed for the safe deployment of the boom.

The Ro-boom withstands the effects of the sun, sea and oil, while attachments, such as eyelets and brackets, are made from stainless steel.

Technical specifications (Desmi Ro-boom 2000)	
Boom length:	2 x 250 meters
Purchased:	2007
Freeboard:	0.6 m
Draught:	1.1 m
Length of air chamber:	4.5 m
Section length:	50 m
Weight per metre incl. chain:	13.5 kg
Tensile strength chain:	200 kN
Buoyancy to weight ratio	20:1
Ballast chain:	13 mm
Operational temperature:	-40°C to 60°C
Efficient in waves up to:	4 m
Stable in current up to:	3 knots
Standard connector:	Stainless steel hinge
Maximum in-line towing speed:	10 knots

3.2 Towing set

The Ro-Boom 2000 is provided with two sets of towing lines.



Towing set

Tow Bar

The hinge type tow bar is manufactured from heavy, threaded pipe, sealed at both ends by means of end covers with eyelets for mounting of chain, handling, etc. Tube stubs are mounted along one side of the bar, matching the hinge connectors of the boom. On the other side of the bar, heavy eyelets are welded to connect the bridle. The bar is hot dip galvanized.

Bridle

The bridle, consisting of polypropylene prongs with thimbles, is assembled with a ring at one end.

Tow Rope

The tow rope is a polypropylene rope with spliced eyelets in one end and thimble in the other. The eyelet with the thimble has a class 1 shackle and is shackled to the oval ring of the bridle. The opposite end is shackled to a buoy by means of a shackle.

Towing set components	Quantity
Bridle with oval ring - 4 pr. Ø14 x (5000 & 5097)	2
Buoy - 60 litres - Ø450 x 720 mm	2
Tow rope - Ø32 mm x 70 m	2
Shackle - 7/8" class 1 - 6.5 T	4
Tow bar - 170 x 115 x 2000 mm	2
Shackle - 5/8" class 1 – 3.25 T	8
Wire with slip hook - Ø10 mm x 10 m	1
Shackle - ½" type D - 0.5 T	1

3.3 Desmi power pack 58Kw

Manufacturer:

Ro-Clean Desmi A/S

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Denmark

Phone: +45 6591 0201

Fax: +45 6590 8877

Email: info@ro-cleandesmi.com

Website: www.desmi.com/ro-cleandesmi.

Description

The Ro-Clean Desmi power pack, type DSPP 58 kW, is a versatile power unit, designed to operate in areas where hazardous atmospheres may occasionally occur. It is fitted with the necessary safety equipment to meet the safety standard Lloyd's Register Open Deck Zone II Areas, and it is designed with ease of operation and maintenance in mind.

The hydraulic control valve and the high-capacity air-blower are built into a moveable remote-control stand. The hydraulic proportional control valve has three independent hydraulic circuits, each controlled by a load-sensing proportional valve, for operating two Desmi boom winders units and the built-in air blower.

Technical Specifications (Desmi DPSS 58 kW power pack)	
Frame Power Pack:	Painted steel frame with ISO corners
Length:	2015 mm
Width:	1115 mm
Height:	1800 mm
Weight:	Approx. 1310 kg (empty tanks)
	Approx. 1500 kg (full tanks)
Power input:	Water-cooled, naturally aspirated 4 cylinder, 4-stroke diesel engine.
Make:	Power Torque, type: PP 804 GP Zone II, flame protected. Fitted with the necessary safety equipment to meet safety standard for Lloyd's Open Deck Zone II T3 area.
Performance:	58 kW at 2200 rpm according to DIN 6270
Starting equipment:	Spring starter Make: Startwell
Automatic stop:	- Automatic stop in case of low lube oil pressure
	- Automatic stop in case of high coolant water temp.
	- Automatic stop in case of high exhaust temperature
	- Automatic stop in case of engine over-speed.
Instrumentation:	Hydraulic pump pressure gauge
	Tachometer
	Hour meter
	Engine lube oil pressure gauge
	Engine coolant temperature gauge
	Exhaust gauge
Power output:	Pressure-flow compensated hydraulic axial piston pump Make: Sauer Danfoss GRR 090 C
Hydraulic control valve:	Load sensing proportional valve Make: Sauer Danfoss PVG32 four sections

Max. continuous pressure:	210 bar
Flow range:	0-200 l/min
Hydraulic hose connections:	Stainless steel TEMA quick couplings: 2 x 3/4", 2 x 1/2" and one 3"/8" case drain

3.4 Air blower and remote-control stand

Description

The Desmi remote control stand with built-in air-blower is a movable unit designed for inflation/deflation of oil booms and operation of boom winders in areas where hazardous atmospheres may occasionally occur.

The remote-control stand is connected to the power supply by means of a hose set (included in the equipment) with TEMA quick couplings. The remote-control stand should be placed in such a way that the best possible control of the operation is obtained.



Desmi air blower

Technical specifications	
Length:	750 mm
Width:	600 mm
Height:	1125 mm
Weight:	95 kg
Hydraulically driven air blower:	Elektor HRD2
Max. air flow:	27 m ³ /h
Max air pressure:	0.086 bar
Max rpm allowed:	5800 rpm
Couplings:	2 x 4" Perrot
Hydraulic control valves:	Danfoss PVG 32 proportional valve
Max. hydr. flow:	100 l/min.
Max. hydr. pressure:	210 bar
Relief valve setting:	240 bar
Hydr. connections:	TEMA type quick couplings

3.5 Storage reel

The Ro-boom 2000 is delivered on two winders. The winder frame is used for storage, transportation and handling of the Ro-boom. The standard winder frame is manufactured from specially designed steel and standard profiles.

Two frames with bearing housings for a shaft are mounted on the bottom frame. A drum with end flanges is mounted on the shaft and on one end of the shaft a sprocket wheel is mounted between the drum and the bearing housing.

To rotate the drum a gearbox, with hydraulic motor, is mounted on a bracket plate on the bottom frame. The rotating power to the drum is transferred by a roller chain. On hand cranked winders the gear box with crank is placed on the side of the bearing frame.

In order to secure the boom to the drum before winding, the drum is on each side equipped with two eyes to which the two reeling wires are shackled.

The bottom of the winder frame is equipped with two ISO forklift channels and in the corners, there are four lifting brackets for strops for lifting by crane. The corners have ISO corner fittings suitable for fixing to the flat rack by ISO twist locks.

Lashing points are provided on the bearing frames by transverse pipes situated under the bearing base plate.

Each winder is delivered with a canvas, which is mounted with rubber strops provided with steel hooks.

The 10' storage container comes equipped with twist locks for transportation, lifting hooks and forklift channels.

Dimensions	
Length:	2991 mm
Width:	2438 mm
Height:	2591 mm

4 HC Skimmer (Normar 200 Ti) with two thrusters

Manufacturer:

AllMaritim AS

Fagernes 4

5043 Bergen

Norway

Normar 200Ti skimmer with two thrusters

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Website: www.allmaritim.com.



NorMar 200Ti system

Description

The NorMar oil recovery and transfer system consists of two interchangeable skimmer heads: a weir skimmer and a high viscosity soft shovel skimmer cassette. The skimmer head is connected to the outer end of the floating umbilical. A dedicated power pack provides the necessary hydraulic supply. The system is a complete integrated unit with a built-in crane arm. The materials are coated mild steel for the structure, seawater resistant aluminium for the skimmer frame and stainless steel for the hydraulic fittings. The system is all hydraulically operated and therefore suited for deck operation during an oil

spill. Using two Desmi modified positive displacement Archimedes screw (PDAS) pumps in vertical design, type DOP-250 DUAL, the skimmer is able to efficiently recover light as well as heavy oil, also when mixed with debris normally found in oil spills. The NorMar skimmer and hose handling system is designed to recover oil and oil emulsions with Page 27 of 44 medium to high viscosity from the sea surface under calm to rough weather conditions. The skimmer has two thrusters to secure the best recovery position in the floating containment boom. The thrusters are hydraulically driven and controlled from the remote-control box. The NorMar double barrel free floating transfer hose is designed so that the hydraulic lines inside the transfer hose can easily be inspected or replaced without disturbing the floating transfer hose. The NorMar skimmer system is operated from an operator's platform located at the side of the unit. Each function is controlled by its own proportional valve. In addition to the manual operated proportional valves, the system is also remotely operated via an explosion proof remote control. The NorMar skimmer is operational under the following weather conditions:

Wind:	15 m/sec
Waves:	up to 4 m
Max towing speed:	4 knots
Temperature air °C:	-40°C to + 50°C
Temperature sea °C:	-2°C to + 40°C

4.1 Skimmer modules: weir and brush

Weir skimmer

Skimmer modules: weir and brush The NorMar weir skimmer is built into a protective frame made from seawater resistant aluminium, ensuring safe operation and low weight. The skimmer frame is equipped with two thrusters 15 hp each. The weir is built with a self-adjusting floating ring. The external skimmer floats can easily be removed for storage, or for hook up of the heavy oil shovel brush cassette. Two Desmi pumps are included in the weir skimmer module see 4.2)

Technical specifications	
Length:	2000 mm
Width:	2000 mm
Height:	1500 mm
Weight:	350 kg



Weir skimmer head

Brush skimmer

The NorMar brush/disc skimmer is designed to recover oil with viscosities ranging from light to heavy oil. The cassette is equipped with four Archimedes screw soft shovels on all sides giving heavy oil

recovery capacities up to 200 m³/h. The skimmer is not sensitive to floating debris due to the inlet guard mounted in front of the soft shovel segments.

The skimmer is designed to be operational in 4-meter waves.

The main body comprises:

- Aluminium frame
- Transfer pumps (the brush skimmer head is placed on the same frame as the weir skimmer fitted with the two Desmi pumps, (See 4.2)
- Oil sump
- 4" flange coupling for connection to transfer hose
- 4 floats – as an integrated part of the skimmer body
- 4 soft shovel units, each with a max. capacity of 50 m³/h

Technical specifications	
Length:	1914 mm
Width:	1914 mm
Height:	1006 mm
Weight:	280 kg

4.2 Desmi DOP-250 dual PDAS pump



Brush skimmer head

Manufacturer:

Ro-Clean Desmi A/S

Hestehaven 21 B

DK-5260 Odense S

Denmark

Phone: +45 6591 0201

Fax: +45 6590 8877

Email: info@ro-cleandesmi.com.

Website: www.desmi.com/ro-cleandesmi.



Desmi DOP-250 dual PDAS pump

Description

The NorMar skimmer incorporates two Desmi DOP-250 pumps which deliver a maximum capacity of 200 m³/h and can develop discharge pressures up to 10 bar while maintaining nearly maximum flow. Two of these pumps are installed in the common weir/brush skimmer frame.

The Desmi DOP-250 DUAL is in its basic design a modified Archimedes' screw pump. Inside the Desmi DOP-250 DUAL pump the pressure is built up between the screw and the engaging plate wheel. In order to withstand this pressure and the wear caused by abrasive media, the plate wheel is specially designed: a high-tensile steel core carries easily replaceable sectional discs of polyethylene.

Each pump is fitted with a cutting knife that will handle many types of trash found in oil spills.

Technical specifications	
Length:	720 mm
Width:	390 mm
Height:	670 mm
Weight:	78 kg
Max. pressure:	10 bar
Max. capacity:	100 m³/h
Viscosity range:	1 to > 1 million cSt

Material specifications	
Screw:	Double-curved Archimedes' screw in cast stainless steel (Ni-Resist), machined in a 5-axis CNC centre.
Casing:	Casing in seawater resistant aluminium, cast iron, or stainless steel. Standard is aluminium. Replaceable polyethylene sealing ring.
Hydraulic system	
Priem mover:	Danfoss hydraulic motor, type OMTS 160
Max. Speed:	800 rpm continuously
Max. input power:	47 kW continuously
Max. output power:	38kw continuously
Max. oil flow:	160 l/min. continuously
Max. inlet pressure:	210 bar continuously
Hydraulic connections	
Pressure line:	3/4" - 1" quick coupling male
Return line:	3/4" - 1" quick coupling male
Drain line	3/8" quick coupling male

4.3 Diesel hydraulic power pack 11 kW

The power pack is mounted on the lower foundation of the storage and handling system. The base frame, the tank and the panel are all made from seawater resistant aluminium.



Diesel-hydraulic power pack

Technical specifications	
Diesel Engine	Perkins 4 cylinder in-line, or equal. Radiator cooled
Rating:	110 kW at 2400 rpm
Operational area:	Zone II
Length:	2250 mm
Width:	1020 mm
Height:	1420 mm
Weight:	1250 kg (full tanks)
Starting:	Hydraulic starter with accumulator
Exhaust:	Combined silencer/ Spark catcher
Hydraulic pump:	Variable axial piston pump – constant pressure
Hydraulic working pressure:	210 bar

Adjustable pressure:	0-600 bar
Oil flow:	260 l/min
Hydraulic cooler:	Radiator type
Controllers:	Instruments and controllers for both the diesel engine and the hydraulic system are assembled on a common panel
Safety control system	Overload protection by pressure relief valve. Emergency shutdown: - Low hydraulic oil level - High hydraulic oil temperature - High engine temperature - Low lubricating oil temperature - Over-speed
Hydraulic oil tank:	200 litres with sight glass and return filter
Fuel tank:	Built in tank for 6-hour operation. Quick coupling for connection of external fuel supply.

4.4 Hydraulic driven reel 360° turntable and integrated crane

The hose reel is designed for storage of 50 meters of Noren 5" floating hose. The reel is hydraulically driven for launching and retrieval of the floating hose and skimmer unit. The hose reel is built together with a crane arm (A-frame) to allow handling and deployment of the skimmer heads over the side of a ship or other barriers.

The crane arm is equipped with an automatic spooling device. The hose reel and crane arm is mounted on a common foundation allowing for 360° rotation. The system is mounted on a common foundation with 20 ft. container footprint with twist locks in each corner.

The crane is an integrated part of the hose handling reel, has a capacity of 6 tons and an outreach of 5.5 meters. All hydraulic connections are done via swivel arrangement at the base of the turntable as an integrated part of the unit.



NorMar reel

Technical specifications (NorMar TI hose handling system)	
Length:	6058 mm
Width:	2480 mm (2965 mm incl. operator platform)
Height:	2768 mm in stored position (3878 in operation)
Weight:	8000 kg (including crane arm and floating hose)

4.5 Remote and local control

Manufacturer:

Remote and local control

Cavotec Micro-control AS

Gevinglia 112

NO-7517, Hell, Norway

Phone: +47 74 83 98 60

Fax: +47 74 83 01 50

Email: microcontrol@cavotec.com.

Website: www.cavotec.com.



Cavotec remote control

Description

The MC-3-series system mainly consists of the following parts:

- Terminal
- Carrying belt/strap
- Rechargeable batteries

- Base unit
- Antenna

All the skimmer's hydraulic functions are remotely operated by radio. 20 meters cable also connects the terminal to the base unit.

Technical specifications	
Control unit:	MC-3000-Ex
Operational area:	Zone II
Frequency range:	418-474 MHz
Max. operating distance:	200 m
Transmitter weight:	2.2 kg
Transmitter size:	305 x 200 x 190 mm
Control valves:	Danfoss PVG 120-32/9, 24 V 4 – 20 mA
Power supply:	220 V, 50/60 hz

4.6 Umbilical hose

The NorMar floating umbilical is made as a double barrel umbilical, where replaceable hydraulic lines are in one barrel, and the recovered oil is pumped through the other barrel. A water injection flange is mounted close to the connection between the skimmer head pump flange and the floating umbilical flange for lubrication and friction reduction in the transfer hose during recovery of heavy oils.



Floating umbilical

Complete floating hose components:

Oil hose:

Ø 5" x 2 x 50-meter Bunkerflex ST cargo hose with 2 x ND 125 NP 16 flanges and termination plates for service hoses

Hydraulic hoses:

Ø 3/4" x 50 m hydraulic pressure hose

Ø 1" x 50 m hydraulic return hose

4 x Ø 1/2" x 50 m hydraulic hose for operation of 2 thrusters

Ø 1/2" x 50 m multipurpose hydraulic hose, to be used depending on the equipment configuration.

All hydraulic hoses are industry standard. All hydraulic couplings and fittings are in AISI 316 stainless steel.

Technical specifications (Noren floating hose)	
Length:	50000 mm
Height:	200 mm
Width:	350 mm
Weight:	26 kg/m
Min. bending radius:	620 mm
Outer layer (skin):	Neoprene 483
Nominal pull strength:	3300 kp
Max. pull strength:	6500 kp
Pressure class:	Working pressure 17 bar Burst pressure 52 bar

5 Communications (2VHFs)

Manufacturer:

Jotron AS

P.O.Box 54

3281 Tjodalyng

Norway

Phone: +47 33 13 97 00

Fax: +47 33 12 67 80

Website: www.jotron.com.

Email: sales@jotron.com.



Jotron Tron Air

Description

The portable VHF air band Jotron Tron Air is a battery operated 200 mW carrier AM transceiver for the VHF air band (118-137 MHz) covering the two frequencies 121.5 MHz and 123.1 MHz. The unit is specially designed and manufactured as emergency two-way transceiver. The Tron Air comes with a housing made of rough glass and meets the requirements encountered under severe maritime conditions. The equipment is designed to comply with MED 96/98/EC for Maritime VHF distress radio equipment operating on aeronautical frequencies. The Tron Air is waterproof to a depth of 1 meter for 5 minutes. When the battery pack X-98806 is used, the Tron Air also floats in case of accidental drop into water. The Tron Air is designed to withstand a drop from 1 meter onto a hard surface and is also resistant to seawater, oil and sunlight.

Technical Specifications	
Frequency channels	121.5 MHz and 123.1 MHz
Frequency stability:	+20 ppm
Modulation:	A3, 300 - 3000 Hz
SW version	1.10
Receiver	
Sensitivity:	SINAD better than 12 dB for an input signal of 2µV pd (-101 dBm), 30%, 1kHz modulation, according to CCITT
IF selectivity:	-3 dB at +/- 7,5 kHz -70 dB at +/- 25 kHz
IF:	21.4 MHz and 455 kHz
AGC:	<3 dB audio variation for input signal levels between -101 dBm and -20dBm
Intermodulation:	Two interfering signals of equal amplitude and at least 60 dB more than a desired signal giving 10 dB sinad and at a distance of 100 kHz from the operating frequency will not generate 3rd order intermodulation products, at the receiver output, larger than the desired signal
Radiated spurious components	<0.25 Nw
Squelch:	Noise squelch, center frequency 18.75 kHz +/-6.5 kHz. Adjustable and hysteresis less than 3 dB. Opening/closing < 50ms
S/N ratio:	>35 dB, 100µV, 1 kHz, 70% modulation depth
Audio response:	-3 to +1 dB rel to 1 kHz, 300-3000 Hz. -10dB at 100 Hz and -35 dB at 5 kHz
Audio outputs	Loudspeaker: Min. 200 Mw
Distortion:	Less than 10% with 70% modulation, 1mV input signal

Power supply:	Battery, 6.2 V-7.5 V
Transmitter	≥35 dB at 85% mod. (AM)
Carrier power:	50-200 mW at 7.2 V battery supply
Distortion:	≤10% THD at 85% mod. (AM)
S/N ratio:	≥35 dB at 85% mod. (AM)
Frequency response:	300 - 3000 Hz -3 to +1 dB ref 1 kHz. -10 dB at 100 Hz and -35 dB at 5 kHz
Modulation:	Max. 85% AM
Harmonic emission:	Less or equal to 10 µW
Spurious emission:	Less or equal to 10 µW
Adjacent channel power:	Less or equal to -70 dB
Environmental conditions	
Operating temperature:	-20°C to + 55°C
Water resistant:	Capable of being immersed into water to a depth of 1m for 5 minutes
Environmental resistance:	Not affected by sea water, oil or exposure to sunlight
Materials	
Housing:	Polycarbonate
O-ring :	Rubber
Gaskets:	Silicone rubber
Antenna:	Conical helix, moulded in high gloss, flexible thermoplastic rubber
Dimensions (WxDxH):	70 mm x 50 mm x 195 mm (height without antenna and projections)
Weight:	Approximately 500 g
Charger	Tron CHARGE X-93080
	Jotron dual slot fast charger with trickle charging, wall and table mountable
Voltage:	12–24 DC, or 115/230 VAC with external mains adapter

Dimensions (WxDxH):	155 mm x 83 mm x 69 mm
Weight:	Approx. 300 g

6 Cleaning machines

Manufacturer:

Tecnomec Srl

Via Canale, 114 - Villalunga

42013 Casalgrande (Reggio Emilia)

Italy

Phone: +39 0522 840805

Website: www.tecnomec.com.

Email: tecnomec@tecnomec.com.

Description

The EURA 10/130 high pressure hot water cleaning machine is a compact professional cleaner, suitable for the daily jobs where an optimal washing power is needed in order to degrease with hot water binding surfaces and surfaces affected by smog, oils and limestone. The EURA is equipped with an external detergent intake device. This cleaner is built with high quality components and high-pressure pumps. The internal boiler can heat up to 11 l/min of water up to an adjustable temperature of 90°C.

- Axial pump with brass head and 3 ceramic pistons
- Professional pump and motor at 2800 rpm
- Maximum temperature thermostat
- Painted steel boiler
- Double coil
- Safety valve
- Self-extinguish ABS cover
- Low pressure detergent intake



Eura 10/130 high-pressure cleaning machine

Technical specifications	
Model:	Eura 10/130
Max. pressure:	130 bars.
Capacity:	600 l/h
Motor Power	3 HP/2.2 kW
Volt:	230 V/50 Hz
Pump:	(Mec -Pump) HS
Hose:	8 mt. R1
Lance:	120 cm.
Dimensions:	90 x 70 x 86 cm (LxWxH)
Weight:	86 kg (net)
	97 kg (with packaging)
R.P.M:	2800