

**Annex V of the VAC**  
**Technical Specifications for the equipment and dispersants**  
**(Lot 2 – Southern Atlantic coast)**

**Procurement procedure:** EMSA/CPNEG/1/2020

**Title:** Service Contracts for Stand-by Oil Spill Recovery Vessel(s)

Phase II – Invitation to Tender

**All the costs related to the purchase and transport of additional equipment, transportation of transferred equipment and dispersants as well as servicing of the transferred equipment in line with this Annex and as per below requirements have to be included in the “equipment costs”**

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## **1. General description of the equipment**

The oil pollution recovery equipment comprises two different at-sea oil recovery systems designed to recover medium to high viscous oils. Those systems will be installed on board when operating as an oil spill recovery vessel although they will not be used at the same time.

The Contractor will receive the set of equipment as listed and described in detail in Section 5 of this document. However, the Contractor will be responsible for the correct functioning of the equipment according to the parameters of its technical specifications.

### **1.1. Equipment Transferred**

The contractor will receive from EMSA the equipment listed below:

1. Lamor high capacity skimmer;
2. Dispersant application system (Jason spraying system, tank containers, loading system);
3. Spare pumps;
4. Sampling/testing equipment (flash point tester, viscosity and density meter);
5. Cleaning equipment;
6. Heating system.

All tenderers will have the opportunity to visually verify the condition of equipment items listed above in the stockpile in Sines, Portugal at request (please see relevant location of each item in the table in point 3.1 below). Indicatively the visit will be organised in week 27. The visit details will be arranged with the requesting tenderer.

There were no technical issues regarding the transferred equipment occurred in the past during the previous contract implementation.

### **1.2. Servicing of the equipment**

The equipment that will be transferred to the Contractor was purchased between 2007 and 2018 (for details refer to point 5 below). It is generally in good condition. It has never been used to recover oil and it has been deployed a few times per year for the purpose of drills and exercises (in average 4 quarterly drills and 1 exercise per year). The equipment has been categorised and appropriately labelled. It has undergone regular maintenance according to the manufacturer's specifications. The maintenance was closely monitored by EMSA. The working condition of the equipment is regularly verified by the Agency during drills.

The Contractor will be responsible for the safe, reliable and sustainable operational use of the equipment, the Contractor should arrange servicing to the equipment after the handover but before expiration of the Preparation Phase. In such a case, each tenderer will include in its financial offer regarding the oil pollution response equipment, the estimated servicing costs. This estimation will be considered as the ceiling that EMSA will reimburse in relation to the equipment servicing.

Detailed report of the service(s) actually carried out on the equipment item(s) shall be included by the Contractor as part of the Completion Report This report should include as a minimum list of works performed, list of parts replaced and/or repaired, photos, etc.

The Servicing might be performed by a third party subcontracted by the contractor.

The contractor should arrange servicing to the following equipment:

1. Lamor high capacity skimmer;
2. Dispersant application system (Jason spraying system, tank containers, loading system);
3. Spare pumps;
4. Sampling/testing equipment (mini lab, flash point tester);
5. Cleaning equipment;

The servicing should include the following:

- Check and replace, if necessary, the hydraulic and oil hoses and couplings;
- Check and replace, if necessary, the cables, lifting wires, ropes, etc.;
- Check of power packs, change the engine and hydraulic oil, coolant liquid, filters (oil, air, fuel);
- Check the brushes of the free-floating skimmer;
- Check and servicing of the pumps, if necessary;
- Check the paint and repaint, if necessary.
- Calibration for the sampling/testing equipment, when applicable.

### 1.3. Additional equipment

Contractor will need to purchase/deliver the following equipment:

#### 1. Rigid Sweeping arms

The sweeping arms will be constructed in such a way that they can recover any type of surface pollutant which has a density lower than water and which can pass through the inlet. The sweeping arms must be of rigid type.

Diagrams showing the position on the vessel of the arms as well as the deployment and recovery manoeuvre must be included in the bid.

Each rigid sweeping arm system shall consist of a steel fixed sweeping fence with oil resistant rubber fenders, which can be towed at an angle alongside the vessel, with a built-in weir type skimmer. However, it must have interchangeable skimmer heads of brush and weir type. The arm will also have a submerged pump in the hull's nearest edge to transfer, via a semi-rigid hose, the recovered mixture to a tank or hopper onboard the vessel. The steel structure shall have at least 4mm of thickness. Although it will depend on circumstances, the usual towing angle will be 60° on the basis of a sweeping speed of 1.5 to 3.5 knots.

The vessel will have one sweeping arm located on each side of the vessel (total two), which length will depend on the size of the vessel and the available space on deck. A minimum length of 12 metres is required although 15 metres is **preferred**.

The sweeping arms will be handled and deployed by cranes placed on board. The necessary hoisting eyes in the arms shall be welded to the arms structure in order to hoist and deploy the sweeping arms safely and shall be provided with towing chains to which a towing wire can be fastened.

Where possible, the arms can be executed with foldable ends to reduce the overall dimensions and facilitate the transportation.

A hoisting gear with a manually operated winch for pump cleaning is to be provided.

Each sweeping arm will have an adjustable overflow (when the sweeping arm is working with a weir skimmer installed) and a pump capable of processing the thickest oil-water mixture. A remotely controlled self-cleaning grating will be provided to avoid interference from debris at the suction side.

Once the arms are in their operational position, a cable system, manned from the bow windlasses or winches, will keep them in an appropriate position.

The two sweeping arms will direct the oil/water mixture to be recovered to a collection chamber where submerged hydraulically driven pumps are installed. The model of the pump chosen will have to be specially designed to transfer high viscous oils or emulsions as follows:

- For the weir skimmer module - centrifugal pumps with a capacity not less than 300 m<sup>3</sup>/h of water at 6 bar or equivalent.
- For the brush skimmer module - Positive Displacement Archimedes Screw Pumps with a capacity not less than 125 m<sup>3</sup>/h of water at 7 bar or equivalent.

Both types of pumps must be provided (a pair of each type). In any case, the maximum discharging pressure will be at least 10 bar and the diameter of the discharging hose will be of at least 6 inches. A radial current system of hot water injection in the inlet and outlet of the pump or equivalent where appropriately justified, will be installed in order to facilitate the flow of the oil to the storage tanks.

The oil recovery hoses will be semi-rigid and as short and wide as possible. Once the recovery hoses reach the vessel, they will be connected to loading pipes of a diameter of at least 8 inches to direct the recovered product to the cargo tank(s) or hopper. The recovery hoses should not be longer than 20 m although 10 m is expected. The height from the water line to the connection to the loading pipe should be less than 6 m.

The whole system will be operated from a control desk with the necessary safety mechanisms, alarms and emergency stops. The control desk will have good visibility of the sweeping arms manoeuvring. From the control desk it shall be possible, as a minimum, to remotely deploy and hoist the sweeping arms.

When no oil recovery operations are being carried out with the sweeping arms, they will be stowed in such a position where they are safe from the sea and/or from other operations. Alternatively, they will be stored onshore in the "home" port, ready for quick installation.

The sweeping arms will be able to operate safely at least until a sea state of Beaufort 5 conditions.

#### Cranes for Sweeping Arms

The rigid sweeping arms shall be deployed using two cranes. Each crane shall have its own hydraulically driven winch and hydraulic cylinder for moving the rigid sweeping arm from the inboard to the outboard position of the vessel. The cranes shall be welded or bolted to a deck foundation. They shall be equipped with a double hook. The first hook will be on the reaching limit of the crane and the second hook will be located at 5 meters (approx.) from the fixed arm reaching limit. The cranes will have adequate capacity to hoist and deploy the sweeping arms.

The rigid sweeping arms shall be secured by sea fastenings to the deck of the vessel.

Each crane shall be remotely controlled from a control desk from which the operator must have good visibility of the overall manoeuvring operation with the arms. The cranes should, in any case, be suitable for operation of vessels at sea. If necessary, the cranes shall be approved by a Recognised Organisation in accordance with Regulation (EC) No 391/2009 and/or Flag Authorities.

## Ancillary Equipment Sweeping Arms

The sweeping arm system shall comprise all the necessary power packs, hoses, cables and tools to:

- Stow the sweeping systems and ancillary equipment on board in a safe way while sailing. Should the length of the hoses be such that the safety of the operations is somehow hampered when the arms are deployed or during the deployment or hoisting manoeuvre, then a galvanised steel reel should be installed to stow such hoses.
- Deploy the sweeping systems on the water surface.
- Tow the sweeping arms in a safe manner with a secure system to avoid their loss, and maintain the appropriate sweeping angle.
- Hoist the sweeping arms to their onboard stowing position as soon as the operation has finished.
- Couple the oil recovery hose to the storage tanks inlet or oil/water separator when applicable.

Two diesel hydraulic power packs must be provided in order to operate the two sweeping arms.

## 2. Boom system

The boom acts as a containment and concentrating device whilst the skimmer is used to pump the oil which has been contained to the storage tanks on board. When recovering oil, the boom is towed by the vessel and an auxiliary towing vessel.

To carry out this operation, the vessel shall have two reels on board. Each reel will be hydraulically driven and be able to hold 250 m of open sea booms. The minimum height of the booms will be 1900 mm and the minimum freeboard 800 mm. If the boom is divided in different sections, each section will have standard connectors, with preference for ASTM connectors. The boom will be of the Curtain type and inflated via pressurised air. The skirt material may be either PVC-Coated Polyester or Vulcanized Neoprene Rubber. The length of each section, where applicable, shall be of at least 3 m, the towing speed at least 0.7 knots in the perpendicular, the ballast material shall be galvanised chain, the reserve buoyancy shall be of at least 300 kg/m and the reserve buoyancy to weight ratio will be of at least 10. It shall be fast to deploy and easy to maintain and clean. The total strength of the boom as a whole will be of at least 20t. They must be containerised with all the necessary equipment to deploy them (e.g. compressor). The necessary space on board will be considered for storing the container(s).

Self-inflatable booms should only be used when either there is not enough space on deck to deploy it safely or when the vertical distance from the boom reel pedestal to the sea surface is more than 3.5 m.

In terms of breaking strength (BS), the towing line must have a lower value than the connectors and around 75% of the boom value:

- BS towing line < BS connectors
- BS towing line  $\approx 0.75 \times$  BS boom

The boom spare kit must include a spare towing line.

The model of boom selected must be able to be deployed in open U configuration. Appropriate fittings/devices to achieve this configuration must be included if necessary. A second portable compressor can be provided to ensure that the boom maintains its integrity when towed by auxiliary vessels, if needed.

3. Adjustments to the power pack: Adjustments to the hydraulic power pack of the Lamor high-capacity skimmer (e.g. purchase of a hydraulic control panel) in order to be able to operate the boom system according to its technical specifications. Alternative proposals duly justified (e.g. use of ship's hydraulic system) can also be considered.
4. Slick Detection System: The oil encounter rate is improved when the oil layer thickness of the recovery area is larger. The vessel will have a system installed, which, without external aid, is capable of detecting the location of the highest concentration of oil. The system will permit the vessel to continue oil detection in low visibility conditions so that the oil recovery operations are not aborted due to lack of visibility.  
The system must be permanently installed onboard. In the case a "pool" of vessels is offered, then each vessel must have a system installed. During data capture, the vessel movement will be compensated in order to ensure the reliability of the information.  
The system will be able to provide continuous monitoring of the slick area and, in combination with current and wind data, predict the oil spill trajectory. It will be possible to record the evolution of the spill trajectory in video format. Such a format should be compatible with common media players software.  
The system should also provide an estimate of the spill area by size, real time distance measurement to a defined point and will be able to be overlaid with an electronic map. The ability to calculate volume in combination with other data is appreciated. However, a system which measures directly both slick size and thickness is preferred.  
The detection range shall be at least 2 nautical miles and will operate efficiently in wind speed of 2m/s or more.  
The integration with VHF frequency used in the AIS system is mandatory if such a system is not already installed on the vessel.  
The Graphic User Interface shall be user-friendly with a PC-based data processing capability. The layout of display and colour, for use both day and night, will be specially made for operation on a vessel's bridge. The system must be regularly (annually) updated with the latest software for the system during the whole duration of the contract.
5. Flow-meter: to be used during drills and recovery operations to measure the flow of the pumps installed in the sweeping arms and skimmer.
6. Interface Detection System: When the oil/water mixture is stored in the tanks, the water and the oil is naturally separated due to the difference in density. The tenderer shall provide adequate equipment (fixed or portable) to detect the interface border between the oil and the water so that the quantity of actual oil stored is known.
7. Communication devices: At sea oil recovery operations require a number of different actors at different locations. In addition to the GMDSS area A3 requirements set in point 15 of Annex IV, the vessel must be able to communicate with aircrafts, so two VHF radiophone, aeronautic band, will be foreseen for recovery operations or exercises.
8. Gas Detector: It will be needed to check the presence of explosive gases
9. EMSA logo on equipment: At least one EMSA logo must be attached/painted on a visible position on each sweeping arm and crane, skimmer frame (if possible), boom reel, power

pack, storage or tank containers. The dimension of the logos shall be in proportion to the items to be marked.

The Contractor will purchase the above listed additional oil pollution response equipment items and will obtain and conserve ownership of them until the Clearance of the Preparation Phase is completed. All provisions of the Contract including article IV.4.3 (transferable call option) shall apply to the additional oil pollution response equipment items.

10. Vessel Model: At the end of the preparation phase, the Contractor will deliver to EMSA, at its premises in Lisbon, a model(s) of the Vessel(s) at (approximate) scale 1/100. All oil pollution response equipment will be displayed, in the appropriate scale, on board the model(s). In particular, one system must be deployed, simulating recovery of oil with the option to display the alternate system (sweeping arms or boom/skimmer systems). The model(s) should be as detailed as possible, preferably made of plastic or metal. The model(s) remains the property of EMSA, only to be used by the Contractor upon request with the agreement of EMSA. Any cost related to the production of the model and its transportation costs shall be borne by the Contractor<sup>1</sup>.

## **2. Dispersants transferred**

The dispersants that the Agency will transfer are stored in Intermediate Bulk Containers (IBCs) of 1 m<sup>3</sup> capacity each (weighing approximately one tonne).

The quantity of dispersant to be transferred by EMSA and stored is 200 tons (212 IBCs with dispersants plus 10 empty IBCs, total 222 IBCs).

Detailed information regarding dispersants is contained in point 6 of this document.

## **3. Handover procedure for equipment and dispersants transferred**

The conditions of handover, transportation, storage and insurance of the equipment and dispersants are described below. If any part of the equipment delivered is not used by the Contractor due to the fact that it is not suitable for the vessel offered, the associated costs for the storage, insurance and maintenance shall be borne by the Contractor.

### **3.1. Date and place of the handover**

Prior to the handover, the Contractor shall designate a representative whose name and position shall be communicated in writing to EMSA. The Agency may also designate a representative to witness the handover process.

The items listed in point 1.1 and the dispersants described in point 2 above will be made available for handover and ready for transportation at their relevant storage location in Sines, Portugal:

The handover will be done at a date to be mutually agreed between EMSA and the Contractor and shall not take place earlier than **18 July 2021** and not later than **3 September 2021**.

On the handover dates, the Contractor representative shall be present and verify the delivery of the equipment and dispersants in question.

A delivery/receipt statement prepared by EMSA will be used in order to acknowledge handover of all the oil pollution response equipment items and dispersants. By signing the delivery/receipt statement on the handover date, the Contractor representative accepts the equipment and dispersants in its current condition.

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<sup>1</sup> The model price should be indicated in the bid for information only.

### **3.2. Transportation**

The Contractor shall bear all risks involved in transporting (including loading and unloading) for the items listed above from the handover place to the new storage facilities.

The Contractor shall arrange the packing and preparation of the items for transportation, provision of stevedoring services and lifting resources (e.g. forklifts, mobile cranes, etc.) and all necessary shipment.

The costs related to the transportation (including insurance during transport) of the equipment and dispersants must be paid initially by the Contractor. However, these costs are, within the contract budget ceiling, reimbursed by EMSA as part of the oil pollution response equipment and dispersants purchase. Accordingly, the tenderer shall include in its financial offer the estimated transportation costs for the oil pollution response equipment and dispersants.

### **3.3. Storage and insurance**

Prior to the equipment and dispersants handover, the Contractor shall arrange for the appropriate storage and insurance of all the oil pollution response equipment and dispersants.

For the purpose of taking out the full risk insurance policy covering the transferred oil pollution response equipment items and dispersants, the value shall be the purchase value as described under in the tables in points 5 and 6 below.

## **4. Use of the oil pollution response equipment and dispersant application system**

The equipment that must be installed/carried simultaneously on board for oil pollution response must include, as a minimum, the following configurations:

- the sweeping arm system,
- the boom system (2 x reel) + Lamor high-capacity skimmer system,
- the oil slick detection system,
- other equipment (minilab, flashpoint tester, cleaning machines, VHF's, etc.)

and their relevant power packs and ancillaries.

This configuration must be tested during three quarterly drills.

**or**

- the sweeping arm system,
- the dispersant application system (including tank container(s) with min. capacity for dispersants of 34 m<sup>3</sup>),
- the oil slick detection system,
- other equipment (minilab, flashpoint tester, cleaning machines, VHF's, etc.)

and their relevant power packs and ancillaries.

This configuration must be tested during one quarterly drill with minimum one tank container installed on deck.

The tenderer may offer a different proposal to that described above with equivalent performance adapted to the vessel configuration. Such equivalence will be duly justified and motivated.



## 5. List of transferred equipment and description

Ref. No	Category and purchase value	No	Item	Item Brand	Item Model	No of Pcs	Additional info	ID Code (old)	ID Code (new)	Delivery Date
5.1	<b>HC Skimmer</b> (EUR 813,980)	5.1.1	Power reel & Umbilical hose	Lamor	LUT 5 80	1	Umbilical Hose Reel Telescopic LUT 5/80 on a 10' flat rack footprint	n/a	2751	28/09/2018
						1	Umbilical Hose LUH 5" 80m, 11 Ch, Antistatic	n/a	2752	
		5.1.2	Remote control			1	Radio Remote Control MC-3-6 EX M36-EX501058 with Receiver Base Units 1 (LWS 1300) 2 (UHW)	n/a	2753	
		5.1.3	Flow meter		DP65/ED	1	AISI316 DN125, PN16 20-135 m3/h - integrated	n/a	2754	
		5.1.4	Weir skimmer module and brush adaptors	Lamor	HC LWS 1300	1	With hydraulic thruster set	n/a	2756	
						1	Brush adaptor with removable debris screen	n/a	2759	
						1	Brush adaptor with removable debris screen	n/a	2760	
						1	Brush adaptor with removable debris screen	n/a	2761	
		5.1.5	Pumps	Lamor	GT A 140	1	Cargo pump with water injection kit, inlet 3/4"	n/a	2762	
					LIP 400 IP	1	Water injection for PDAS pump	n/a	2763	
		5.1.6	Power Pack	Lamor	LPP 95	1	Diesel driven, hydraulic start, battery 70 Ah Installed inside of a 10' ISO closed container	n/a	2765	

Ref. No	Category and purchase value	No	Item	Item Brand	Item Model	No of Pcs	Additional info	ID Code (old)	ID Code (new)	Delivery Date
5.1	<b>HC Skimmer</b> (continuation)	5.1.7	Cover	n/a	n/a	1	20' Steel container storage roof with side door for 2 x 10' flat-racks (power reel and LWS 1300 skimmer) including 8 lashing twist locks	n/a	2767	28/09/2018
		5.1.8	Spare parts	n/a	n/a	n/a	Spk1 for GTA; Kit rubber adhesive for LUH; Spk1 for weir skimmer; Spk1 for Brush adapter; Spk1 for LPP 95; 1 Hydraulic Hose set between LUH and LWS; 1 hydraulic hose set 10m for power reel; paint repair kit	n/a	2768	
		5.1.9	Ancillaries	n/a	n/a	n/a	Removable Debris Screen for LWS 1300 MkII	n/a	2757	
						n/a	Water injection outlet assembly, DIN 5" flange D125 PN 16 SS, TEMA 5011 RFV SS, for LWS 1300 Mk II skimmer	n/a	2758	
						n/a	Ancillaries for the water injection pump 1 x water suction hose semi rigid Apollo 2 1/2" L-5m; 1 x suction stainer & check valve camlock 2 1/2" SS 1 adapter camlock 2 1/2" -TEMA 1/2" SS 2 x water injection hose 20m, SS 2 x hydraulic hose 1/2" x 15m, SS TEMA 5000	n/a	2764	
						n/a	Hydraulic hoses: Set 10m, SS for Umbilical Hose Reel, incl. Water Injection Hose SS, 10m	n/a	2755	
						2	Oil hoses: Semi Rigid, multi-oil blue heavy duty 5", 2 x L-10m, anti-static	n/a	2766	

Ref. No	Category and purchase value	No	Item	Item Brand	Item Model	No of Pcs	Additional info	ID Code (old)	ID Code (new)	First Delivery Date
5.2	<b>Dispersant system</b> (EUR 158,801)	5.2.1	Pumping system	n/a	n/a	1	Pump. Includes: 2 pipe adaptors, 2 non-return valves, 1 press. gauge, 1 orifice (T-40.0188 to avoid pump overheating when running with nozzles closed) and 2 couplings	n/a	2141	23/06/2016
						1	Pump. Includes: 2 pipe adaptors, 2 non-return valves, 1 press. gauge, 1 orifice (T-40.0188 to avoid pump overheating when running with nozzles closed) and 2 couplings	n/a	2142	
						1	Frequency convertor	n/a	2143	
						1	Frequency convertor	n/a	2144	
						1	Pressure transmitter	n/a	2145	
						1	Actuator For 1 1/4" ballvalve; S-20.0226	n/a	2146	
						1	Actuator For 1 1/4" ballvalve; S-20.0226	n/a	2147	
						1	Actuator For 1 1/4" ballvalve; S-20.0226	n/a	2148	
						1	Actuator For 1 1/4" ballvalve; S-20.0226	n/a	2149	
						1	Vacuum meter	n/a	2150	
						1	Eductor - Non self-priming pumps	n/a	2163	
						1	Eductor - Non self-priming pumps	n/a	2164	
		5.2.2	Hydraulic power unit Electro control cabinets and Remote control	Jason	n/a	1	Includes: control unit & 8 hydraulic hoses	n/a	2151	
						1	Electro control cabinet	n/a	2152	
						1	Electro control cabinet	n/a	2153	
						1	Wireless remote control box including charger for battery	n/a	2154	

Ref. No	Category and purchase value	No	Item	Item Brand	Item Model	No of Pcs	Additional info	ID Code (old)	ID Code (new)	First Delivery Date
5.2	Dispersant system (continuation)	5.2.3	Support booms	Jason		1	Support boom	n/a	2159	23/06/2016
						1	Support boom	n/a	2160	
			Spray booms	Jason		1	12 nozzles (twin system: 2 lines x 6 nozzles)	n/a	2161	
						1	12 nozzles (twin system: 2 lines x 6 nozzles)	n/a	2162	
			Winches			1	Hydraulic motor driven winch with 20m of nylon rope	n/a	2155	
						1	Hydraulic motor driven winch with 20m of nylon rope	n/a	2156	
						1	Hydraulic motor driven winch with 20m of nylon rope	n/a	2157	
						1	Hydraulic motor driven winch with 20m of nylon rope	n/a	2158	
			Flow meter			1	Flow meter	n/a	2165	
			Dispersant hose			6	Includes: quick release coupling-male and quick release hat	n/a	2166	
		5.2.4	Tank containers			1	20 ft (second hand); Capacity: 24 m3	n/a	2167	
						1	20 ft (second hand); Capacity: 24 m3	n/a	2168	
						1	10ft (new); Capacity: 10 m3	n/a	2169	
						1	10ft (new); Capacity: 10 m3	n/a	2170	
		5.2.5	Dispersant loading system			1	Pump L-VAC, 60P, Self-priming centrifugal driven by diesel engine (Lombardini 15DL350 at 3020 rpm)	n/a	2171	
						1	Pump L-VAC, 60P, Self-priming centrifugal driven by diesel engine (Lombardini 15DL350 at 3020 rpm)	n/a	2172	
						1	Discharging "Y" manifold with valves; stainless steel	n/a	2173	
						1	Discharging "Y" manifold with valves; stainless steel	n/a	2174	
						6	Oil/chemical hose(s), flexible with quick coupling connectors; for suction and discharge	n/a	2175	
						n/a	Spare parts: 50 m of flexible hose 1.5" including several connectors	n/a	2176	
		5.2.6	Spill kit			1	Kit with suitable sorbents to collect spilled dispersant	n/a	2177	

Ref. No	Category and purchase value	No	Item	Item Brand	Item Model	No of Pcs	Additional info	ID Code (old)	ID Code (new)	Delivery Date
5.3	<b>Spare pumps</b> (EUR 44,300)	5.3.1	Pumps	Lamor	GT A 115	1	PDAS	CEGE283201	0626	04/10/2007
					GT A 115	1	PDAS	CEGE283202	0627	
					GT A 115	1	PDAS	CEGE283203	0628	

Ref. No	Category and purchase value	No	Item	Item Brand	Item Model	No of Pcs	Additional info	ID Code (old)	ID Code (new)	First Delivery Date
5.4	<b>Sampling/ testing</b> (EUR 12,200)	5.4.1	Mini lab				SAMPLING MINILAB DENSITY METER	CEGH231701	0645	04/10/2007
		5.4.2	Mini lab				SAMPLING MINILAB VISCOMETER	CEGH234301	0646	
		5.4.3	Flash point tester				FLASH POINT TESTER	CEGH173901	0647	

Ref. No	Category and purchase value	No	Item	Item Brand	Item Model	No of Pcs	Additional info	ID Code (old)	ID Code (new)	First Delivery Date
5.5	<b>Cleaning</b> (EUR 2,000)	5.5.1	Cleaning machine				PORTABLE CLEANING MACHINE	CEGB092901	0648	04/10/2007
		5.5.2	Cleaning machine				PORTABLE CLEANING MACHINE	CEGB092902	0649	
		5.5.3	Cleaning machine				PORTABLE CLEANING MACHINE	CEGB092903	0650	

Ref. No	Category and purchase value	No	Item	Item Brand	Item Model	No of Pcs	Additional info	ID Code (old)	ID Code (new)	First Delivery Date
5.6	<b>Heating</b> (EUR 119,410)	5.6.1	Boiler	Babcock Wanson	VAP 1800		fitted with a 15' ft container	CEGF060001	0651	18/07/2013
		5.6.2	Coil				M10 - MFG PLATE HEAT EXCHANGER	CEGF210001	0652	

## DESCRIPTION OF TRANSFERRED EQUIPMENT

- 5.1 High capacity skimmer
- 5.2 Dispersant application system (Jason spraying system, tank containers, loading system)
- 5.3 Spare pumps
- 5.4 Sampling/testing equipment (viscosity meter, density meter, flash point tester)
- 5.5 Cleaning equipment
- 5.6 Heating system

### 5.1. High Capacity Skimmer

**Manufacturer:** Lamor Corporation Ab

**Website:** [www.lamor.com](http://www.lamor.com)

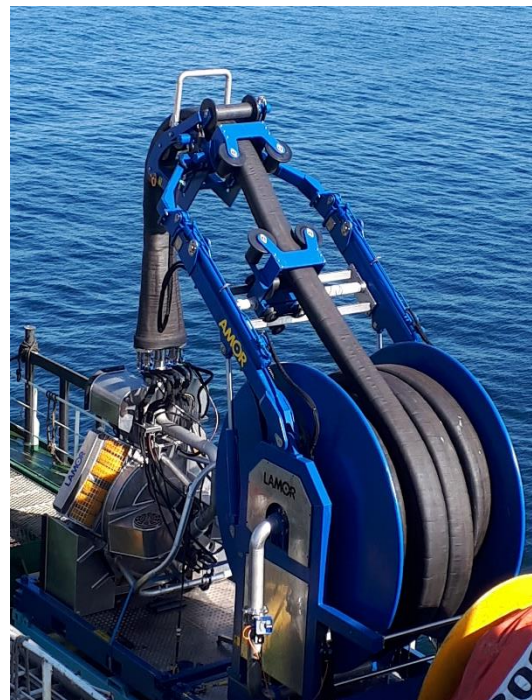
**Year of purchase:** 2018

#### 5.1.1. Lamor Power Reel and Umbilical Hose (LUT) 5/80

The Lamor Umbilical Hose Reel (LUT) 5/80 has been designed as a single system to easily and efficiently deploy a large oil skimmer off a vessel in an emergency oil spill response operation. The LUT provides control and ease of use by a single operator.

This LUT system includes the following features:

- Crane arm (additional telescoping and vertical lifting cylinders available)
- 360° turntable
- Single 10' flat rack
- Container cover for storage or transport
- Radio Remote control
- Mooring function



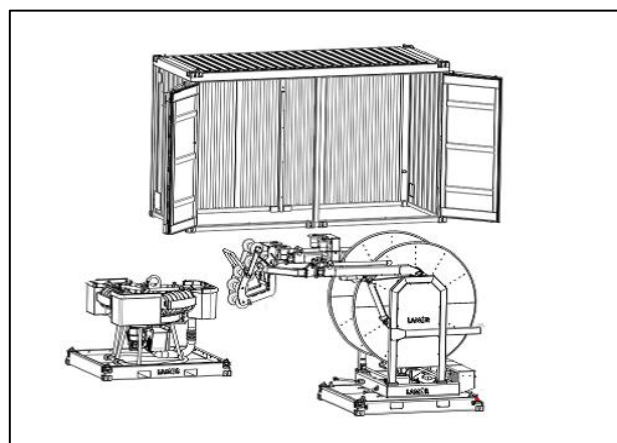
Lamor Umbilical Hose Reel (LUT) 5 80

LUT system is furnished on a 10' (ISO 668) flat rack base. This compact sized platform allows installation of the system onto a limited work space.

When combined with the 10' skimmer base and the 20' roof module, the equipment is containerized for storage and transport.

LUT systems are designed to deploy the Lamor Free Floating (LFF) 100. The umbilical hose and skimmer is supported during deployment by a crane arm integrated to the reel.

The crane arm includes a telescoping system and vertical lifting cylinders.



System drawing (without power unit)

The system is mounted on a 360° rotating, hydraulically driven turntable increasing control and the range of the operation.

The hose reel itself combines all necessary hydraulic and transfer hoses needed to operate the skimmer in a neatly packaged hose.

The oil transfer and hydraulic hoses are connected to manifolds at the hub of the reel by pump-through swivel joints allowing the hydraulic hoses to be continuously energized and providing uninhibited flow in the oil transfer hose at any deployed length.

LUT system EX Zone II has designed according 2014/34/eu ATEX directive. The corresponding ATEX-code is II 3 G Ex h IIB T4 Gc.



Skimmer assembled in a 20' container

#### System technical specifications

Components:	Description/Material:
System assembled	Assembled system of two flat racks and roof dimensions are: Width 2.438 m / 8' 0" Height 4 m / 13' 2" Length 6.058 m / 19' 10.5" Weight (dry) 14 tonnes (Weight wet 15 tonnes)
Umbilical hose reel on flat rack	Foot print 10ft container Length 2990 mm Width 2437 mm Height 3950 mm Weight (dry) 10 000 kg (Weight wet 11 000 kg) System pressure 210 bar
Skimmer flat	Length 2990 mm Width 2437 mm Height 2650 mm (Skimmer with flat rack) Weight (with skimmer) 1500 kg
The reel and skimmer flat racks are to be coupled into one 20 ft footprint flat rack (ISO 668)	
Container roof	Length 6058 mm Width 2438 mm Height 3685 mm Weight 2500 kg System is non-stackable
Painting	Blue RAL 5010 Teknos K27e

#### 5.1.2.Remote control

The radio remote control (MC-3-6 EX) allows the operator a range of motion providing ease of deployment and increased safety. The remote control can control all components of the operation, including the reel and skimmer simultaneously.

The controller can be connected to the electronic control box by a backup cable if the radio signal is lost.





### 5.1.3. Flow-meter

The system is fitted with a flowmeter DP65/ED AISI316 DN125, PN16 20-135m<sup>3</sup>/h including resettable totalizer. It is a very robust instrument prepared to work in extreme conditions of pressure and temperature.

The local flow rate indication is done by means of magnetic coupling, with scales calibrated in l/h, m<sup>3</sup>/h, kg/h, t/h, %, etc.

The disk flowmeter is based on the indirect measurement of the force which is exerted on a disk suspended in the trajectory where a fluid flows at a certain speed.



### 5.1.4. Weir Skimmer HC LWS 1300 Ex Zone II with brush adaptors

The Lamor Free-Floating Offshore Weir Skimmer, LWS 1300, is a high capacity weir skimmer designed for open ocean oil recovery. The skimmer is equipped with a floating weir lip that separates and collects the oil into a hopper. The floating weir lip has separate small ballast weights that can be independently adjusted, allowing perfect floatation even in difficult sea conditions. The floating level of the skimmer can be adjusted by moving the pontoons up or down on the skimmer frame.

The skimmer is hydraulically operated and fitted with two thrusters that allow the operator to manoeuvre the skimmer to where oil is the most heavily concentrated. A radio remote control can be operated from up to a 200m distance from the hose reel. The hydraulic power is supplied to the skimmer via hydraulic hoses.

The oil on the surface of the water is drawn over the weir lip into the skimmer by gravitational flow combined with the added suction of the screw pump. The skimmer can efficiently recover and pump a wide range of oils from light products to medium viscous, debris-laden emulsions. Recovered oil is discharged from the skimmer to the collecting tank by the transfer hose.

The skimmer frame is manufactured from aluminium with 3 specially designed aluminium air tight floats. The skimmer incorporates a large diameter free floating weir-lip that gives it excellent wave following characteristics. LWS weir skimmers have been specifically designed to work with a wide range of optional oil transfer pumps. The GTA pump is suitable for light to high viscosity oils. Please note that the pump will be specified separately.



Skimmer head

The Lamor Brush Adaptor LBA 1300 Mk II is a brush-type oil recovery module designed to fit quickly and easily onto the hopper of the Off-Shore Weir Skimmer Lamor LWS 1300 Mk II. The purpose of the device is to improve the overall recovery efficiency (reduce free water recovered with oil) and to improve the performance in very high viscosity oils.

The three LBA brush banks are mounted within a sturdy aluminium frame with a centre-lifting eye. The brushes are driven by one hydraulic motor, which is powered by a single hydraulic circuit.

The LBA can be easily installed on the Lamor LWS 1300 skimmer hopper in place of the weir bellow and be secured with stainless steel clamps.



Total system operational weight including Weir Skimmer, Brush Adapter, Thrusters and Pump is 820kg.

#### Weir skimmer technical specifications

Technical Parameter:	
Length (mm)	2644
Width (mm)	2212
Height (mm)	1830
Weight (kg)	280
Weir Lip Diameter (mm)	1300
Capacity (m <sup>3</sup> /h)	360
Frame, Floats, Hopper, & Weir Lip	Marine-Grade Aluminum
Bellows	Reinforced Neoprene Rubber
Draft	1100

#### Brush adaptor technical specifications

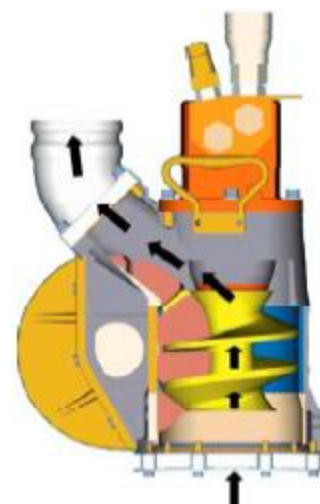
Technical Parameter:	Specification:
Length	2050 mm (80.7 in)
Width	1800 mm (70.8 in)
Height	570 mm (22.5 in)
Weight	220 kg (485 lbs)
Maximum Certified Capacity*	3 x 74 m <sup>3</sup> /h (326 gpm)
Design Capacity*	3 x 60 m <sup>3</sup> /h (264 gpm)
Free Water Content	<2%
Hydraulic Flow	10 l/min (5.28 gpm)
Hydraulic Pressure	170-200 bar (2466-2901 psi)
Power Requirement	6.5 kW (8.7 hp)
Brush Base	Polyethylene
Stiff Bristle	Polypropylene
Brush Cleaner	Marine Grade Stainless Steel
Brush Wheel Speed	0-60 rpm
Plastic clips and slides	Antistatic POM ELS
Drive Motor	Danfoss 11159803 OMR 200 ATEX

#### 5.1.5. Pump GT A 140 and water Injection Pump LIP 400

##### GT A 140

The GTA series pumps is a multi-purpose submersible Archimedes positive displacement high performance screw pump that have a capacity of 140 m<sup>3</sup>/h. In addition to be a primary oil transfer pump, the GTA pump can be utilized for numerous applications such as offloading emergency pumping of heavy crude, bitumen, tank cleaning, pipeline maintenance, sludge removal etc.

The GTA pump design promotes a smooth pumping action and easy flow control that will not emulsify oily water and reduces cavitation ensuring a constant flow. The efficiency of the GTA pump is increased with a built-in annular water injection (AWI) flange at the pump outlet, which assist the flow of viscous materials, decreases the pressure while reducing friction in the oil transfer hoses thus making operations safer and more efficient.



The GTA ATEX pump casing is compact and made of duplex stainless steel casting. Moreover, all internal components are made of acid proof steel with specialized seals. The GTA has a debris grid and a cutting knife fitted on the inlet.

#### GT A 140 technical specifications

Pump capacity (m3/h)	140
Length (mm)	500
Width (mm)	300
Heights (mm)	598
Weight (kg)	71
Diameter (mm)	520
Flow (max l/min)	160
Pressure (bar)	210
Discharge pressure (bar)	10
Power requirements (kW)	56

#### LIP 400

The LIP 400 is built in a wheel frame and is hydraulically powered. Lamor LIP 400 IP ATEX EX Zone II has designed according 2014/34/EU ATEX directive. The LIP 400 IP EX ATEX-code is II 2 G e IIA T3 Gb.

#### Water injection pump technical specifications

Technical Parameter:	LIP 400
Pump Capacity	10 m³/h
Length	920 mm
Width	850 mm
Height	770 mm
Weight	150 kg
Discharge Outlet	2" Male Camlock

#### 5.1.6.Lamor Power pack LPP 95

The Lamor Power pack LPP 95 is a diesel engine driven hydraulic unit suitable for operation in hazardous area Zone II.

A Flame protection system is fitted to the diesel engine in such a way that the outside temperature of diesel engine and even the exhaust system and other hotspots of diesel engine never exceeds beyond the conditions which are guilty for above mentioned protection group.

Several safety devices are fitted on the Power Pack and diesel engine and will do stop the Power Pack and the diesel engine in case of dangerous situations or mechanical failures.

The fuel tank is designed to contain fuel for a long time of use and that it



is possible to mount the Diesel engine and hydraulic system of Power Pack in an as small as possible frame.

This Power Pack is designed to use on open hydraulic systems only. The hydraulic pump is a variable displacement hydraulic pump of axial piston swashplate design, for open circuit hydraulic systems.

Lamor Power Pack Type LPP 95J EX Zone II has designed according 2014/34/eu ATEX directive.

The LPP 95J EX ATEX-code is II 3 G Ex h IIA T3 EPL Gc.

The power pack is installed in a **10 ft container** designed to be used for stowing and running Lamor Oil Spill equipment. The container is ISO 668:2013 compliant and has dedicated fittings for Lamor LPP 95 J, EX Zone II Power Pack. It also has an Earthing Point, one at blank side and second for internal connections. the 10 ft Container is designed to be used in hazardous area Zone II as described in 2014/34/eu ATEX directive.

Lamor Power pack LPP 95 operational specifications

Technical Parameter	Parameter value
Make/type	JCB 444 / PP1254
Design	4 cylinder line, water-cooled
Rated power	93 kW at 2200 rpm
Zone	II 3G IIA T3
Start system	Hydraulic start
Cooling system	Water cooling (coolant)
Coolant type	774F OEM RED, -39°C
Fuel system	Dual filter incl. water separator
Fuel type	EN 590 diesel fuel, (additive recommended when in storage) see JCB User's manual
Fuel consumption	N 225 g / kW / h (@ 2 200 r/min, max load)
Fuel tank	Basement tank, incl. filler breather filter and level gauge
Lubricant type (engine oil)	See JCB User's Manual MOBIL DELVAC 15W40 or equivalent
Air inlet	Dry filter with dust cyclone and safety element. Flame arrestor installed in inlet system
Exhaust	Exhaust gasses cools down by cooling system and Stainless-steel Flame/Spark arrester is in-stalled in exhaust system
Indicators	Engine speed, Water temperature, Exhaust temperature, Oil pressure, Hydraulic oil pressure and Hydraulic oil temperature
Protection against	1. Low pressure (0,75 bar, 10,9 psi) of lubricant 2. High temperature of exhaust gasses, 200°C 3. High temperature of engine(coolant), 100°C 4. Overspeed of diesel engine. 2300 rpm 5. Hand operated emergency stop which is closing the air inlet valve.
Operating temperature	Between -20 °C and +50 °C
Starting temperature	Min -20 °C, Requires Winter or Arctic type fuel, engine oil and hydraulic oil i.e. Neste Oil Neste diesel -29/-34 °C, or better
Storing temperature	-40 °C to +50 °C

#### Lamor Power pack LPP 95 technical specifications and dimensions

Technical Parameter	Parameter value
Length	1500 mm
Width	2 050 mm
Height	1750 mm
Volume of fuel tank	210 liters
Volume of lubricant for engine	14 liters
Volume of hydraulic oil tank	260 liters
Volume of cooling system	22 liters
Weight	1800 kg dry weight excluding hydraulic oil and diesel fuel
Weight	2300 kg including hydraulic oil and diesel fuel
Color	Lamor colors, Main frame RAL 5010. Doors, tank RAL 1023.

#### Technical data 10' container

Technical Parameter:	LIP 400
Length	2291 mm (91 in)
Width	2438 mm (96 in)
Height	2591 mm (30 in)
Weight	3500 kg (7720 lbs)
Painting system	EN ISO 12944 C5-M (Marine) EPZnEPPUR200/4- Fe Sa2½ Exteriors: Blue RAL 5010 Interior: Gray RAL 7001

#### 5.1.7. Cover

The Skimmer is protected by a steel container storage roof with side door for 2 x 10' flat racks.



#### 5.1.8.Spare parts

Below list of spares is indicative. Note that these are consumables and not all of them might still be available.

- Spare part kit SPK 1 for Oil Transfer Pump GTA 115/GTA 140
- Repair Kit rubber adhesive, for Umbilical Hose LUH
- Spare part kit SPK 1 for Weir Skimmer LWS 1300 Mk II

- Spare part Kit SPK 1 for Brush Adapter for Weir Skimmer LWS 1300 Mk II
- Spare part kit SPK 1 for Hydraulic Power Pack, Diesel LPP 95 DHP Ex Zone II
- Spare Hose Set between LUH and LWS, Hydraulic Hoses SS, Anti static
- Spare Hydraulic Hose Set 10m SS for Umbilical Hose Reel
- Paint repairing kit, 0,5 l primer, 0,5 l top coat and 2 x brush



## 5.2. Dispersant application system

### Manufacturer:

Jason engineering AS

Web-Site: <http://jason.no/>

Year of purchase: 2016

The system is designed for spraying dispersant from a vessel to an oil spill on the sea surface.



### 5.2.1.Pumping system

Technical specification pumping system

Pump:	multistage non self-priming centrifugal Grundfos
Speed for pump data:	3514 rpm
Actual calculated flow:	12 m <sup>3</sup> /h
Resulting head of the pump:	57.6 m
Impellers:	05
Power (P2) required by pump:	3 kW
Mains frequency:	60 Hz
Rated voltage:	3 x 380-480 V
Rated current:	6,20-5,00 A
Gross weight:	65 kg





### 5.2.2. Hydraulic Power Unit, Electric Control Cabinet and Remote Control

Hydraulic Power Unit consists of electric motor (1.5 kW), oil tank (14 l), pump, and solenoid directional valves.

The complete dispersant spray system is remote controlled by means of a control cabinet, four three-way valves with hydraulic actuator and two small hydraulic powered winches on each boom. All control valves are fitted with 24VDC solenoids and sensors on dispersant valves for open/closed position.

The control cabinet can be operated in remote by radio control box or manually.

The wireless radio control box is fitted with:

- switches for valve and winch operation and with indicating light for valve position;
- display for indication of pressure and flow and push button for increase /decrease frequency converter.



### 5.2.3. Support booms and Spray nozzle manifold with winches

The hydraulic winches (on each support arm) allows regulation of the distance from the water to the spraying boom by means of two ropes, jaggging wheels and hydraulic motor. Weight of the winch assembly is approx. 50 kg.

Two support booms of 7.2 m with nozzle manifolds of 10.2 m each one, are located port and starboard. Soft rubber hoses with quick couplings act as dispersant supply lines from the support



Support Boom



Spray nozzle manifold

boom down to the manifold. The support arm is fitted with “hook on” hinges for easy and quick mounting. The weight of the supporting arm is approx.60 kg.

The dispersant spray nozzles are flat jet type with spray angle of approx. 45 degrees. Several nozzles are covering the whole length of the spray boom ensuring an even spray pattern.

The spray nozzle manifold can be lowered or uploaded and therefore the distance from de water should be easily regulated.

Nozzle flow rate is approx. 10 and 2.5 litres/min at 2 bars inlet pressure and can be adjusted increasing or decreasing the frequency in the control cabinet and flow control.



Hydraulic winch

#### 5.2.4. Tank containers

Four ISO Standard tank containers (2 x 10ft and 2 x 20ft), certified for marine transport according the IMO Container Safety Convention (CSC), are used for dispersant storage on board the vessel and with the application system indicated previously.

These tank containers are coated with marine quality paint to prevent the corrosion. EMSA logos are present on each one.

##### 10' Tank container technical specifications

Capacity:	10000 l
Overall dimensions (L x W x H):	2991 mm x 2438 x 2591
Tare weight:	2800 kg
Maximum payload	21200 kg

##### 20' Tank container technical specifications

Capacity:	24000 l
Overall dimensions (L x W x H):	6058 mm x 2438 x 2591
Tare weight:	3500 kg
Mass gross	36000 kg



10 feet Tank container (x2)



20 feet Tank container (x2)

### 5.2.5. Dispersant loading system (hoses, pump and manifold)

In case of vessel mobilisation for the dispersant spraying service, the dispersant stowed into standard IBCs of 1 m<sup>3</sup> each (stored into the shore warehouse) will need to be transferred into the tank containers.

The transfer will be done using two Self-Priming centrifugal pumps L-VAC 60P, close driven by a diesel engine “Lombardini Model 15DL350 at 3020 rpm.

The capability of each pump is 24 m<sup>3</sup>/Hr, discharge head 20 mts w.cm, inlet outlet ports 2”. Weight around 55 - 60 kg.

These pumps can be used together or one working and the other as backup or redundancy. The main elements of the system for transferring the dispersant are:

- 2 Self-Priming Centrifugal Pumps driven by diesel engine
- 2 discharging “Y” manifold with valves (stainless steel)
- Heliflex 2” hoses and quick coupling connectors. For suction.
- Heliflex discharge hoses of 20 mts

The system will allow to fill two tank containers simultaneously. All 4 tanks could be loaded in approximately 2 hours.



Centrifugal Pumps



Y manifolds

### 5.2.6. Spill kit

One kit with suitable sorbents and tools to contain and collect spilled dispersant.





### 5.3. Spare Pumps - PDAS GT A 115 (3 pcs)

**Manufacturer:**

Lamor Corporation Ab  
Mestarintie 25  
06150 PORVOO  
FINLAND

Tel: +358 (0)20 7650 100,

Fax: +358 (0)207 650 129

Email: [info@lamor.fi](mailto:info@lamor.fi)

Website: [www.lamor.fi](http://www.lamor.fi)

**Year of purchase:** 2007



The GT A 115 pump is multipurpose submersible Archimedes screw pumps with a pumping capacity of 115 m<sup>3</sup>/h. This type of pump has been designed for use in skimmers and transfer or offloading pump applications and are able to pump a wide range of liquids ranging from water to the heaviest debris-laden viscous oils. The pumps can deliver a maximum of 12 bar outlet pressure, benefits from water/steam annular injection flange on the inlet as standard and debris cutting knife to handle solids such as seaweed, plastics and ropes.

The GT A pump range is constructed from robust seawater resistant aluminium for the casings and stainless, acid proof steel internals with special seals that ensure the pump remains “dry”. The pump can handle solids up to 30 mm in diameter, should the pump become clogged, and it can be reversed to expel the blockage.

The GT A pump received accreditation from Bureau Veritas confirming their recovery capacities with oils of varying viscosities.

The pump speed can be adjusted freely between 0...100 % from the control panel on the deck. It is capable of pumping oils with viscosities up to 3,000,000 cSt.

**Technical specification of the PDAS Pump Lamor GT A 115**

Length	500 mm
Width	300 mm
Height	598 mm
Weight	71 kg
Capacity	115 m <sup>3</sup> /h
Hydraulic flow	160 max l/min
Hydraulic pressure	210 max bar
Power req.	56 max kW
Discharge pressure	12 bar

## 5.4. Sampling and Testing System

The sampling and testing kit consist of a Mini-Lab (Densimeter, Viscometer) and a Flash Point Tester.

### 5.4.1. Density meter

**Manufacturer:** JSC LEMIS Baltic  
26 Ganību dambis Str.  
Rīga, LV-1005,  
LATVIA  
Tel: +371 67383223  
Fax: +371 67383270  
E-mail: [info@lemis-baltic.com](mailto:info@lemis-baltic.com)  
Website: [www.lemis-baltic.com](http://www.lemis-baltic.com)

**Year of purchase:** 2007



The DenDi density meter provides remarkable accuracy for a wide range of liquids and eliminates any subjective mistake due to data readings on LCD.

The compact device is maintenance free and simple in using: one-button control doesn't require proficient staff for its operating. Calibration is realized by distilled water.

Versatile measurement formats of DenDi enable flexible reporting options:

- Real Density (g/cm or kg/m) or Specific Gravity or API Gravity;
- Reduced Density to 15°C or 20°C or 60°F;
- Temperature (°C or °F).

### 5.4.2. Viscometer

**Manufacturer:** CANNON Instrument Company  
2139 High Tech Road  
State College PA 16803,  
USA  
Tel.: 1-814-353-8000 or 1-800-676-6232  
Fax: 1-814-353-8007 or 1-814-353-8006  
Email: [service@cannonInstrument.com](mailto:service@cannonInstrument.com)

**Year of purchase:** 2007

The CANNON Digital Paddle Viscometer has been designed to accurately measure the viscosity of asphalt emulsions, suspensions, marine fuels, residual oils, slurries, paints and similar materials between 30 and 30,000 centipoise (mPas) at temperatures of 25°C, 40°C, 50°C, 80°C, and 100°C (see temperature specifications for temperature associated with each model). It meets ASTM D 7226 for asphalt emulsion testing.



#### Digital Paddle Viscometer specification

Dimensions:	191 mm wide x 235 mm deep x 451 mm high (7.5 x 9.5 x 17.75 inches) [150 mm rear clearance required]
Weight:	7.7 kg (17 lbs)
Shipping Weight:	12.3 kg (27 lbs)
Viscosity Range:	30 to 30000 cP (100-fold range dependent on paddle selection)
Viscosity Accuracy:	±10% from 30-3000 cP; 10% from 300-30000 cP
Test Temperatures:	Standard Model: 40°C, 50°C, 80°C, 100°C Water-Cooled Model: 25°C†, 40°C, 50°C, 80°C, 100°C
Temperature Accuracy:	±0.1°C
Operating Conditions:	15°C to 30°C, 15 to 95% relative humidity, non-condensing
Power Requirements:	100 to 120V, 50/60 Hz, 120W; 200 to 240V, 50/60 Hz, 120W

#### 5.4.3. Flash Point Tester (SetaFlash)

**Manufacturer:** Stanhope-Seta  
London Street, Chertsey, Surrey,  
KT16 8AP  
UK  
Tel.: +44(0)1932 564391  
Fax: +44(0) 1932 568363  
Email: [info@stanhope-seta.co.uk](mailto:info@stanhope-seta.co.uk)  
Web: [www.stanhope-seta.co.uk](http://www.stanhope-seta.co.uk)



**Year of purchase:** 2007

The SetaFlash Series 3 Closed Cup Flash Point Tester is an easy to use instrument that can complete a flash/no-flash test in less than two minutes and in many cases in 60 seconds, or determine the flash point of a sample within a temperature range of 0° to 300°C.

#### SetaFlash Closed Cup Flash Point Tester technical specification

Temperature range	Ambient to 300°C (0° to 300°C with 13870-0)
Cup material	Aluminium
Test modes	Rapid Equilibrium
Sample size	2ml for flash points up to 100°C 4ml for flash points above 100°C
Test duration, Rapid Equilibrium Mode	1 minute below 100°C, 2 minutes above 100°C
Heating and Cooling System	Cartridge heater
Power	2ml for flash points up to 100°C 4ml for flash points above 100°C
Voltage	110/120V or 220/120V, 50/60Hz (switchable)
Gas supply	Laboratory gas, 3kPa (0.44psi) maximum pressure or Butane from optional Portable Gas
Size (HxWxD)	26 x 28 x 26cm
Weight	4 kg
CCCN Code	Tariff 90268020

## 5.5. Cleaning equipment

### Portable High-Pressure Washer Poseidon 2-26

**Manufacturer:** NILFISK-ADVANCE A/S

Sognevej 25

DK-2605 Broendby

DENMARK

Tel.: +45 43 23 8100

Fax: +45 43 43 7700

**Year of purchase:** 2007



Portable Cold-Water High-Pressure Washer Poseidon 2-26 is equipped with the Automatic Start/Stop. The motor only runs when the machine is activated. The device provides good performance and is easy to transport and store.

#### Portable High-Pressure Washer Poseidon 2-26 Technical specification

Voltage/Phase/Frequency/Current	230/1/50/10 V/~Hz/A
Fuse	14 A
Power rating	3.2 kW
Water flow Q max/ Qieq.	610/540 l/h
Max. water inlet temp.	50 °C
Max water inlet pressure	10 bar
Dimensions	555x290x275 mm
Weight	26 kg
Suction height	0.5 m

## 5.6. Heating System (Boiler & Heat Exchanger)

### 5.6.1.Boiler

**Manufacturer:** Babcock Wanson

Avda. Pinoa s/n Barrio SAN MARTINDK-2605 Broendby, 48170 ZAMUDIO (VIZCAYA)

Apartado de Correos - 5.146 48080 BILBAO

Tel.: 94.452 30 36

Email: [cypbw@babcock-wanson.com](mailto:cypbw@babcock-wanson.com)

Year of purchase: 2013





The boiler is a vertical generator of mono-tubular steam at forced circulation, where the quantities of fuel, burning air and feeding water are regulated in a proportional way upon the demand of steam of the uses.

It is enclosed type with high funnel over the deck and supplies steam to a deck heater (see 5.6.2) in order to heat the recovered oil/water mixture, before discharge it in the tanks.

The boiler is installed inside an adequate 15 feet ISO container (doors on both ends) which can be fitted on the deck of the vessel. Also, inside the container there is an electrical board, a feeding water pump and a feedwater tank. The nominal power of this boiler is 1,386 kw. It can be connected to an existing system via removable & flexible pipes.

Specifications:

Net capacity	1.200.000 Kcal/h
Steam production	2.000 Kg/h
Feed water temperature	60 °C
Efficiency	86 %
Service pressure	7 bars
Certification	BV
Steam production	2000 kg/h
Burner Fuel	Gas oil
Regulation	2 stages
Chimney	Twin wall insulated

### 5.6.2. Heat Exchanger

Supplier: Alfa Laval Iberia S.A.

Address: San Rafael, 1 Ed. Europa III, 28108 Alcobendas (Madrid)

Tel.: +34 902 12 25 32

Email: [alfa\\_laval.spain@alfalaval.com](mailto:alfa_laval.spain@alfalaval.com)

Web: [www.alfalaval.com](http://www.alfalaval.com)

Year of purchase: 2013



The heater consists of plates (ALLOY 316 / 0.60 mm) with a capacity of 1172 KW to increase the temperature to a mass of 115000Kg/h more than 20°C.

This system is intended to pre-heat the recovered oil before introducing it in the tanks or to increase the heating in tanks by recirculation.

The heat exchanger is totally mechanical and manual regulated, without any electrical part. It works in conjunction with the boiler (5.6.1) and can be installed on deck. The connections to the boiler and to the oil recovery manifold can be made via removable & flexible pipes. The equipment is not certified for Ex Proof Zone 2.

#### Specifications

Model	M10-MFG
No. of plates	212
Material	AISI 316
Thickness of the material (mm)	0.6
Heat Exchanger Capacity (SQ FT)	75.8 SQ
Height (mm)	1084
Width (mm)	470
Length (mm)	695 - 2400
Heat transfer area (m2)	6.6
Number of effective plates	210
Total heat transfer area (m2)	1386
Heat exchange (kW)	1172

## 6. List of transferred dispersants and description

Item	Pieces	Tons	Reception Date	ID Code
IBC with dispersant	1	0.95	08/06/2016	5546
IBC with dispersant	1	0.95	08/06/2016	5547
IBC with dispersant	1	0.95	08/06/2016	5548
IBC with dispersant	1	0.95	08/06/2016	5549
IBC with dispersant	1	0.95	08/06/2016	5550
IBC with dispersant	1	0.95	08/06/2016	5551
IBC with dispersant	1	0.95	08/06/2016	5552
IBC with dispersant	1	0.95	08/06/2016	5553
IBC with dispersant	1	0.95	08/06/2016	5554
IBC with dispersant	1	0.95	08/06/2016	5555
IBC with dispersant	1	0.95	08/06/2016	5556
IBC with dispersant	1	0.95	08/06/2016	5557
IBC with dispersant	1	0.95	08/06/2016	5558
IBC with dispersant	1	0.95	08/06/2016	5559
IBC with dispersant	1	0.95	08/06/2016	5560
IBC with dispersant	1	0.95	08/06/2016	5561
IBC with dispersant	1	0.95	08/06/2016	5562
IBC with dispersant	1	0.95	08/06/2016	5563
IBC with dispersant	1	0.95	08/06/2016	5564
IBC with dispersant	1	0.95	08/06/2016	5565
IBC with dispersant	1	0.95	08/06/2016	5566
IBC with dispersant	1	0.95	08/06/2016	5567
IBC with dispersant	1	0.95	08/06/2016	5568
IBC with dispersant	1	0.95	08/06/2016	5569
IBC with dispersant	1	0.95	08/06/2016	5570
IBC with dispersant	1	0.95	08/06/2016	5571
IBC with dispersant	1	0.95	08/06/2016	5572
IBC with dispersant	1	0.95	08/06/2016	5573
IBC with dispersant	1	0.95	08/06/2016	5574
IBC with dispersant	1	0.95	08/06/2016	5575
IBC with dispersant	1	0.95	08/06/2016	5576
IBC with dispersant	1	0.95	08/06/2016	5577
IBC with dispersant	1	0.95	08/06/2016	5578
IBC with dispersant	1	0.95	08/06/2016	5579
IBC with dispersant	1	0.95	08/06/2016	5580
IBC with dispersant	1	0.95	08/06/2016	5581
IBC with dispersant	1	0.95	08/06/2016	5582
IBC with dispersant	1	0.95	08/06/2016	5583
IBC with dispersant	1	0.95	08/06/2016	5584
IBC with dispersant	1	0.95	08/06/2016	5585
IBC with dispersant	1	0.95	08/06/2016	5586
IBC with dispersant	1	0.95	08/06/2016	5587

Item	Pieces	Tons	Reception Date	ID Code
IBC with dispersant	1	0.95	08/06/2016	5588
IBC with dispersant	1	0.95	08/06/2016	5589
IBC with dispersant	1	0.95	08/06/2016	5590
IBC with dispersant	1	0.95	08/06/2016	5591
IBC with dispersant	1	0.95	08/06/2016	5592
IBC with dispersant	1	0.95	08/06/2016	5593
IBC with dispersant	1	0.95	08/06/2016	5594
IBC with dispersant	1	0.95	08/06/2016	5595
IBC with dispersant	1	0.95	08/06/2016	5596
IBC with dispersant	1	0.95	08/06/2016	5597
IBC with dispersant	1	0.95	08/06/2016	5598
IBC with dispersant	1	0.95	08/06/2016	5599
IBC with dispersant	1	0.95	08/06/2016	5600
IBC with dispersant	1	0.95	08/06/2016	5601
IBC with dispersant	1	0.95	08/06/2016	5602
IBC with dispersant	1	0.95	08/06/2016	5603
IBC with dispersant	1	0.95	08/06/2016	5604
IBC with dispersant	1	0.95	08/06/2016	5605
IBC with dispersant	1	0.95	08/06/2016	5606
IBC with dispersant	1	0.95	08/06/2016	5607
IBC with dispersant	1	0.95	08/06/2016	5608
IBC with dispersant	1	0.95	08/06/2016	5609
IBC with dispersant	1	0.95	08/06/2016	5610
IBC with dispersant	1	0.95	08/06/2016	5611
IBC with dispersant	1	0.95	08/06/2016	5612
IBC with dispersant	1	0.95	08/06/2016	5613
IBC with dispersant	1	0.95	08/06/2016	5614
IBC with dispersant	1	0.95	08/06/2016	5615
IBC with dispersant	1	0.95	08/06/2016	5616
IBC with dispersant	1	0.95	08/06/2016	5617
IBC with dispersant	1	0.95	08/06/2016	5618
IBC with dispersant	1	0.95	08/06/2016	5619
IBC with dispersant	1	0.95	08/06/2016	5620
IBC with dispersant	1	0.95	08/06/2016	5621
IBC with dispersant	1	0.95	08/06/2016	5622
IBC with dispersant	1	0.95	08/06/2016	5623
IBC with dispersant	1	0.95	08/06/2016	5624
IBC with dispersant	1	0.95	08/06/2016	5625
IBC with dispersant	1	0.95	08/06/2016	5626
IBC with dispersant	1	0.95	08/06/2016	5627
IBC with dispersant	1	0.95	08/06/2016	5628
IBC with dispersant	1	0.95	08/06/2016	5629
IBC with dispersant	1	0.95	08/06/2016	5630
IBC with dispersant	1	0.95	08/06/2016	5631



Item	Pieces	Tons	Reception Date	ID Code
IBC with dispersant	1	0.95	08/06/2016	5632
IBC with dispersant	1	0.95	08/06/2016	5633
IBC with dispersant	1	0.95	08/06/2016	5634
IBC with dispersant	1	0.95	08/06/2016	5635
IBC with dispersant	1	0.95	08/06/2016	5636
IBC with dispersant	1	0.95	08/06/2016	5637
IBC with dispersant	1	0.95	08/06/2016	5638
IBC with dispersant	1	0.95	08/06/2016	5639
IBC with dispersant	1	0.95	08/06/2016	5640
IBC with dispersant	1	0.95	08/06/2016	5641
IBC with dispersant	1	0.95	08/06/2016	5642
IBC with dispersant	1	0.95	08/06/2016	5643
IBC with dispersant	1	0.95	08/06/2016	5644
IBC with dispersant	1	0.95	08/06/2016	5645
IBC with dispersant	1	0.95	08/06/2016	5646
IBC with dispersant	1	0.95	08/06/2016	5647
IBC with dispersant	1	0.95	08/06/2016	5648
IBC with dispersant	1	0.95	08/06/2016	5649
IBC with dispersant	1	0.95	08/06/2016	5650
IBC with dispersant	1	0.95	08/06/2016	5651
IBC with dispersant	1	0.95	08/06/2016	5652
IBC with dispersant	1	0.95	08/06/2016	5653
IBC with dispersant	1	0.95	08/06/2016	5654
IBC with dispersant	1	0.95	08/06/2016	5655
IBC with dispersant	1	0.95	08/06/2016	5656
IBC with dispersant	1	0.95	08/06/2016	5657
IBC with dispersant	1	0.95	08/06/2016	5658
IBC with dispersant	1	0.95	08/06/2016	5659
IBC with dispersant	1	0.95	08/06/2016	5660
IBC with dispersant	1	0.95	08/06/2016	5661
IBC with dispersant	1	0.95	08/06/2016	5662
IBC with dispersant	1	0.95	08/06/2016	5663
IBC with dispersant	1	0.95	08/06/2016	5664
IBC with dispersant	1	0.95	08/06/2016	5665
IBC with dispersant	1	0.95	08/06/2016	5666
IBC with dispersant	1	0.95	08/06/2016	5667
IBC with dispersant	1	0.95	08/06/2016	5668
IBC with dispersant	1	0.95	08/06/2016	5669
IBC with dispersant	1	0.95	08/06/2016	5670
IBC with dispersant	1	0.95	08/06/2016	5671
IBC with dispersant	1	0.95	08/06/2016	5672
IBC with dispersant	1	0.95	08/06/2016	5673
IBC with dispersant	1	0.95	08/06/2016	5674
IBC with dispersant	1	0.95	08/06/2016	5675

Item	Pieces	Tons	Reception Date	ID Code
IBC with dispersant	1	0.95	08/06/2016	5676
IBC with dispersant	1	0.95	08/06/2016	5677
IBC with dispersant	1	0.95	08/06/2016	5678
IBC with dispersant	1	0.95	08/06/2016	5679
IBC with dispersant	1	0.95	08/06/2016	5680
IBC with dispersant	1	0.95	08/06/2016	5681
IBC with dispersant	1	0.95	08/06/2016	5682
IBC with dispersant	1	0.95	08/06/2016	5683
IBC with dispersant	1	0.95	08/06/2016	5684
IBC with dispersant	1	0.95	08/06/2016	5685
IBC with dispersant	1	0.95	08/06/2016	5686
IBC with dispersant	1	0.95	08/06/2016	5687
IBC with dispersant	1	0.95	08/06/2016	5688
IBC with dispersant	1	0.95	08/06/2016	5689
IBC with dispersant	1	0.95	08/06/2016	5690
IBC with dispersant	1	0.95	08/06/2016	5691
IBC with dispersant	1	0.95	08/06/2016	5692
IBC with dispersant	1	0.95	08/06/2016	5693
IBC with dispersant	1	0.95	08/06/2016	5694
IBC with dispersant	1	0.95	08/06/2016	5695
IBC with dispersant	1	0.95	08/06/2016	5696
IBC with dispersant	1	0.95	08/06/2016	5697
IBC with dispersant	1	0.95	08/06/2016	5698
IBC with dispersant	1	0.95	08/06/2016	5699
IBC with dispersant	1	0.95	08/06/2016	5700
IBC with dispersant	1	0.95	08/06/2016	5701
IBC with dispersant	1	0.95	08/06/2016	5702
IBC with dispersant	1	0.95	08/06/2016	5703
IBC with dispersant	1	0.95	08/06/2016	5704
IBC with dispersant	1	0.95	08/06/2016	5705
IBC with dispersant	1	0.95	08/06/2016	5706
IBC with dispersant	1	0.95	08/06/2016	5707
IBC with dispersant	1	0.95	08/06/2016	5708
IBC with dispersant	1	0.95	08/06/2016	5709
IBC with dispersant	1	0.95	08/06/2016	5710
IBC with dispersant	1	0.95	08/06/2016	5711
IBC with dispersant	1	0.95	08/06/2016	5712
IBC with dispersant	1	0.95	08/06/2016	5713
IBC with dispersant	1	0.95	08/06/2016	5714
IBC with dispersant	1	0.95	08/06/2016	5715
IBC with dispersant	1	0.95	08/06/2016	5716
IBC with dispersant	1	0.95	08/06/2016	5717
IBC with dispersant	1	0.95	08/06/2016	5718
IBC with dispersant	1	0.95	08/06/2016	5719

Item	Pieces	Tons	Reception Date	ID Code
IBC with dispersant	1	0.95	08/06/2016	5720
IBC with dispersant	1	0.95	08/06/2016	5721
IBC with dispersant	1	0.95	08/06/2016	5722
IBC with dispersant	1	0.95	08/06/2016	5723
IBC with dispersant	1	0.95	08/06/2016	5724
IBC with dispersant	1	0.95	08/06/2016	5725
IBC with dispersant	1	0.95	08/06/2016	5726
IBC with dispersant	1	0.95	08/06/2016	5727
IBC with dispersant	1	0.95	08/06/2016	5728
IBC with dispersant	1	0.95	08/06/2016	5729
IBC with dispersant	1	0.95	08/06/2016	5730
IBC with dispersant	1	0.95	08/06/2016	5731
IBC with dispersant	1	0.95	08/06/2016	5732
IBC with dispersant	1	0.95	08/06/2016	5733
IBC with dispersant	1	0.95	08/06/2016	5734
IBC with dispersant	1	0.95	08/06/2016	5735
IBC with dispersant	1	0.95	08/06/2016	5736
IBC with dispersant	1	0.95	08/06/2016	5737
IBC with dispersant	1	0.95	08/06/2016	5738
IBC with dispersant	1	0.95	08/06/2016	5739
IBC with dispersant	1	0.95	08/06/2016	5740
IBC with dispersant	1	0.95	08/06/2016	5741
IBC with dispersant	1	0.95	08/06/2016	5742
IBC with dispersant	1	0.95	08/06/2016	5743
IBC with dispersant	1	0.95	08/06/2016	5744
IBC with dispersant	1	0.95	08/06/2016	5745
IBC with dispersant	1	0.95	08/06/2016	5746
IBC with dispersant	1	0.95	08/06/2016	5747
IBC with dispersant	1	0.95	08/06/2016	5748
IBC with dispersant	1	0.95	08/06/2016	5749
IBC with dispersant	1	0.95	08/06/2016	5750
IBC with dispersant	1	0.95	08/06/2016	5751
IBC with dispersant	1	0.95	08/06/2016	5752
IBC with dispersant	1	0.95	08/06/2016	5753
IBC with dispersant	1	0.95	08/06/2016	5754
IBC with dispersant	1	0.95	08/06/2016	5755
IBC with dispersant	1	0.95	08/06/2016	5756
IBC with dispersant	1	0.95	08/06/2016	5757

Item	Pieces	Tons	Reception Date	ID Code
IBC spare (empty)	1	0	08/06/2016	5758
IBC spare (empty)	1	0	08/06/2016	5759
IBC spare (empty)	1	0	08/06/2016	5760
IBC spare (empty)	1	0	08/06/2016	5761
IBC spare (empty)	1	0	08/06/2016	5762
IBC spare (empty)	1	0	08/06/2016	5763
IBC spare (empty)	1	0	08/06/2016	5764
IBC spare (empty)	1	0	08/06/2016	5765
IBC spare (empty)	1	0	08/06/2016	5766
IBC spare (empty)	1	0	08/06/2016	5767

## 6.1 Dispersant Radiagreen OSD

**Manufacturer:** Oleon NV

**Web-Site:** <http://www.oleon.com/>

**Year of purchase:** 2016

Radiagreen OSD is a concentrated blend of natural surfactants and solvents.

Due to its high solvency power, Radiagreen OSD will easily penetrate the oil slick as a result of which the surfactants will be incorporated rapidly. The surfactants will reduce the interfacial tension between oil and water, allowing it to divide the hydrocarbons in droplets of such a size that the physical and bacterial action is accelerated, leading to a faster degradation.

Radiagreen OSD (free of aromates) has been engineered for a large number of spills. We differentiate:

- Cleaning of oil spills (crude oil, diesel, gasoil, vegetable oil, other oils);
- Oil spills on warehouse floors, port quays, sea, bulkhead areas;
- Rocks and beaches;
- Oil and fats on machines and mechanical parts.

Flammable: Flash-point-ASTMD 93: >110°C

Maximum storage Temperature: 60°C

Minimum Temperature: -20°C

Optimal storage Temperature: 5 - 35 °C

The product will have a shelf life of minimum 5 years if the storage conditions are respected.

Radiagreen OSD is stored in standard IBC's with the following indicative external dimensions: Length 1.2 m x Width 1.0 m x Height 1.16 m.



IBC's with Radiagreen OSD

Dispersant Safety Data Sheet is presented as an Appendix to this document