PUMP OUT & TREATMENT UNITS FOR
WASTE WATERS IN PORTS & MARINAS

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CHEMICAL – PHYSICAL PLANT FOR TREATMENT OF WASTE WATERS FROM WASHING OF BOATS
UNIT TYPE CT-MARINE

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1. GENERAL DESCRIPTION OF THE SYSTEM

The unit is composed by a Chemical-Physical system (our model CT-MARINE). The unit is designed to treat a maximum waste water flowrate of 500 lt/h.
We can also supply units with capacity of 1,2,4 m3/h.

The wastewater to be treated will be extracted from the careenage waste water collection pit by means of a submersible centrifugal pump which will discharge waste water into the PEHD tank capacity 300 lit. that is part of the unit.

Feed pump will suply the unit with waste water.

Level switches installed in PEHD tank controls the local panel to start/stop automatically the feed pump.

2. DETAILED DESCRIPTION

The chemical-physical section is composed of three compartments. In the first compartment pH of waste water is adjusted and chemicals are added (Caustic soda 20% for pH adjustment, PAC 18%), in the second compartment flocs growth occurs (flocculation) and in the third compartment sedimentation of sludge occurs.

In the second compartment, flocks are kept in agitation by a slow speed electric stirrer to allow the flocs dimensions growth (to decrease the settling time). The slow speed of the stirrer also allows that formed flocs are not broken due to agitation.

In the third compartment flocks sedimentation occurs and settled flocks (sludge) are collected in the bottom.

Sludge accumulated in the bottom of the sedimentation compartment shall be periodically extracted opening the manual sludge valve foreseen on the sedimentation compartment.

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Extracted sludge flows to a dehydration unit composed by a sludge drying bag installed inside a steel cabinet supplied with the package.
Solids contained in the wet sludge are retained by the bag while water flows through the bag and is discharged by gravity through a discharge nozzle. Such water shall be routed back to the waste water pit.
Once the bag is full of dry sludge, it shall be replaced with a new one. The exhausted bag shall be stored at a low humidity room so to allow the complete dehydration to reduce further the volume and therefore the final disposal cost. The bags disposal shall be done by authorized companies according to local regulations.

Treated water before discharging goes through zeolite and active coal filter for final treatment.

The chemicals used for the treatment are:

Floculant

- PAC 18% solution
- Caustic soda 20% solution

Dosing of chemicals occurs by means of dosing pumps fabricated with materials suitable for the pumped fluids. Suction pipe of pumps is connected to the chemical drum.

Clarified water flows by gravity to a clarified water compartment and then to final treatment by zeolite and active coal filter. Then it is discharged by gravity to the plant outlet nozzle.

The unit is fully pre-assembled and fabricated in carbon steel internally and externally sandblasted and painted with products suitable for aggressive environment.

The unit is installed in small container with dimensions of 3,2 x 2,4 m.

Treated waste water can be discharged in public sewage or in surface waters (including sea).

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3. ELECTRICAL PANEL

Electrical components for wiring are according to CEI regulations and they include power and control panel and wiring among panel and all electrical motors/instruments installed on the unit.

The panel includes all components required for the correct operation of the unit and for the protection of the unit in case of any anomaly.

4. PACKAGE TECHNICAL DATA

The package has following technical characteristics:

- Treatment capacity: 500 lt/h
- Power consumption: approx. 1.1 KW
- Feed power: 220V/1phase/50Hz
- Overall container dimensions: 3200 mm x 2400 mm x 2600 mm (LxWxH)
- Empty weight: approx. 750 Kg (WITH CONTAINER)