

# A new cleaning system for the treatment of sewage water on yachts

## PNR Italia designs a new solution for cleaning sewage water tanks on yachts



### SCENARIO FOR THE SECTOR

#### Sewage water treatment in the shipbuilding industry

The Italian law provides that all pleasure boats built since 2008 and equipped with toilets must have sewage water tanks or a wastewater treatment system.

When sailing offshore, boaters are obliged to dispose of chemically treated sewage water strictly beyond 3 miles from the coast, while untreated sewage water beyond 15 miles.

The law states that fixed or mobile solutions have to be installed within all ports to offer all ships, including fishing boats and pleasure boats, to unload the waste produced, whether it is wastewater, bilge water, oils, or solid waste.

**The ship's systems for sewage water treatment can be of various types and sized according to the ship's dimension, but in general, they all use tanks and filter membranes.**

A fundamental operation is the maintenance of the systems and the cleaning of the tanks.

### THE PROBLEM OF OUR CLIENT

The customer who turned to PNR Italia is a manufacturer of sewage water treatment systems for small or medium-sized yachts.

**The need was to identify an effective, repeatable, and verifiable method of cleaning the tanks of the sewage treatment system.** Before our intervention, the cleaning was carried out with manual cleaning systems and sprinkler nozzles already supplied with the yachts.

#### INDUSTRY

Shipbuilding industry



#### APPLICATION

Washing



#### PROBLEM

Identifying an effective, repeatable, and verifiable cleaning method



#### SOLUTION

Manifold system, full cone nozzles, and tank washing heads



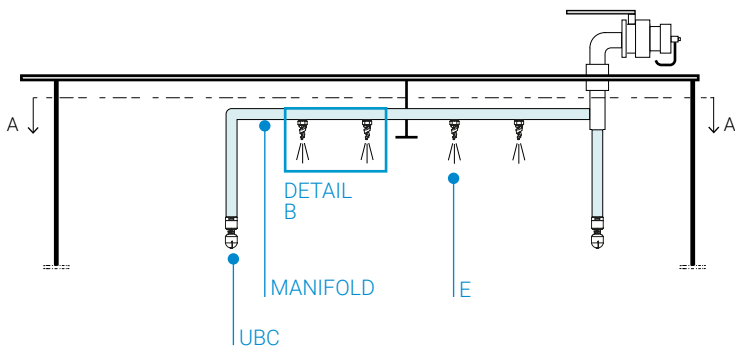
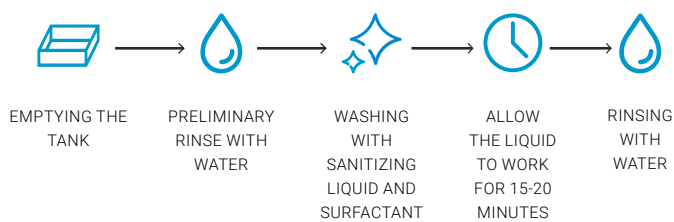
## PNR ITALIA SOLUTION

The PNR Italia technical office has designed a manifold system equipped with nozzles and tank washing heads.

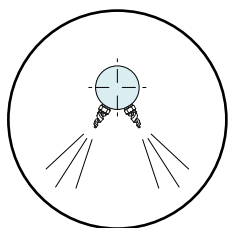
The H-shaped manifold houses 4 UBC tank washing heads at the ends and 4 E spiral full cone nozzles on the central section. The purpose of the spiral nozzles is to clean the most difficult spot to reach.

## THE TANK CLEANING PROCESS WITH THE PNR ITALIA SOLUTION

The cleaning process thus designed has 5 phases in total in which the E nozzles and the UBC tank washing heads always operate simultaneously:



**SECTION OF THE SEWAGE WATER TREATMENT SYSTEM TANK MANIFOLD WITH NOZZLES AND TANK WASHING HEADS**



**DETAIL B**  
MANIFOLD WITH E NOZZLES

## ADVANTAGES FOR OUR CLIENT

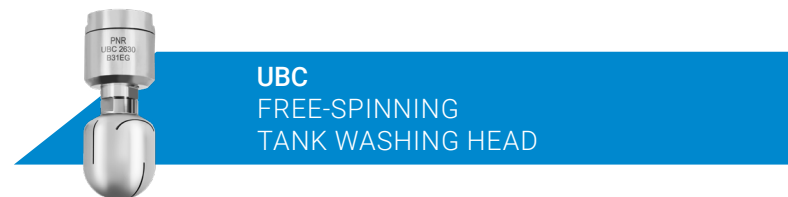
The system developed by PNR Italia allows for optimally cleaning the sewage treatment systems' tanks. The process is automated, verifiable, and repeatable and does not require manual intervention.

## FOCUS ON THE PRODUCTS



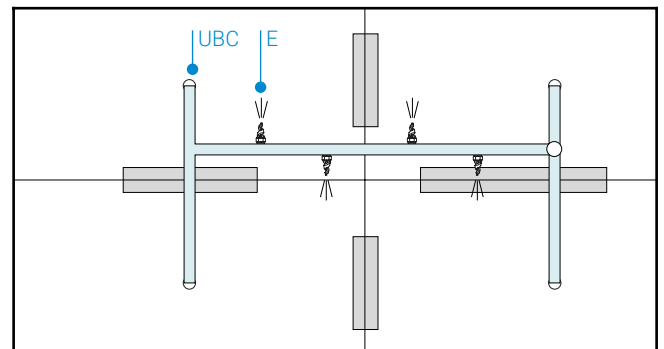
**E**  
FULL CONE NOZZLE

E full cone nozzle works on the impact principle by deflecting a water stream that impacts a spiral profiled surface, providing the desired spray angle.



**UBC**  
FREE-SPINNING  
TANK WASHING HEAD

Inner and outer surfaces are carefully machined, deburred, cleaned and polished to a precisely defined roughness grade to avoid contamination from bacterial growth.



**SECTION AA'**  
PLAN OF THE TANK OF THE SEWAGE WATER TREATMENT SYSTEM

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