

WE ARE FOCUSED

to help you to be
different from the rest.

Guide to avoid fresh water pollutions



Aquatex

www.aquatex.dk

OUR SERVICE. YOUR PROFIT.

its essential part of our vision.

At Aquatex, our vision is to keep down your maintenance costs, lower your energy consumption, keep your vessels stay at sea and put you in a position from where you can stand from the competition.

About Aquatex

Aquatex is a trading and service company located in Denmark. Since 1992 we have provided products and service for drinking water plants and the industry.

In the beginning of the new millenium we got more inquiries from the marine sector with fresh water pollution problems, fuel into the FW-systems, stocked drains and pipes, Legionella on board, stocked heat exhangers and intercoolers. Mostly tasks we have dealt with for many years on land.

With our innovative methodes and environment-friendly cleaning products we succed in helping our customers to minimize the risk for fresh water pollution, better health for the crew and the passengers and less consumption of fuel by optimizing the the cooling, the ventilation and the engine.

References

Aquatex delivers marine service to some of the largest shipping and ferry companies. Please ask for further documentation.

Take contact to Aquatex Marine Service and let us help you to lower your costs and minimize your maintenance tasks.

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16 FREE MONEY SAVING ADVICES

to avoid pollutions on board.

In order to maintain a high quality of fresh water on board ships, so no contamination occurs, you can benefit from reading the following guide. The free guide to avoid fresh water pollution on board will save you a lot of troubles and costs.

1. Refilling of Fresh Water

Of course a precondition for pure Fresh Water on board is high quality water from your fresh water supply. Keep yourself informed about the water quality from your water plant or in board water supply.

2. Securely stow the refilling hose

If the refilling hose is polluted you also pollute the ship's Fresh Water supply. Stow the refilling hose securely when not in use. The hose is to be sealed so animals, insects and dirt cannot enter between the refillings.

3. Plan for disinfection of the refilling hose

Draw up a plan for the regular disinfection of the hose- e.g. once a month. The hose can be disinfected with the chlorine-free and environmentally-friendly products CARELA® PEROXSIL or CARELA® BIO-DES. Pump a solution of the disinfectant into the hose. Leave it for a suitable period of time based on product and concentration. Then rinse out well with clean water. If you need to make a quick disinfection, you can use a solution of 1% CARELA® BIO-DES in the water. Pump the solution into the hose and seal it. Let it stand for 1 hour. Then flush with pure fresh water - now you have a disinfected hose.

4. Disinfection of couplings

Disinfect the fresh water hose coupling and the ship coupling before refilling of Fresh Water with CARELA® FIX&DES. Spray CARELA® FIX&DES onto the couplings. Wait a few minutes. Then rinse with pure fresh water and connect up.



5. Fresh water tanks

When the ship is undergoing routine maintenance at the shipyard, clean the Fresh Water tanks of layers, dirt and bacteria. This cannot be done with chlorine-based products as these do not remove layers of lime, manganese, ochre, rust and biofilms. All are breeding grounds for bacteria.

If you try to remove the scalings using a highpressure pump you risk damaging the surfaces of the tank, and you must still perform a disinfection afterwards. Avoid the cost of replacement of the tank's surface coating by only using the Aquatex method without high-pressure cleaning of the tanks. The removal of the scalings and bacteria is performed by applying the following to the surfaces:

6. Air intake to the water tanks

Remember to clean the filter and the pipes by the air intake to the water tanks. When using a steel mesh filter change the filter to a changeable and closer mesh non-woven filter.

7. Piping and blind ends

When replacing FW pipes the system is to be kept free of blind pipe ends, because standing water in blind pipes gives rise to bacteria growth and you will not succeed in cleaning the pipes.

Remember when performing repairs to avoid pollution in pipes and valves. Use CARELA® FIX&DES for the disinfection of repair spots. Cleaning and disinfection of the piping for Fresh Water, including filters, pressure tanks, softener etc. is performed by filling the piping with a solution of CARELA products.

If possible, let the solution work for 12 hours. Then flush the system out with pure fresh water. The waste water can be sent down the drain. The pipes are now free of layers, dirt and bacteria. If you clean the Fresh Water tanks and piping in this way on a regular basis when the ship is at the shipyard, the water quality will remain stable for a long time, and you can avoid major problems and expenses connected with acute water pollutions.



Quick Tip

Hydrophor and water softener. These are often growth areas for bacteria, because the water stands and often has a higher temperature. Both should always be cleaned together with the FW pipes and tanks. NOT only disinfected - CLEANED.



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If UV-filters are fitted on the ship to kill the bacteria, these shall if possible be installed following the pressure tank and softener.



9. Fresh water temperatures

Fresh Water does not have the ideal conditions onboard because the temperatures are high everywhere. High temperatures offer good growing conditions for bacteria. For this reason it is important that the water is as clean as possible right from the refilling stage, and that the tanks and piping are clean.

10. UV filter

A UV-filter is installed on many ships which kills the bacteria in the Fresh Water by exposing it to UV-rays. The water is led past a UV-lamp and any bacteria in the water are killed by the UV-rays. UV-lamps have a definite service life after which they lose their effect and must be replaced.

Over time the UV-lamps or UV-pipes become coated with lime, dirt, biofilm etc. and so lose their effect.

By using CARELA® UV-CLEAR you can clean and disinfect UV-lamps and the entire UV-filter quickly and effectively. If the ship has problems with complying with the water quality requirements, for example, because the water consumption is low and infrequent, you can profit from the retrofitting of a UV-filter. The costs of such a filter are minimal compared to recurrent water pollution, suspended operations and associated costs of water tests and consultants.

11. Changing the water filters

If water filters are installed on board bear in mind the following when changing them in order to avoid pollution of the Fresh Water:

Use new, clean plastic gloves before unpacking the filter. Disinfect the filter housing using CARELA® FIX&DES and then rinse with clean water. Install the filter. In this way you ensure bacteria does not pollute the Fresh Water system.

Plate Heat exchanger - before/after cleaning



Pipe Before Cleaning



Pipe After Cleaning



Quick Tip

Over time the UV-lamps or UV-pipes become coated with lime, dirt, biofilm etc. and so lose their effect. By using CARELA® UV-CLEAR you can clean and disinfect UV-lamps and the entire UV-filter quickly and effectively.

Taking water samples

12. Internal inspection of fresh water quality

You can keep abreast of ensuring the water quality onboard by drawing up plans for an internal inspection of the Fresh Water quality.

13. Mandatory water sampling

When you are visited by the water analysis firms in order to inspect your water quality, it is a good idea to arrange the following:

- a. Set up a dedicated sampling tap which is cold water only and is only used for taking water samples.
- b. There must be no aerator in the tap and it should preferably be made from stainless steel.
- c. Let the tap run for a long time – preferably hours - before taking samples of the water. In this way you ensure that the water is fresh and as cold as possible.
- d. Ensure that the tester complies with all regulations governing the sampling of water. Errors can easily be made and even the smallest error can have unfortunate consequences for the results of the test.
- e. Note that the tester CANNOT undertake a proper water test in the 15-20 minutes when, for example, a ferry is in port between two sailings. The water is to run for a longer period before sampling, so it can be ensured that the water is as fresh as possible.
- f. If water samples are taken from a mixer tap with both warm and cold water, the warm water supply MUST be disconnected at the valve. Most mixer taps are slightly leaky, and this is enough to give a false test result.

14. Guide to proper water sampling

It is very important that water sampling is to be done as carefully as possible in order to avoid contamination of the sample. Therefore ensure that these directions are followed:



Quick Tip

If water samples are taken from a mixer tap with both warm and cold water, the warm water supply MUST be disconnected at the valve. Most mixer taps are slightly leaky, and this is enough to give a false test result.

15. Emergency plan for polluted water

Anyone can be hit by polluted drinking water. For this reason it is important to know what to do. Make a plan for dealing with polluted water so everyone knows what to do.

24/7 Marine Service

Aquatex is at your disposal on tel. +45 70 260 400 with advice, products, equipment and emergency rapid reaction service in the event of polluted water.

The most important step is to inform the crew and the passengers so no one risks getting ill.

The source of the pollution is to be found by

- Taking water samples ashore where the water is supplied by the waterworks
- From the refilling hose
- From the tanks
- Before and after the filters
- From the hydrophor
- From the softener
- And UV-filter
- As well as from the outermost drain cocks on the vessel.

Aquatex can assist by taking water samples for the isolation of the pollution source. Once the source of the water pollution is found, the defect is to be rectified and the polluted area cleaned and disinfected.

After this the entire system is to be thoroughly rinsed out with fresh water and new water samples taken. When the water quality is as it should be, order an official water sampling test.

16. Fuel into the fresh water tank?

Have you by accident got fuel into your fresh water tank on board, Aquatex provide service, environment friendly products and equipment to degrease and to disinfect your whole fresh water system.

Together with our experienced partners, the CARELA®-Teams, we are always available with advice, service and environment friendly cleaning products.

Aquatex Marine Service

24 hour cleaning and disinfecting service in harbours in Denmark, Germany, The Netherlands and Sweden. And cleaning products as well as equipment delivered world wide.



Cleaning/optimizing advice

Fresh Water

- Cleaning and disinfecting Fresh Water tanks, pipes, hydrophor, filters
- Degreasing of new FW tanks before disinfection
- Removing fuel from FW tanks and pipes
- Legionella fighting
- Cleaning of membrans in RO-filters
- Cleaning of UV-lamps and -filters

Pipes and Drains

- Cleaning and descaling of pipes and drains to vacuum toilettes

Cooling and heating

- Cleaning of cooling and heating systems in place.
- Pipes, heat exchangers, boilers
- Energy optimizing

Ventilation

- Cleaning coolers and energy optimizing
- Legionella fighting

Engines

- Cleaning the cooling system and intercoolers
- Energy optimizing

Fuel Additives

- Additives for ship engine fuels
- Less CO₂, less fuel consumption, longer engine life

Delivery of Products and Equipment

Guidance, documentation, products and cleaning equipments for your own world wide money saving warranty at the vessels.

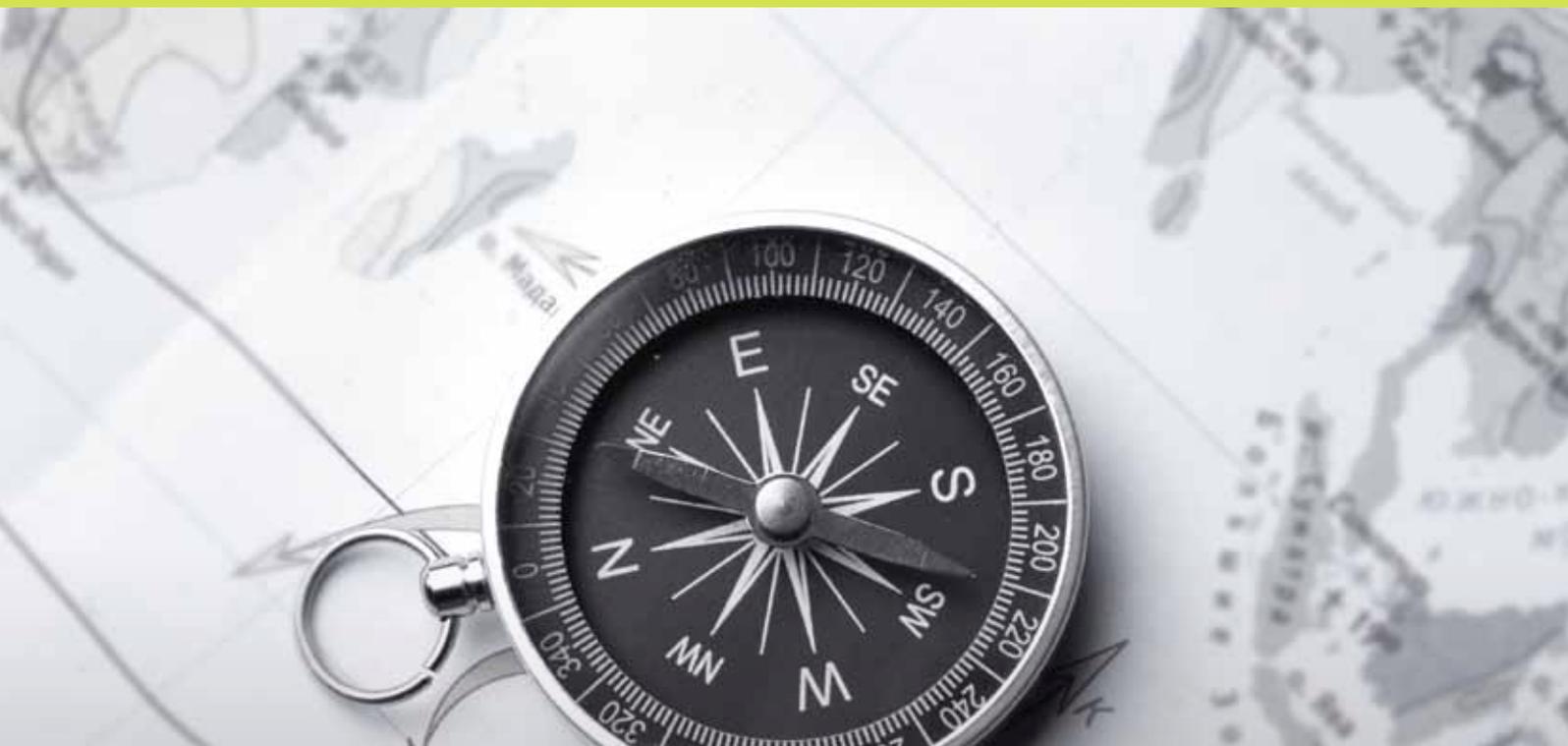


Approved Product Line

- CARELA® HYDRO-DES - FW-pipes
- CARELA® BIO-PLUSforte - FW-tanks
- CARELA® PEROXSIL - Disinfection
- CARELA® FIX&DES - Disinfection tool
- CARELA® DECALCON A40 - Heat Exchangers
- CARELA® URINSTEN - Toilettes and drains
- CARELA® RS 100 - Degreasing of surfaces
- CARELA® BRUNOX EPOXY - Corrossion protection

Equipment

- CARELA® PIPE-DES - Cleaning of pipes and drains
- CARELA® AIR-MAT - Cleaning of tanks
- CARELA® CIP-MAT - Cleaning of heat exchangers and pipes
- CARELA® Personal Safety Clothings



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Reference List

Vessels and offshore:

Shipping Company	Name of Vessel	Type of Vessel	Type of Job
Maersk	Fighter	Supply	FW Maintenance
Maersk	Forwarder	Supply	FW Maintenance
Maersk	Frontier	Supply	FW Maintenance
Maersk	Feeder	Supply	FW Maintenance
Maersk	Finder	Supply	FW Maintenance
Maersk	Fetcher	Supply	FW Maintenance
Maersk	Battler (Angola)	Anchor Handling	Products, equipment and guidance for cleaning FW-system
Maersk	Maersk Giant	Rig	FW Maintenance
Maersk	Maersk Gallant	Rig	FW Maintenance
Maersk			General FW Maintenance guidance
Nordic Tankers			General FW Maintenance guidance
Scandlines	M/F Prinsesse Benedikte	Ferry	FW Maintenance
Scandlines	M/F Kronprins Frederik	Ferry	FW Maintenance
Scandlines	M/F Prins Richard	Ferry	FW Maintenance
DSB	M/F Prins Henrik	Ferry	FW Maintenance
HH Ferries	Mercandia IV, VIII	Ferries	FW Maintenance
Navy Admiral Danish Fleet	MHV9V	Defence Vessels	FW Maintenance, EVAC System Cleaning
Mols Linien	Maren Mols	Ferry	Fuel in FW-system
Fisher Boats and Trawlers			FW Maintenance and guidance/cleaning of cooling systems
Færgen	M/F Sydfyn, M/F Odin	Ferry	FW Maintenance Toilet Drain Cleaning
DFDS	Seaways Crown	Ferry	FW and Cooling Manintenance guidance
Ø-Færgen	M/F Faaborg III, Faaborg II, M/F Faaborg	Ferries	FW Maintenance
Strynø-Rudkøbing Færgeservice ApS	M/F Strynø	Ferry	FW Maintenance
Ærøfærgerne	M/F Ærøskøbing	Ferry	FW Maintenance
DTU	AQUA	Research Vessel	Tank Cleaning
Polar Seafood		Factory Trawler	Disinfection Products
Ocean Team Skandinavia A/S		Rigs	Guidance in Cleaning of oxygen wheels for
Hapag-Lloyd AG, Hamburg	MS Europa	Container Vessels Cruiser	Cooling Systems and FW Maintenance (CARELA)