

# LIQTECH WATER



LiqTech Marine  
Water Treatments

**LIQTECH  
WATER**

# IMPROVING OUR FUTURE

The world is running out of clean water resources and it is essential that we treat the resources we have with respect and care. LiqTech has developed a unique ceramic membrane capable of removing oil, pathogens and heavy metals etc. from water, thus providing robust filtration solutions for essential applications.

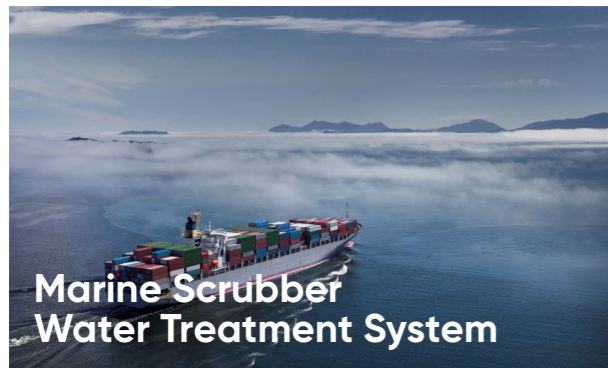


## Superior Marine Products for Your Growth & the Environment

At LiqTech, we care about the future, and at the same time about growth. We see it as our mission to enable companies to grow stronger while meeting tomorrow's environmental demands. That means the world to us.

With more than 20 years of experience in the marine industry and water treatment, we can help you make growth sustainable – both in relation to profits and the environment.

We have successfully delivered turnkey marine water treatment solutions to market leaders worldwide. Our references include vessels, cruise ships, cargo ships, container ships, bulk carriers, and tanker ships. Hundreds of ships around the world are already compliant with future environmental requirements. You can be as well!



With more than 20 years of experience in the marine industry and water treatment, we can help you make growth sustainable.



250+ systems installed worldwide,  
and we have more than 20+ years of  
experience in the filtration industry.



## Selected by Market Leaders Worldwide

LiqTech's marine water treatment systems are installed on hundreds of vessels worldwide. Our references from industry leaders include vessels such as cruise ships, Ro-Ro passenger ships, Ro-Ro cargo ships, container ships, bulk carriers, tanker ships, etc.

Water treatment solutions from LiqTech range from sea-water reverse osmosis, scrubber wash water treatment, UV disinfection of water, and much more.





## Marine Scrubber Water Treatment System

LiqTech Water offers a compact and efficient marine scrubber water treatment system for closed-loop and hybrid scrubbers, which outperforms all discharge limits set and regulated by the IMO and other authorities.

The solution will treat the water from the scrubber tower and send it back to the scrubber tower for reuse or discharge. This enables the scrubber tower to run in a closed-loop with no pollutant wastewater discharged overboard. The marine scrubber wastewater system can, among others, remove sulfur oxide (SOx), unburned fuel oil, soot particles, ash, pathogens, and heavy metals from wastewater.

The system is based on LiqTech's innovative, patented ceramic membrane technology to ensure mechanical, thermal, and chemical strength. All unwanted particles are filtered and concentrated in the ceramic membranes and can be dewatered further in a filter press. The dewatering step can lead to significant sludge handling cost reductions.

The water treatment system can both be installed on retrofits as well as new-builds. Moreover, you can always easily increase your capacity if your demands change.

- ⊕ 12-18 months return on investment
- ⊕ Minimal sludge production & handling costs
- ⊕ Market proven
- ⊕ Ideal for retrofit installation
- ⊕ Future-proof solution
- ⊕ Selected by market leaders
- ⊕ Guaranteed compliance with IMO discharge regulations
- ⊕ Un-interrupted operation on HSFO in SECAs



Low-pressure system with the highest recovery rate in the market, resulting in low energy consumption and high efficiency.



We have long-term experience working with top marine scrubber manufacturers, shipowners, and shipyards, and we have a market-proven solution.

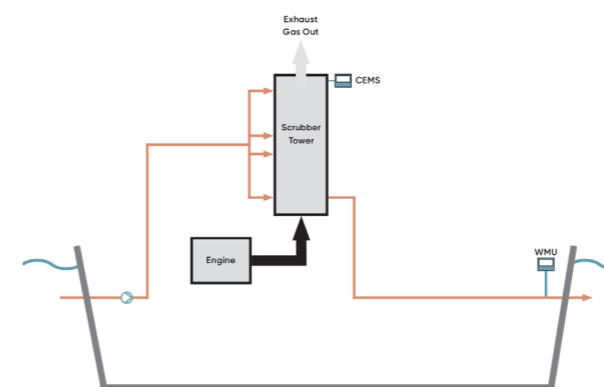
## Open-Loop Scrubber Conversion

- + Constant IMO compliance
- + Operate in zero-discharge mode or discharge clean water
- + Fully automated solution - emancipate person-hours for a more efficient operation
- + Remote service and support 24/7 - Anywhere in the world
- + Low maintenance

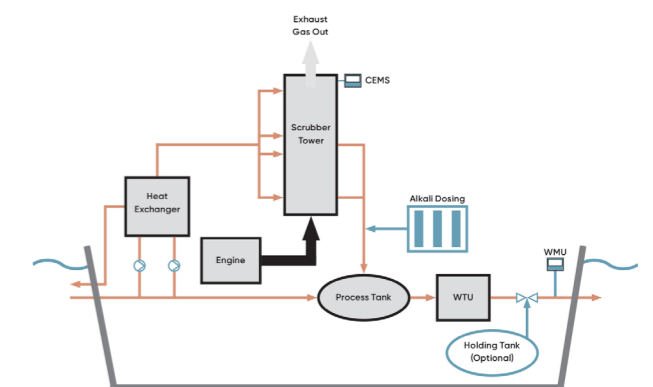
LiqTech Water also offers the marine scrubber water treatment system as open-loop to closed-loop scrubber conversion installation. The future of open-loop scrubbers is heavily debated as they discharge large amounts of pollutant wash-water. Thus, many countries have already implemented an open-loop scrubber ban, and more are expected to come. With an open-loop to closed-loop scrubber conversion, you are compliant with the most stringent environmental regulations set by the IMO and other authorities. Simultaneously, you can continue to operate on heavy fuel oil (HFO), which is often a more cost-effective solution than alternative compliant fuels.

By converting into a closed-loop scrubber or hybrid scrubber in closed-loop mode with a water treatment system, you can operate in zero-discharge mode (water reuse) or discharge clean water without the pollutants that damage ecosystems and harm wildlife. Sludge and wastewater (bleed-off water) can be stored onboard and discharged shoreside.

Open-Loop Scrubber Illustration



Closed-Loop Scrubber Illustration





## SWRO Desalination

Generate potable and technical water directly from seawater

- Greener footprint as no more waste and costs of plastics bottles
- Options for unlimited technical water on board

LiqTech Water offers a compact SWRO unit applicable for smaller commercial vessels, fishing boats, sailing boats, small port applications, and generally all places with access to seawater and where desalinated, potable water is needed.

The reverse osmosis principle employs a polymeric membrane, which is a thin, semi-permeable membrane, to produce clean water. The polymeric membrane allows pure water to pass through while impurities such as chlorine, heavy metals, dissolved solids, ions, bacteria, and viruses are rejected. It is a clean and safe method to produce clean potable water as it does not use any chemicals to purify the water. To ensure consistent, high-quality freshwater, the LiqTech SWRO is equipped with a conductivity sensor, which continuously measures the water's salinity.

The LiqTech SWRO is constructed with high-quality components to ensure a reliable and cost-effective solution, capable of producing clean potable water anywhere, anytime.

- ⊕ Produce drinking water on a vessel at a cost that is cheaper than bottled water
- ⊕ Clean potable & technical water anywhere, anytime
- ⊕ Long lifetime & low maintenance
- ⊕ Greener footprint
- ⊕ Fully automated solution
- ⊕ Easy to operate
- ⊕ Smaller footprint than conventional technologies



Compact SWRO unit applicable for smaller commercial vessels, fishing boats, sailing boats, and small port applications.



Flexible filter press wastewater treatment system with outstanding performance & integrated reject handling.

## Filter Press

- + Extreme solid & liquid separation
- + Optional build-in reject handling
- + Long lifetime & low maintenance
- + Simple & flexible solution
- + Easy to operate

LiqTech Water offers a filter press for extreme solid and liquid separation ideal for marine water sludge treatment. Filter press technology is acknowledged as one of the most efficient and cost-effective methods to separate solid and liquid by delivering extremely high cake dryness.

The LiqTech filter press can produce filter cakes of up to 80 % dryness. This, ultimately, reduces the weight of waste products significantly. By reducing the weight of waste products, effluent levies and waste handling costs can be reduced considerably. This directly affects your profitability, and thus, your competitiveness.

Moreover, wastewater or sludge may also contain valuable, untapped resources, which can be used to optimize various processes. By employing a filter press machine, potential valuable resources can be separated for further reuse or processing. For instance, when separated, wastewater can be reclaimed for other industrial processes or sold for irrigation. This can both be highly cost-efficient but also be the lever to protect scarce water resources.







## UV-C Disinfection Systems

LiqTech Water offers several innovative UV-C LED disinfection solutions for the marine industry. Our disinfection solutions provide instant disinfection of water to provide clean and safe drinking water for all on board the ship. It is an innovative and cost-effective method to efficiently remove 99.99 % of pathogens from water.

We offer point-of-entry (POE) and point-of-use (POU) installations. Thus, our UV disinfection solutions can be installed at the freshwater tank as POE or in kitchens or at bathrooms as POU. All LiqTech Water's UV disinfection solutions are easy to install and maintain. They require merely a small footprint and have a low energy consumption.

They are made of clean materials and do not use or add any chemicals. Get cleaner, safer, and better water for all.



- ⊕ Remove bacteria & viruses from drinking water
- ⊕ Instant water disinfection
- ⊕ Do not use or add any chemicals
- ⊕ Easy to install and maintain
- ⊕ Low energy consumption



**Innovative and cost-effective method to efficiently remove 99.99% of pathogens from water.**



## End to End Service

At LiqTech, we have everything in-house that is key to our customers because they want to work with filtration experts, and they want to work with a company who knows their technology and equipment in detail.

### Technical Sales Support

Our technical sales team is highly experienced and competent engineers with years of marine experience enabling us to discuss and advise on the best system configuration for any vessel type and size.

### Process Engineering Consulting & Chemistry

Through 20 years of manufacturing water filtration systems and filters, LiqTech process and chemical engineers are expert advisors in choosing the best filtration solution, chemicals and dosage suited for the application.

### 18 System Design

LiqTech's water filtration solutions are highly flexible and modular. We can customize filtration solutions to match your specific water filtration needs regarding desired water quality and capacity. And the capacity can always be increased easily.

We have delivered turnkey filtration solutions to several international marine companies and industry leaders, known for their high standards and requirements for flexible and long-lasting production equipment..

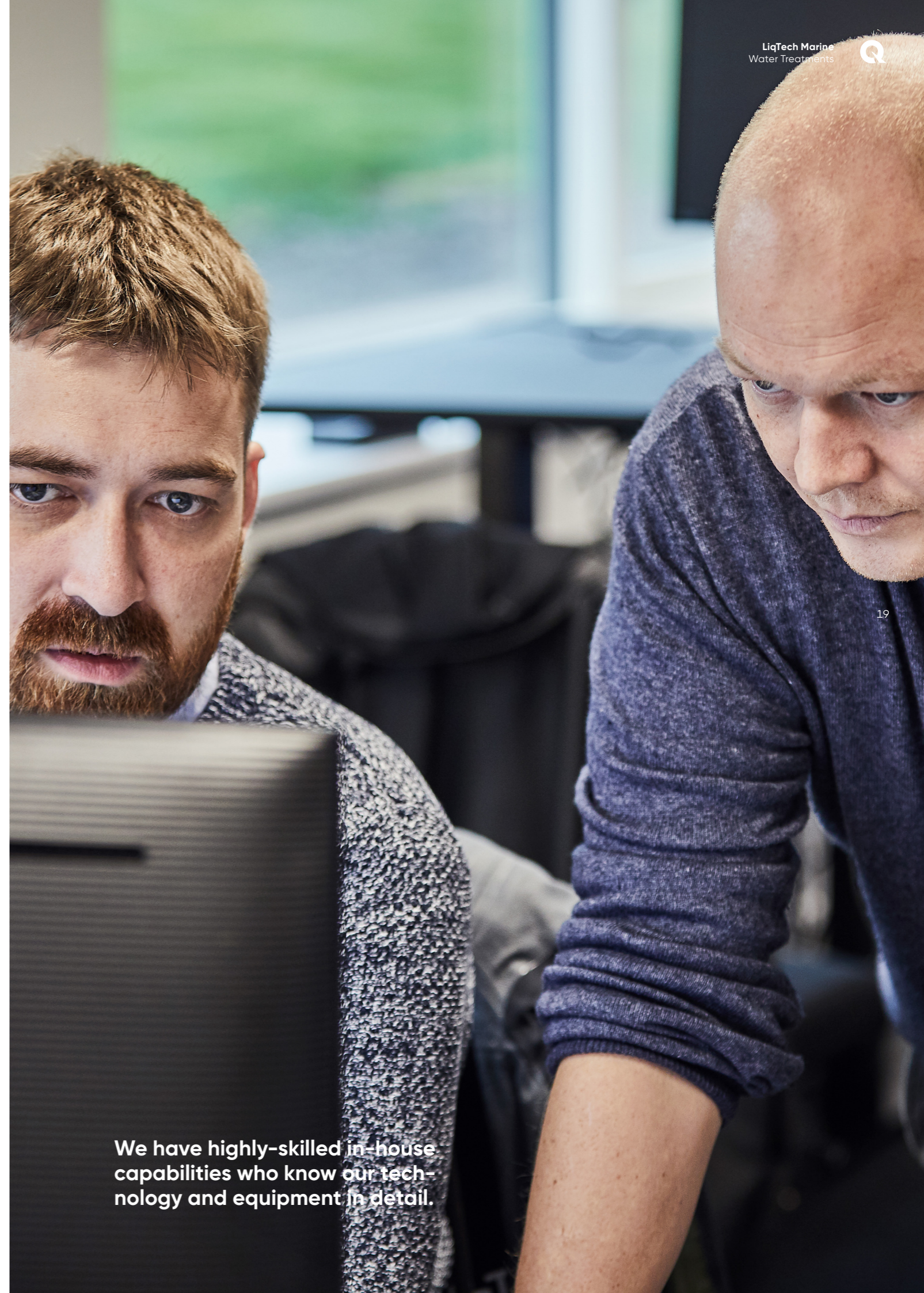
### Project Management

The LiqTech project management team has successfully delivered on schedule 250+ high-quality marine systems to our customers. The individual project managers are given ownership of separate projects, ensuring dedicated focus on client contacts and their systems. Leading up to factory acceptance test (FAT) and system delivery, or whenever a current status update in the building process is needed, that appointed person will always be available and ready to report to the client representative.

### Service & Commissioning

LiqTech will support our systems and your ship for as long as it sails. We support you by:

- Providing technical support who will enjoy in-depth, expert assistance from our highly qualified team of marine service engineers during the entire process, from sales to operations and repair.
- Providing live demonstrations and in-house training
- Performing pre-shipment FAT on every system, ensuring every delivered system works according to specifications.
- Providing on-ship system commissioning for every system
- Continuously upgrading our control module operating system and provide our customers with these upgrades, ensuring the best possible operating performance.
- Providing 24-7 support, so you can have complete confidence in your LiqTech system. The team is always ready to assist through remote service and support on system installation, commissioning, system status and preventative maintenance.



We have highly-skilled in-house capabilities who know our technology and equipment in detail.



LiqTech Water A/S  
Benshøj Industrivej 24  
9500 Hobro, Denmark

+45 7020 7258  
saleswater@liqtech.com  
liqtech.com