

Advantages

- Simple and completely reliable
- Requires no daily maintenance
- Systems are fully monitored to ensure the correct UV dose
- Interfaces with ship management systems
- Range of sizes to suit different demands
- Minimal space requirements

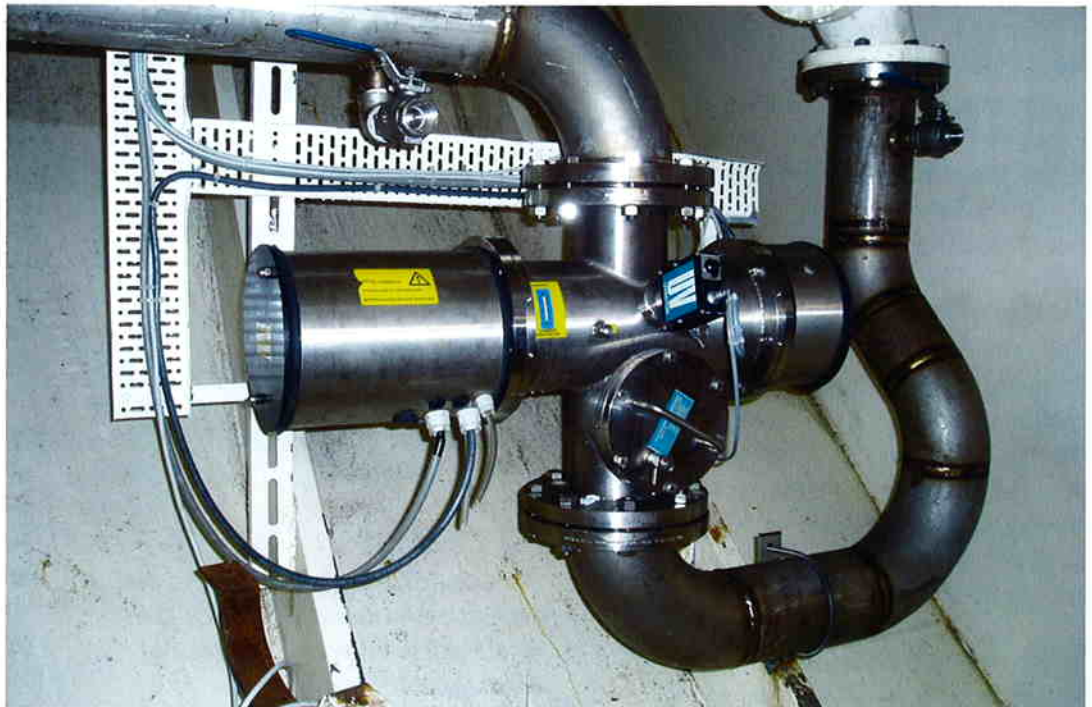
Proven Performance

- No effect on taste, odor or pH
- No residue and overdosing is not possible
- No hazardous chemicals and no toxic by-products
- UV disinfection used extensively throughout the world for water purification
- Same technology used for many years in municipal and industrial water treatment
- Water quality to the highest international standards

Total Solution

- Capacities to meet any requirement
- Totally automatic turnkey packages available
- May be installed on operating ships with minimal disruption
- Full service available from Hyde Marine
- Ship checks, installation support, and spare parts available worldwide

Hyde Potable Water Treatment System



Hyde Marine Disinfection systems use high output medium pressure UV lamps to ensure complete inactivation of pathogens.

Hyde UV Treatment Offers Alternative to Chlorine Treatment

As chlorine becomes a less acceptable method for treating drinking water due to by-products and handling concerns, treatment utilizing ultraviolet technology offers an attractive alternative. UV treatment is a cost-effective and environmentally friendly way to eliminate harmful organisms with minimal servicing and without using chemicals. The system is easy to install and can be easily retrofit onto existing vessels. Low capital, operating and maintenance costs add to the system's appeal.

UV is proven to kill bacteria, fungi and molds as well as spores and viruses. It has also been demonstrated that UV effectively deactivates chlorine-resistant pathogens such as *Cryptosporidium*, *Giardia* and *Legionella*.

Hyde Potable Water Treatment System

PRODUCT DATA CONTINUED

The Hyde Marine System

In the treatment room, all the water flows through the chamber where UV purifies it. The only moving part is the automatic wiper, which keeps the surface of the quartz sleeve free from deposits.

Monitor

The monitor provides continuous measurement of the UV intensity and keeps the system running at maximum efficiency. Any change in process conditions triggers a remote alarm.

Control Unit

The control unit has a full suite of indicators, alarms, and a UV intensity meter output with a real-time VFD display. The unit can be integrated with the ship management systems or operated as a stand-alone. It has a constant wattage power supply and is built to the highest electrical standards.

Treatment Chamber

The internal finish and photo-catalytic lining are of the highest standard to enhance photo-oxidation reactions. Made of 316L stainless steel and designed for optimum hydraulic

effectiveness, the chamber delivers uniform treatment.

UV Lamp

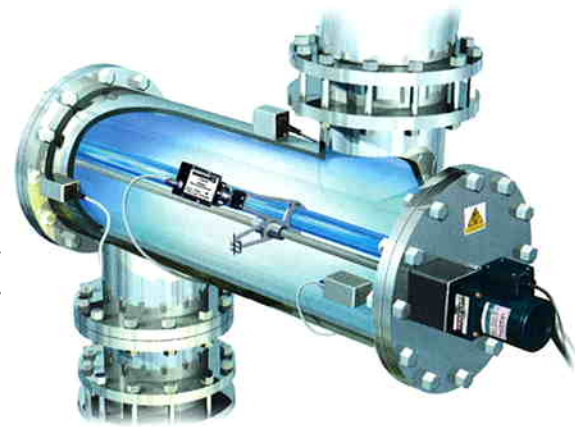
An axially mounted quartz sleeve houses the UV lamp. This can be replaced without interrupting the flow. Hyde Marine uses lamps specifically designed and developed to provide the wavelengths necessary for disinfection.

Application

- May be used for bunkered water as it's taken onboard
- Primary disinfection prior to residual chlorination
- Total and sole treatment where water is of high quality and where regulations do not impose a residual treatment

Most Efficient

- Bacteria, viruses, molds, spores and protozoa are all inactivated by UV
- Treatment is effectively monitored and fully automatic
- UV works instantly so no contact tank is required
- Increasing number of pathogens are chlorine resistant

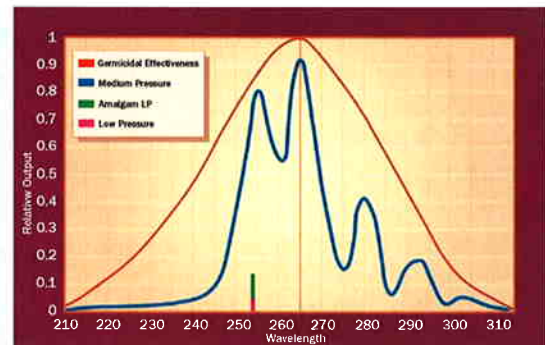


Superior to Alternatives

- UV is an environmentally friendly way to eliminate bacteria and pathogens without chemicals
- Chlorine is becoming less acceptable because of harmful by-products and handling problems
- UV has a small footprint and is straightforward to install for easy retrofitting to existing ships
- UV is simple for ship's crew to operate and maintain
- Permanent accurate treatment records can be produced so all treatment can be traced
- Low capital, operational and maintenance costs

How UV Disinfection Works

- UV energy causes permanent inactivation of microorganisms by disrupting DNA (the reproductive material) so that they can no longer maintain metabolism or reproduce
- Maximum effectiveness occurs between 240 and 280 nm
- Single most effective wavelength occurs at 265 nm
- Hyde Marine medium pressure UV system produces these wavelengths in abundance



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