

Sicure BWMS based on filtration, disinfection and control

SIEMENS | The Sicure Ballast Water Management System (BWMS) developed by Siemens uses electrolysis to produce sodium hypochlorite right from the seawater it is treating. The system uses the same principles and core components as the Chloropac® system that prevents biofouling in cooling water circuits on board oil platforms and ships around the world.

Process steps of ballast water treatment

The Sicure BWMS is based on three main process steps. In the first one, the ballast water is filtered through an automatically backwashing 40 µm filter. This removes plankton and algae and – thus – minimises the amount of sodium hypochlorite disinfectant required. In the second step of the process, the disinfectant is generated on board electrolytically. This completely eliminates the purchase, storage and handling of chemicals.

The third step is a control algorithm specially developed for this application. Based on the activity of the disinfectant in the water, exactly the required amount is produced and dosed. This avoids adding excessive sodium hypochlorite to clean seawater. That saves operating costs and protects the environment. The electrolytic process in the Sicure system does not take place in the main ballast water stream but in a side stream, which corresponds to less than 1% of the total quantity of water.

According to Siemens, this is one of the main differences between BWMS and other



The Sicure Ballast Water Management System can be supplied pre-assembled for new constructions or as separate components for retrofitting

systems available on the market, in which all main components, such as UV lamps and electrolytic cells are integrated directly into the ballast water pipework.

Maintenance and energy requirement

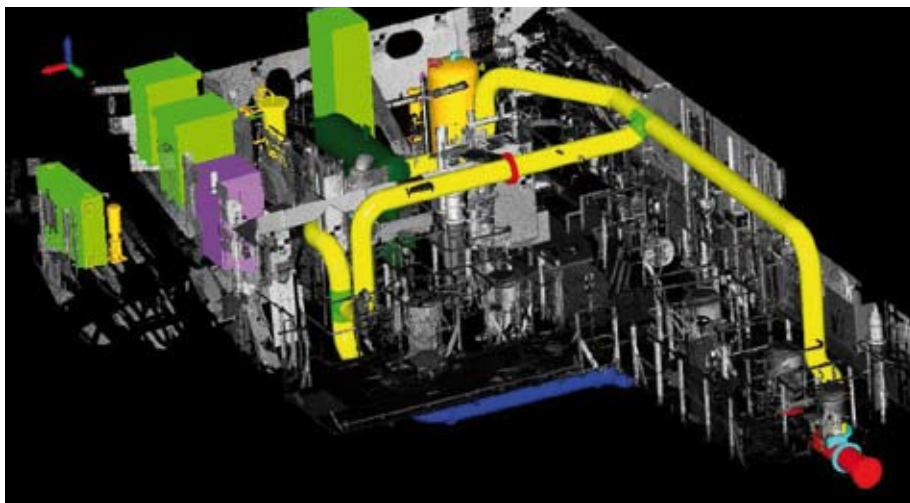
Tubular electrolytic cells comprise the heart of the Sicure system. They are designed to prevent calcareous deposits (calcium and magnesium) from forming on the surface of the cathode, which necessitates the use

of flushing chemicals in conventional equipment. Another crucial point is the system's low energy requirement of about 75 kWh/1000 m³. The additional electrical power of about 50 kW required to run a 900m³/h system can usually be covered by the ship's existing capacities, so there is no need to install an additional generator.

The Sicure BWMS is only brought into operation during the ballasting process. Depending on the mode of operation of the ballast water system, this offers the opportunity of designing the ballast water treatment system for lower volume flows than is the case with a system which is used during both ballasting and deballasting.

Bulk carriers frequently shed ballast when loading at twice the rate that they take on ballast. The Sicure System can be designed for the volumetric flow of one pump for ballasting, whereas two pumps are used for deballasting at double the volume flow rate.

The option of equipping the Sicure BWMS with a dual-action function is especially attractive when building new ships. In this case, the system is designed to treat ballast water when the ship is in harbour, and to prevent biofouling when it is at sea. The Sicure BWMS was already granted Basic Approval and is currently preparing for the Final Approval; Type Approval is expected by the end of 2011.



Advantage during retrofitting: The components of a Sicure BWMS can be installed freely in the machine room because the electrolysis takes place in a side stream of the ballast water pipework