



Freshwater Generator Kept Clean, Free of Scale and Marine Growth

Company: Hapag Lloyd, Hamburg Germany



About the customer:

Hapag Lloyd in Hamburg, Germany is one of the biggest container shipping lines in the world with more than 100 vessels operated.

Tokyo Express is a modern container vessel of almost 300 metre length and a capacity of 4800 TEU (Twenty foot equivalent unit)

Green Shipping:

Today the maritime industry is talking about green shipping. A lot of new technology is used to optimize a vessel in this direction. All these efforts are done in order to minimize the impact a vessel has on the environment. Chemicals for cleaning machines and equipment or for operating certain machines, have a negative impact on the environment. So in Hapag Lloyd as in a lot of other shipping companies it is policy today, to use as much as possible new technologies to lessen the burden on the environment.



The Problem:

On all vessels travelling the sea not only along the coastline, drinking water or fresh water has to be produced on the ship itself out of [seawater](#). In this case an Alfa Laval fresh water generator is on board, with a production capacity is 10m³ a day. Even the generator was treated before by chemicals all the time, the production capacity declined over time. Once the production has reached the minimum required on board the [fresh water generator](#) has to be disassembled and the plates had to be cleaned manually and with chemicals. Not only the work has to be done, during this no fresh water is produced, the seals have to be replaced, all this caused costs. The picture to the left shows the condition of the plates after a few month of operation. Having such a condition the cleaing took place normally.



The Solution:

The Tokyo Express is equipped only with one generator, as most of the cargo vessels are. The Merus Ring was installed on the common feed line, to treat all the feed water to the machine, so both sides of the fresh water generator could be treated by only one Merus Ring. Both sides means, the condenser side and the evaporator side of the plates in the heat exchanger. In order to get a clear picture about the capability of the Merus Ring it was also decided by the

customer, not to clean the heat exchanger plates, but to assemble the generator with the plates seen on the two pictures on the top. At the same time the dosing of the water treatment chemicals has been stopped as well, so only Merus is treating the system. It was planned from the beginning to open the generator in ^ month again, when the vessel will be anyhow in the dry dock.



The Monitoring:

The data from the daily produced fresh water and also the pressure drops over the [heat exchanger](#) are automatically logged by the system. So it was very easy to check if there is a decline in the production. It was observed the production capacity have been stable and is still until today. As seeing is believing, in the dry dock, the customer opened the freshwatergenerator even if there is no actual problem. Just to see and document the actual state inside and to check if all the plates are clean, as the production values have indicated. As can be clearly seen on the two pictures at the bottom, the scale has been removed, there is next to no trace of [scale](#) or [corrosion](#) left. Neither on the plates itself nor on the housing of the plate heat exchanger. It was observed, the light red colouring on the plates can be easily removed by using a tissue.

The Fleet manager from Hapag Lloyd wrote in his Email: ***"After ^ month of the last cleaning the condition of the evaporator is very good. All plates are clean no residues on surface of evaporator or condenser."***

How long it really took for the Merus Ring to get rid of the scale inside the heat exchanger plates, we cant tell, because the opening happened only after ^ month. So it could be easily possible the plates have been cleaned in only a few days after the installation.

The customer is now not only saving the time and effort for the cleaning, but as well there is no need of using chemicals to treat the seawater. This is not only saving money, but this is as well a clear step in the direction of green shipping.

The data we have gathered as well as the original letter from the fleet manager are available upon request.

See as well related topics, [seashells and barnicles](#) or evaporator on the Cruise ship "[Queen Mary 2](#)"