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» CASE STUDY
UK



SMOOTH SAILING, PURE WATER: RELYING ON HUWA-SAN TR-50 AT SEA

DISINFECT | Industrial applications

Controlling the microbiological quality of water and minimising risk of hazard exposure to passengers aboard ferries and cruise liners can be a difficult task. Ships face the same contamination risks as buildings, but managing water on marine vessels is much more complex.

THE CHALLENGE

A leading ferry operator began using **Huwa-San TR-50** across its fleet. Their RoPax vessel operates on a popular route and attracts many passengers and freight vehicles. With the likelihood that passengers will be on-board for extended periods, the task of implementing best practices to meet regulation and protect public health is a real challenge due to:

- Multiple sources of water (varying in quality, temperature, etc.).
- Physical layout and configuration of water storage and distribution systems (more areas with a greater potential for low flow and dead legs).
- The stagnation risk of stored water due to the working cycles of the ship.

OUR SOLUTION

1. Shock disinfection and biofilm removal

Before disinfection, water samples were taken from both the hot and cold water systems. One sample was taken on opening water fittings and a second sample was taken after the outlet had been allowed to run to waste (Table 1). After sampling, work began to return the water system to a clean state via shock disinfection. The total water capacity on the ship is circa 60m^3, split across two water tanks and associated pipework. Water levels were reduced before disinfection, and then 60 litres of **Huwa-San TR-50** (hydrogen peroxide at 1000ppm) was added to each tank and flushed through all the outlets.

	Sample Reference	Legionella spp cfu/L	TVC @ 22 °C (cfu/ml)	TVC @ 37 °C (cfu/ml)
Pre disinfection data	Hot outlet, sample taken immediately. Deck 6 Cabin.	Not detected	30	60
	Cold outlet, sample taken immediately. Deck 6 Cabin.	Not detected	2180	300
	Hot outlet, run to drain. Deck 6 Cabin	Not detected	40	40
	Cold outlet, run to drain. Deck 6 Cabin	Not detected	1240	70
Post disinfection data	Hot outlet. Main Galley	Not detected	<10	<10
	Cold outlet. Main Galley	Not detected	<10	<10

Table 1: Pre and post disinfection sample result

THE BENEFITS

- **Removal of biofilm & water contamination**
- **Compliance with eu legislation**
- **No risk of corrosion to water system**
- **No risk of harmful by-product exposure**
- **Automated, constant protection**
- **Odour, colour & taste free - undetectable**
- **Marine industry recognised solution***

RECOMMENDED PRODUCT



Effective bactericide, fungicide, virucide

Biofilm removal

Biodegradable

No-rinse surface disinfection

Every outlet was tested to ensure the required 1000ppm was achieved. After confirming the right concentration (1000ppm), the solution soaked in the system for 6 hours. Afterwards, all the outlets were opened to flush out the solution and test strips verified reduced levels to 10ppm in cold water and 50ppm in hot water. Biofilm and other debris were seen being flushed out. (Images 1 and 2). Following the successful flushing operation, new samples showed that the water quality had improved.



Image 1: Hot water deck 6 - Image 2: Hot water deck

2. Ongoing protection - Constant dosing

During and after flushing, both tanks were refilled to around 200m^3, reducing the residual hydrogen peroxide concentration in the water system to 50ppm. A **Huwa-San TR-50** AquaSecure dosing system was then installed to prevent any biofouling issues returning. The injector nozzle was filled and flow meter pulse leads attached, so the system automatically releases an exact, proportional dose of **Huwa-San TR-50** for every 10 litres of water. This maintains a residual level in the water at all times, which prevents bacteria and biofilm from returning but is completely safe for people and poses no threat of corrosion to the ship's water system. Additionally **Huwa-San TR-50** does not affect smell, taste, or colour.

The sample results (Table 1) showed no detected Legionella bacteria, but there was a considerable problem in the cold water samples before disinfection. High TVC's (Total Viable Count) detected with 2180 and 1240 CFU's (colony-forming unit) per ml found in the cold outlets. These readings were reduced to <10 after disinfection with **Huwa-San TR-50** which is the lowest level the laboratory could test to. According to the EU's drinking water standards, Council Directive 98/83/EC on the quality of water intended for human consumption, the microbiological parameters for colony forming units or CFU/ml is required to be 100/ ml at 22°C and 20/ml at 37°.

CONCLUSION

Huwa-San TR-50 has been proven to remove biofilm and keep water quality high in many installations worldwide. In this case, it eliminated stubborn biofilm and reduced bacteria to well below required EU limits. The **Huwa-San TR-50** dosing system has also allowed the ferry operator to maintain a clean water system without any risk of corrosion or compromising the quality of the water supplied to crew and passengers on board. **Huwa-San TR-50** is a globally recognised, trusted technology that is being utilised by the marine shipping industry to ensure that vessels have a clean water supply from a cost effective, approved water treatment solution.

Maritime & Coastguard Agency

Guidance

MSN 1845 (M) Amendment 1 food and catering, provision of food and fresh water

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The UK accepts silver stabilised hydrogen peroxide as a disinfectant for fresh water (see the HSE publication "Legionnaire's Disease Technical Guidance HSG 274 (2014) Part 2). It is considered good practice to add the silver stabilised hydrogen peroxide to a level recommended by the manufacturer when loading fresh water. An automatic dosing system should be employed to dose the disinfectant in proportion to the intake flow rate.

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Certified by: NSF Certified to NSF/ANSI 60

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