

# Superyachts



ENWA Water Technology: EnwaMatic®

Applications: LTHW / CHW / COND

Featured: *Bespoke 'White' with Glycol Retention System*



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Corrosion inhibition  
Scale control  
Restricts bacteria  
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ADVANCED WATER TECHNOLOGY



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# Chilling out



ENWA Water Technology UK's **Marcel Sousa** outlines how fouling, corrosion and scaling can affect HVAC efficiency.

When it comes to HVAC water treatment it is easy to take a relaxed approach – after all, ‘if it ain’t broke, don’t fix it’, right? However, a silent and gradual deterioration is easy to miss, and, when damage becomes apparent, many components are often beyond cost-effective repair.

### FOULING

Common debris found in chilled water systems as residue from an installation includes dirt, jointing materials, metal swarf and general fouling. The thoroughness of pre-commissioning and flushing of these chilled water systems, and any filtration and treatment methods used in operation will inevitably dictate the chiller’s efficiency and the associated operational and fuel costs.

The water that is mixed with glycol in the chilled water system is the heat transfer carrier; so essentially, the cleaner it is the more efficient the heat transfer will be. Any deterioration to the chilled water ultimately results in a reduction of thermal performance, leading to higher energy consumption.

When it comes to best practice regarding chilled water, a good benchmark is BSRIA (Building Services, Research and Information Association), which gives guidelines for engineering companies commissioning and servicing

buildings onshore. The table below summarises the maximum recommended levels of solids and iron in suspension of a closed loop HVAC systems.

**Water analysis is recommended on an annual basis and can be carried out by most independent laboratories.**

In ENWA’s experience of testing water samples from hundreds of vessels (both commercial and pleasure) we’ve found that one out of every three does not adhere to these guidelines. The result is restricted flow and blockages in air handling units (AHU) and fan coil units (FCU), leading to reduced efficiency of air conditioning and controls, as well as affecting the comfort experienced by guests on board the yacht. Furthermore, as the heat transfer efficiency is reduced, an increase in energy consumption occurs.

Water analysis is recommended on an annual basis and can be carried out by most independent laboratories.

Suspended solids (mg/l)	Less than 30mg/l in circulating water at pumps
pH	Range recommended by the cleaning specialist – depends on the water-treatment regime
Soluble iron (mg/l)	Less than 3 mg/l
Total iron (mg/l)	Less than 6mg/l

## CORROSION CONTROL

Chilled water systems use glycol as an antifreeze due to their low operating temperatures. Some glycol solutions are premixed with corrosion inhibitors while others are untreated and require supplemental treatments to be added separately. Untreated glycol solutions are extremely corrosive and will eventually degrade to form acids that reduce the pH and accelerate corrosion.

Systems containing glycol can have serious, long-term problems unless proper treatment measures are taken to minimise corrosion and degradation, which is why samples of the chilled water should be inspected on a minimum of once a week.

## SCALE CONTROL

Since chilled water systems operate at relatively low temperatures and require very little make-up water, there is little risk of scale formation. Scale deposits are more commonly seen in higher temperature systems, such as engine cooling, where hard make-up water causes scale to precipitate, leading to gradual build-up of scale in cylinders and cylinder heads.

Regular water sampling and correcting the water's chemical composition through the dosage of inhibitors/glycol ensures long-term efficiency and protects one of the major pieces of equipment on a superyacht. Admittedly, this is a mundane task, but master the mundane and you will be trouble-free.

A simpler and more effective alternative would be to use side-stream filtration and treatment like the EnwaMatic Maritime (EMM). The EMM is a chemical-free and fully automated unit, which provides corrosion inhibition, scale control, air separation and particle filtration in one unified system. The combined filtration and treatment method keeps the water clean and clear, which also has the beneficial effect of restricting bacteria growth.

In an earlier edition of this magazine, Guillaume Roché of Sunrise Yachts described his vision of extended warranty periods for superyacht clients in order to preserve the value of superyachts and to attract more investors into our industry. ENWA shares this view; after all, prevention is better than cure. Since air-conditioning systems are one of the main energy

consumers on a yacht, and the guest experience on board a yacht is greatly affected by the efficiency of the comfort cooling systems, it is essential that these systems are protected in order to maintain their design specification. ■



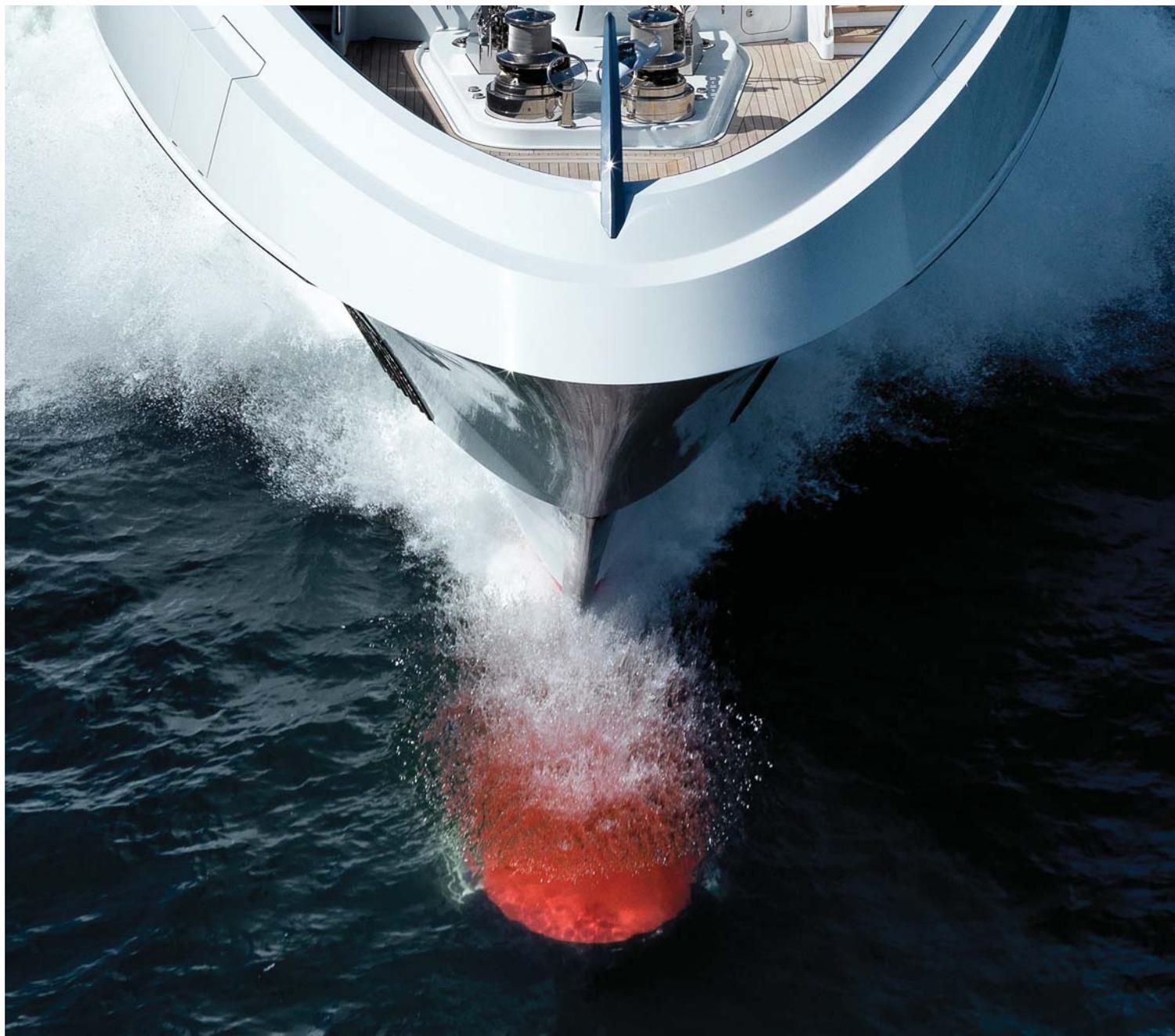
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WITH SUBJECT: CHILLING OUT

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# The Superyacht

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# REPORT

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*TSR* is granted exclusive access on board the 70m motoryacht during her final day of sea trials.

## **HULL FORMS**

In an exclusive with *TSR*, Van Oossanen discuss their three new hull concepts.

## **AV/IT**

A look at what is behind some of the most innovative AV/IT installations on board recent launches.

## **LIGHTING**

The current state of lighting technology and where it might be heading in the future.