

Report about the prevention and removal of scale  
with the aid of the “**Scalewatcher**™”

**The end-user**

The Royal Dutch Navy possesses a fleet of many ultramodern vessels, amongst others a large number of frigates, minesweepers, submarines and supporting vessels.



**The process**

More and more frequently the Royal Dutch Navy is brought into action as a police force on all international sailing courses, to support major crises and to defend the North Atlantic waters. For these purposes the Navy owns very advanced vessels on which hygiene and water quality is ruled by law.

**The problem**

Water quality is different in each harbour. As it is unpredictable whether the water is hard or soft and in order to meet the outlined hygiene and water quality requirements a large span of time is spent on maintenance and cleaning of taps, showers and kitchen apparatus.



Tap



Showerhead

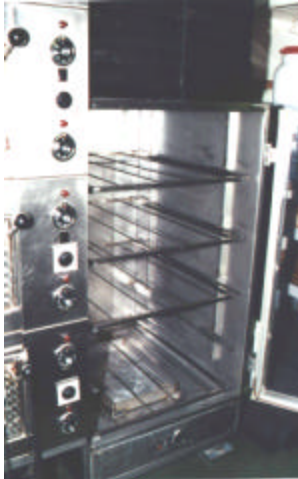


Kitchen

Also the heatexchanger before the central heating boiler has to be descaled regularly and during the voyage very often an electric boiler was added to produce sufficient hot water. If the shower cabins were not very regularly cleaned it would not be unimaginable that mould establishes itself.

### **Solution (1)**

On one of the frigates a test was carried out in June 1997 to prevent scale build up in the central heating pipes and the showerheads, bakery and kitchen.



Bakery



Before the pump



Central heating

The following set up was chosen.

To treat the scale build up in the showers and the kitchen a **Scalewatcher**™ Marine 3 was installed before the pressure water installation. A second unit was installed on the main feed to the central heating installation.

A remarkable improvement was noticed during the three months' voyage.

### **Solution (2)**

In October 1997 a similar test was carried out on one of the minesweeper. The problems on a small vessel differ from the ones on the large frigates. On the small vessels there is only one water stream. Four boilers heating the water for the four sections in which the vessel is divided heat the cold water main feed. As very often scale build up was noticed just after each boiler, a different approach was chosen.

A **Scalewatcher**™ Marine 2) was installed on the main feed and a **Scalewatcher**™ Commercial before the three boilers. One boiler remained untreated. During the inspection after six months hardly any scale build up was noticed in the three with **Scalewatcher**™ protected sections.

### **Conclusion**

A commission laid down this improvement and it was decided to implement this modification to all vessels.

### **Source**

Ministry of Defence, department Marine Purchase.