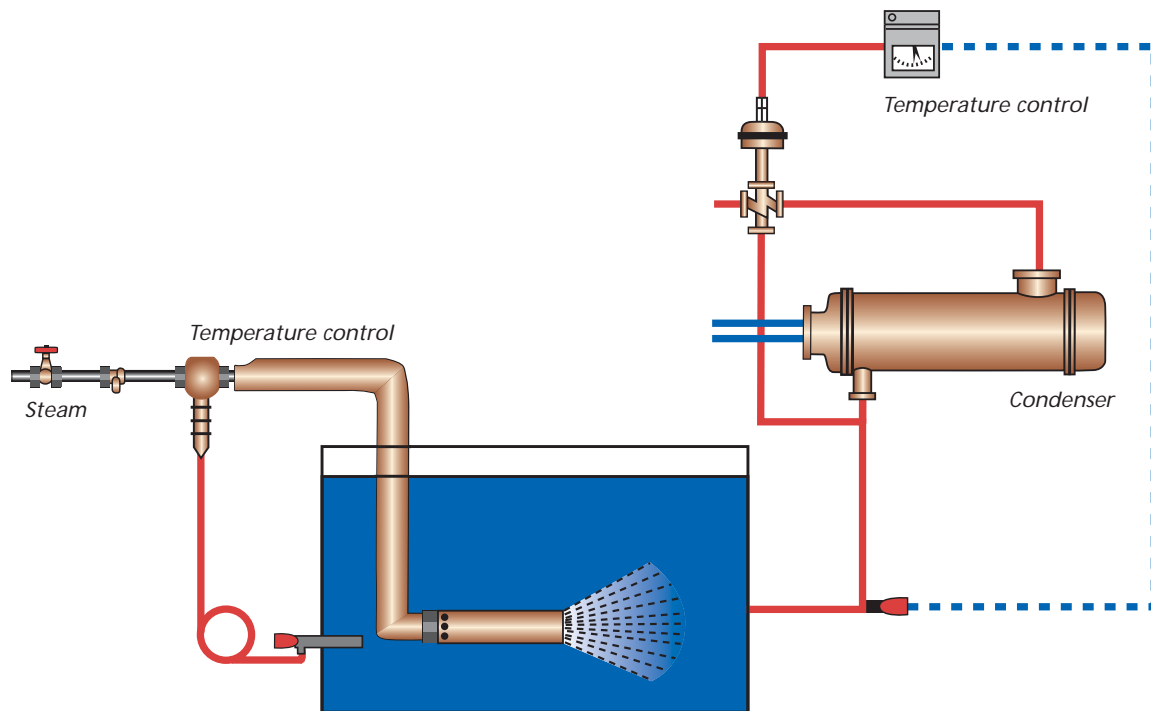


## Keep your feedwater steaming hot

*Corroding salts, gases and oxygen occur in boiler water but can be kept in check if the temperature is kept sufficiently high. The Feedcon steam system is an efficient solution.*



### Water - friend or foe

The majority of ships run with ineffective or improperly operated water treatment systems. This leads to:

- Extensive damage to boilers
- High repair costs
- Dramatic reduction in boiler life

A proper system for boiler feedwater will maintain normal boiler life expectancy up to 30 years.

### The enemy within

Untreated water is never pure. It contains a cocktail of salts and gases. Salts, if not removed or altered by chemicals and water softening treatment, cause scaling on boiler heat transfer surfaces.

Carbon dioxide gas will combine with water to form carbonic acid, which attacks the boiler and the condensation system.

Oxygen in the feedwater is the major cause of corrosion in boilers. The oxygen can, however, be removed by keeping the feedwater temperature above 85°C.

### Fighting oxygen

Thermal deaeration will remove up to 75 percent of the unwanted oxygen in feedwater. Chemical oxygen scavengers can absorb the remaining oxygen.

### Fighting carbon dioxide

Heating of boiler feedwater can keep the carbon dioxide in check. At a temperature of 85 to 90°C, carbon dioxide is in its steam phase, and the gas is harmless in this state. The temperature must be maintained, or corrosion will be triggered by the changes in the carbon dioxide contents. Alkaline boiler water and chemical treatment can help neutralise the effects of the gas as well as handle the salt problem.

### Aalborg's money-saving Feedcon system

Aalborg Industries has a highly effective solution to solving feedwater problems. The system is usu-

ally offered together with new boiler plants but generally decided against by the shipyards, much to the regret of shipowners and ship managers later. The Feedcon system is, however, easy to install and operate.

A Feedcon steam injection system in a closed, vented feedwater tank will ensure that the feedwater temperature is maintained at a minimum of 85°C, thus preventing oxygen corrosion.

A system for controlling condensate temperatures also solves the related and costly problem in condensate water from the system which is often super-cooled before



*SUNROD™ pin tube damaged by oxygen corrosion (pittings).*

being returned to the cascade tank or hotwell tank. This means that more steam has to be injected to maintain the temperature. The Feedcon system prevents this waste of energy and saves the ship operators unnecessary costs.

### *Keep your feedwater steaming hot and you will gain*

- *A longer boiler life*
- *Lower operating costs*
- *Higher steam output*
- *Less maintenance*
- *Lower consumption of chemicals*

