



Danish Clean Water

COOLING TOWER INSTALLATION



The Installation: Evaporators of ca. 50 m³ of water with 280 m³/h flow used for cooling in a range of processes within an industrial area.



The evaporators

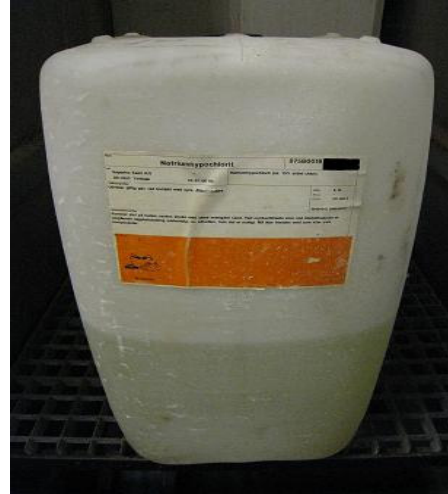


The installation

The Problem:

The original treatment protocols consisted of shock dosing manually with ca. 15% sodium hypochlorite. The shock dosage was an attempt to kill all bacteria as well to remove the biofilm. This proved ineffective and also provoked a high potential enhancing corrosion. The picture on the left was the data log used. No control was made whatsoever between dosages. Tests made in accredited lab showed fluctuating bacterial counts as well

Dato	Spidevand OK/Not	Køllevand OK/Not	Store filter	Lille filter	Salt	Chlor	Initiativ
23/8	ok	ok	ok	ok			20
24/8	ok	ok					14
27/8	ok	ok			100+kg		14
29/8	ok	ok				1 L	14
30/8	ok	ok					33
31/8	ok	ok					34
9/9	ok	ok					14
10/9	ok	ok					14
12/9	ok	ok	ok				33
13/9	ok	ok					33
14/9	ok	ok					33
19/9	ok	ok	ok	ok	100kg		32
23/9	ok	ok					32
24/9	ok	ok					34
25/9	ok	ok					34
30/9	ok	ok					34
31/9	ok	ok			100kg		32
1/10	ok	ok					33
2/10	ok	ok					33



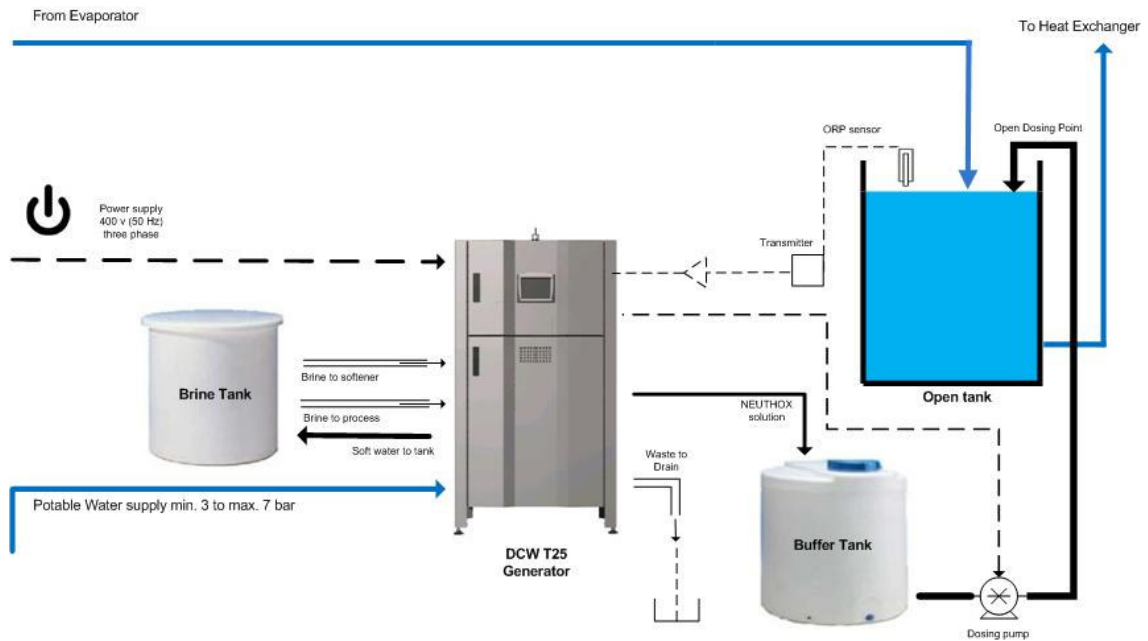
above the legal limit for *Pseudomonas* species, an opportunistic human pathogen causing a broad range of diseases to Man from skin inflammations to death.

The Solution:

A 40 liter generator of Neuthox was employed to solve the problem. The installation included the salt and buffer tank with a dosing pump controlled by an ORP (REDOX) sensor. The dosing pump was set to dose



when the ORP dropped below 450 mv and cease when it reached 500mv. This has resulted in an average free chlorine level of 0.5 ppm. The dosing pump was selected for its ability to transfer the Neuthox some 30 meters from the buffer tank to the open tank as it was not possible to locate the generator within the plant room due to size constraints. The ORP sensor was located in the open tank near the incoming water and the dosing point located near the water outflow to avoid any false readings.

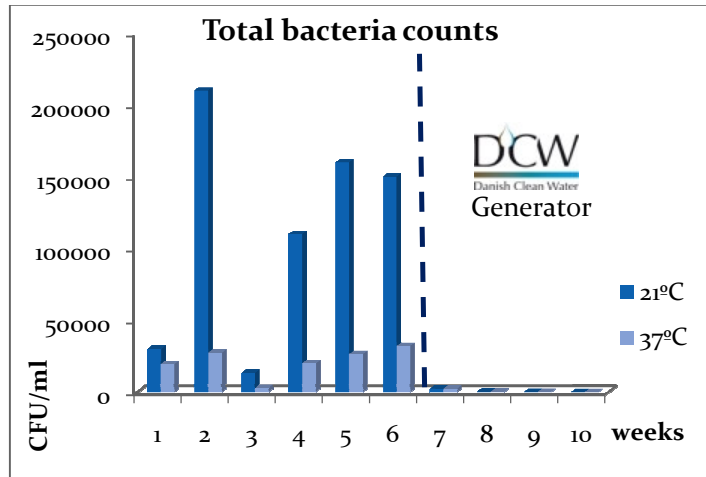


The pictures down show a detail of the salt tank (left) and the dosing pump (right).



The Results:

Tests were made every week in accredited lab before and after the installation. The results clearly show bacteria counts inferior to log 2 since week 7 when the generator was installed. On site it was also observed that the biofilm present in the system was reducing. Pseudomonas was no longer detectable.



The Benefits:

- **Safety**
 - no need to mix or dilute hazardous chemicals
 - environmental friendly solution
- **Efficiency**
 - elimination of biofilms and inactivation of pathogenic microorganisms including Legionella species, and nil or low bacteria counts
 - creates a longer-lasting residual than traditional chlorination, often at a lower dosage
 - right dosage, no more no less – corrosion is reduced
- **Cost reducing**
 - the system is fully automatic and only requires minimal operator attention
 - no need for transport, handling or storage of chlorine gas or hypochlorite