

## Test site 3 Mod base in West Tofts Camp



## The situation

### The location

A busy MOD base serving 600 soldiers, near Theford, Northfolk



The Rinnai hot water heaters and boiler for the central heating system

### The set up in kitchen

Supply is a 28mm pipe and feeding 2 RINNAI warm water hot water heaters (HD70) which will quickly bring the water quickly up to the desired temperature.

There is a secondary return on the hot water system plumbed in 22mm.

This has a capacity of 4.5 m<sup>3</sup> per hour, and caters for up to 600 soldiers

Water pressure is created from tanks and is boosted to 2bar.

The water hardness supplied by Anglian water is about 300 ppm.

### The problem

Rinnai hot water heaters on this site will show signs of scaling after just 4 months, and already fail completely in 6 months. This will manifest it self in lower flow levels and an increase in flue temperatures. The need for a de scale and a replacement of the heat exchangers would be the result.

Other water treatment systems have been installed but results are at the moment inconclusive, at best.

Shower heads still needed descaling every 3 months with an acid dip, as well as regular replacement.

All the above creates large costs for Landmarc especially in terms of labour and fines for equipment not being ready to use.

The kitchen has had 3 rinnai hot water heaters fitted in the last 2 years and 1 clarifier.

Maintenance on site also regularly report that the taps also were in need of regular replacement.

### The set up 2 the shower block

The supply is a 28mm pipe feeding 2 RINNAI warm water hot water heaters which will quickly bring the water up to the desired temperature.

There is a secondary return on the hot water system plumbed in 22mm.

It has a capacity of 4.5 m<sup>3</sup> per hour, and caters for up to 600 soldiers.

Water pressure is from tanks and is boosted to 4bar.

The water hardness supplied by Anglian water is about 300 ppm.

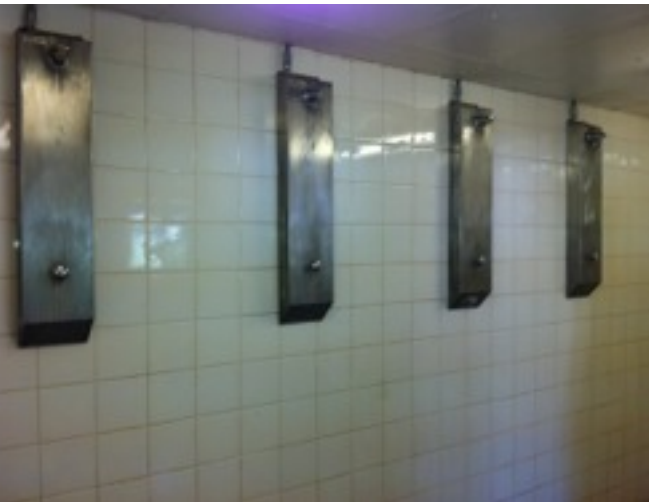
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### The Solution

After spending a substantial amount of money on various scale prevention technologies, the management of Landmarc turned to the patented AQUABION® to be tested on two sites.

In both cases; the shower block and kitchen block, an AQUABION® H25 was installed on the mains as well as an AQUABION® S20 on the secondary return, after the pump. This solution is not only supposed to provide better protection than previous technologies but also better value for money.



Before: the shower heads needed regular descaling or replacement.

### The testing procedure

The first inspection will be expected at 2 months with a shower head inspection.

The second inspection will be expected in month 4. The question that will be asked: Do the shower heads need descaling? With the first 5 taps open what is the flow at the furthest tap from boiler?

The final test will be in December and will be the same as above as well as the removal of the heat exchanger to be cut open by Rinnai.



Albert Watson from Landmarc inspects the performance.

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### Inspection 1 and 2:

The first and second inspection after 2 and 4 months was very successful. Showerheads were free of scale and pressure was fine again, even after a period of 6 months (final inspection)



### The Result

The heat exchanger was inspected by the Rinnai in December.

Albert Watson of Landmarc was delighted to see that with AQUABION®, they have endless hot water, with no problems with scaling.

Mr Watson intends to order more units throughout the year 2012.



Other water treatment systems did not stop the Rinnai warm water heater from scaling up



One of the successful installations for Landmarc on behalf of the MOD