

CASE STUDY

Hamworthy Boiler Manufacturer Space Heating



Executive Summary

- **30%** energy saving validated by Hamworthy
- **3 Floors of Offices**
- **Typical office operating hours**
- **Sub-metered Hamworthy Steel & Aluminium boilers**
- **Internal and External temperatures closely monitored**
- **No changes to the building infrastructure or heating system**

Hamworthy are part of Groupe Atlantic a large European manufacturer with €950m turnover in 2013. Their mission is: "To transform prevailing energies into lasting well-being, by creating thermal comfort solutions that are ecologically efficient, accessible to all and suited to individual needs."

Hamworthy has installed Hydromx© at its offices in Poole. Hydromx is a leading innovation in *Nano Thermo Technology* and Hamworthy have carried out a study into how it improved their energy efficiency. The study recorded gas consumption for two Hamworthy boilers, one with a Steel Heat



Exchanger and the other Aluminium; with a total capacity of 95 kW.

These are controlled by a Cascade Manager with an outside ambient

temperature (OAT) sensor. Direct Hot Water Supply (DHWS) is delivered by separate gas-fired Hamworthy heaters and this consumption was not included in the study. A gas meter was installed on each of the two space heating boilers and several additional temperature data loggers were deployed to ensure internal space temperatures were consistent and comparable across the three floor office space.



The building has a large number of radiators around the perimeter of each of the three floors and temperature control is limited to one thermostat on the 3rd floor and Thermostatic Radiator Valves (TRVs) on the 1st floor. There are no TRVs on the 2nd or 3rd floors.

The building and core of the heating system originates from the 1960s and contains metals commonly found in heating systems including, Steel, Brass, Copper and Aluminium. Installation was carried out within the plant room. The 900 litres of water in the system was drained, a Hydromx solution was pumped in and radiators bled within a day.



Gas consumption, internal and external temperatures were independently monitored and logged by Hamworthy Technical staff throughout, so that the performance of Hydromx could be carefully compared to a baseline of water alone (with just corrosion inhibitors). Staff utilisation of the office was consistent throughout

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and internal temperatures have been verified to be within an average of 0.5° C when comparing heating performance with Hydromx in the system against the baseline use of water.

The heating system was drained and flushed, then refilled with fresh water and inhibitors prior to the start of the trial; this ensured a fair comparison to a "clean" system.

A local public weather station, situated 1 mile away, was used to gather the outside ambient temperature data for use in the Heating Degree Days (HDD) analysis, which is used to determine energy consumption of the "before" period with water and the "after" period with Hydromx installed. The HDD method is recommended by the Carbon Trust & Charter Institute of Building Service Engineers (CIBSE,) as it removes the effect of outside ambient temperature differences between the "before" and "after" periods. The analysis using this method gives a measure of the rate of energy consumption (kWh) for each degree of outside ambient temperature expressed as kWh/HDD. When the kWh/HDD rate is reduced less energy consumption is required to keep the building at the desired comfort temperature, therefore demonstrating that greater energy efficiency is being achieved.

The Energy Saving Trust reports that "Corrosion deposits in an older central heating system can cause a substantial reduction in the effectiveness of the radiators, and the system as a whole – up to a 15% reduction", and that "Using an effective chemical inhibitor can decrease the corrosion rate and prevent the build-up of sludge and scale – preventing system deterioration and helping to maintain efficiency. Typically, it can increase boiler efficiency by around 3%."



Hydromx is a 3-in-1 solution providing:
Building Regulations Part L approved inhibitors; burst pipe protection; and significant energy savings from Nano Thermo Technology, slashing costs.

In this study Hamworthy's, weather adjusted consumption using heating degree day(HDD) analysis was 66.94 kWh/HDD with water, and only 46.29 kWh/HDD with Hydromx, a saving of **30.9%** which is well in excess of the 3% claimed by inhibitors alone.

Hamworthy Technical Director, Bob Walsh says:

"We were sceptical of the performance claims made by Hydromx, but results at our offices have proven them to be true. A 30% saving in energy consumption is a major benefit to commercial customers and of course will make a very significant impact towards achieving carbon reduction targets as well as cutting costs directly off the bottom line. Installation is really simple and can be carried out by any competent contractor - it does not require any more than professional heating engineering/plumbing skills".

Hamworthy Heating celebrated its 100 year anniversary on 10th June 2014. In that time they have consistently led the commercial boiler market with new innovations and look to continue that trend.

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