

## KEY INFORMATION

INSTALL DATE: 21/22 Nov '13

TEST PERIOD: 2 - 5 hour tests

REPORTED SAVINGS:

10.4%



The Performance of EndoTherm was tested at UCLAN - Burnley Campus

## INTRODUCTION

The performance of Endo Enterprises (UK) Ltd's EndoTherm™ solution was tested at Burnley Campus workshops by Chris Hastings in part fulfilment of the requirements for the degree of Bachelor of Engineering with Honours - under supervision on 21/22 November 2013.

## BACKGROUND

UCLAN were requested to test EndoTherm™, an energy saving product which is manufactured by Endo Enterprises (UK) Ltd. It is a proprietary blend of fatty alcohols and glucosides which improves the nucleate boiling effect of water in direct gas fired heating systems. This product has been rigorously tested and installed in many boiler water systems (commercial and domestic) where energy savings of between 10% to 20% have been realised. In some cases reported energy savings have exceeded and reached to 25%.

UCLAN tested the product on 21/22 November at their Burnley Campus Engineering workshops. The set up rig and tests were carried out by Chris Hastings who is a Mechanical Engineer and is using the trial/test as the subject of his Bachelor's degree dissertation.

## TEST RIG

The elements of the test rig were as follows;

- In house Baxi Bermuda Boiler 434/4m with an output rating of 13kW.
- 20/40kW nominal fan assisted Air Handling Unit.
- Standard three speed water pump.
- Small expansion vessel.
- Closed circuit pipework and valves with a total circuit volume of approximately 30 litres.

## PROCEDURE

The comparison between standard water and water with EndoTherm™ were conducted in one 5 hour test for each medium.

The boiler, pump and AHU fan were switched on at time zero. The AHU emitted the heat into the closed workshop which measured approximately 8m wide x 8m long by 8m high.

The boiler was controlled, during the warm up period, by a tube thermostat. When the temperature of the room reached 21°C, the pump, boiler and fan on the AHU were manually isolated (effectively reacting to the room thermostat). When the temperature dropped to 20°C the three drives were re-energised.

The room and outside air temperatures were recorded during the two day trial period to ensure consistency and possible effect of external influences on the results.

## CONCLUSION

**The recorded gas consumption for the two tests were compared and the results indicated that the solution containing EndoTherm™ consumed 10.4% less gas than the test containing only water solution to reach the set point.**

The above results were recognised by Dissertation Supervisor Darius Tabrizi BEng (Hons) CEng MCIBSE FHEA Senior Lecturer in Building Services & Sustainable Engineering The Grenfell-Baines School of Architecture Construction & Environment, University of Central Lancashire

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