

## Clarks Distribution Centre: Kendal, Cumbria



**Building type:**  
Distribution centre

- Technology used:**
- High efficiency boiler
  - Passive flue gas recovery device
  - Solar thermal
  - Air-to-water heat pump
  - Ground source heat pump
  - Mechanical ventilation & heat recovery

**Installer:**  
S.R. Brown Ltd  
[www.srbrownplumbing.co.uk](http://www.srbrownplumbing.co.uk)

## PROJECT BACKGROUND

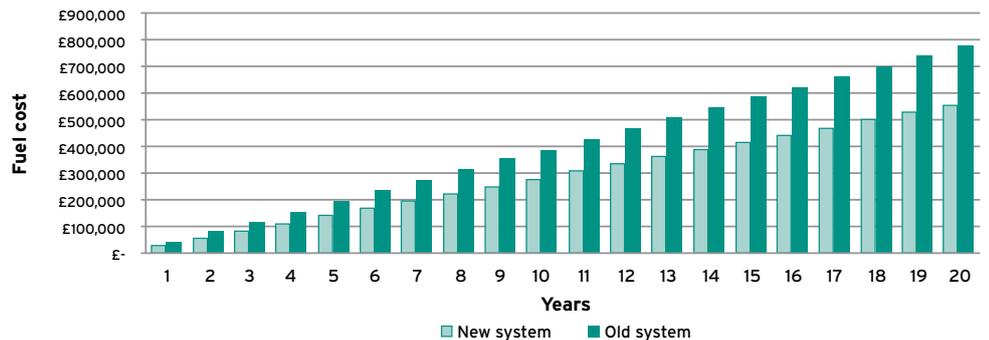
- 165,595 sq ft distribution depot for Clarks Shoes
- Located in Kendal, on the edge of the Lake District National Park
- Six 280kW ecoCRAFT condensing boilers to replace ageing shell & tube boilers
- VRC 630 weather compensated boiler management system & cascade controller
- Improved seasonal efficiency of 25.6%

Annual fuel saving  
**£12,802**

Projected lifetime fuel cost saving over 20 years  
**£256,040**

Projected annual carbon saving  
**72,423kg**

Fuel cost over 20 years



## SYSTEM SPECIFICATION

According to industry standard, the average life of a boiler is estimated to be 15 - 20 years depending on use and maintenance.

Clarks' distribution centre in Kendal was relying on two particularly outdated boilers, one estimated to be 46 years old, the other 32 years old. These two units were originally designed to run on oil, but were later converted to natural gas with the fitting of two gas burners.

The age of the boilers and their converted purpose illustrate that they were not performing as an effective heating solution. Not only were they inefficient, they were also subject to steeper maintenance costs and demanded spare parts which were difficult to find and costly to purchase.

S.R. Brown Ltd proposed the installation of six Vaillant ecoCRAFT 280kW floorstanding condensing boilers, combining to produce a total output of 1,680kW. Each of these modulates slowly down from the maximum 280kW to around 50kW depending upon the load placed upon them at any given time. This is controlled by sensors and a management system inside each individual boiler, ensuring optimal efficiency.

The existing Trend IQ control was proving difficult to use and expensive to maintain. This was replaced by a Vaillant VRC 630 weather compensated boiler management system and cascade controller. This works to further maximise efficiency levels by modulating boiler outputs based on the outside temperature and the heat curve selected.

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## OUTCOME

It is estimated that the previous boilers were operating at no more than 70% seasonal efficiency, while the ecoCRAFT is certified at 95.6%.

In addition, the VRC 630 sequence controls the boilers allowing only as many units to operate as is necessary, which adds at least another 3% on to this efficiency calculation.

As for carbon emissions, previous carbon levels were estimated at **249,683kg** each year. The Vaillant ecoCRAFTs emit a total of **177,260kg** per year, amounting to a reduction of **72,423kg**.

Finally, the new system will result in significant fuel savings. Using Clarks' gas consumption figures for the last five years (2007 to 2011 inclusive) and averaging the gas cost at 3.1p/kWh, annual fuel savings are estimated at approximately £11,339. However, if gas prices increase as predicted the savings would be even greater: for example at 3.5p/kWh savings are estimated at £12,802, and at 4p/kWh approximately £14,631.



Old system



New system



## WHY VAILLANT?

Steve Brown  
MD, S.R. Brown Ltd

"Vaillant provides help and technical expertise all the way through the installation process, and we felt

we could rely on them throughout. We have complete faith the new boilers will make a big difference and improvement on the previous equipment installed."

/// The depot's original boilers were installed in 1966 and 1982 respectively, so the comparison between the new system and the old is very clear! The new ecoCRAFT boilers have made a big difference in both savings - over £12,000 a year - and in controlling the temperature to allow as many units to operate as is necessary. ///

Stuart Rumney, Building Surveyor, Clarks