

HEATPUMP CASE STUDY



South Western Ambulance Service NHS Trust

Blandford Forum Ambulance Station



Property: NHS Ambulance Station
 Application: Refurbishment
 Location: Blandford Forum
 Accreditations: MCS Accredited equipment used
 Installation: Pulse Services Ltd

Equipment: 1 x Delonghi-Climaveneta HT 0061 Air Source Heat Pump
 1 x ACV 200 Litre Multi Fuel Cylinder
 1 x Solar Panel
 Deltasol Flowcon Solar Pump Station
 Various radiators throughout
 1 x 45kW @ 80°C Fan Coil to the garage

The Requirement

The requirement was to provide to this 1970's ambulance station, a low carbon, cost effective, heating & hot water solution, which would operate using an efficient control system requiring minimal user input, whilst also considering the varied occupancy levels during the day and night periods. The existing heating system was operated throughout the building using storage electric heating, with overnight economy 7 electricity supplies only available to the accommodation area. Due to the rise in electricity costs heating bills were very high and the varied occupancy levels meant that the existing heating system was also very inefficient.

System Specification

The system, designed by Pulse, included the High Temperature 65°C DeLonghi-Climaveneta HT designed by Pulse to match the heat loss and high temperature requirement of this particular building, whilst also benefiting from minimal modifications to the existing system. A bespoke high specification control panel was also designed and installed enabling the building to be split into two heating zones, Garage and Accommodation. Hot water is also supplied from the 200 Litre Multi Fuel cylinder with a set point of 55°C. When a demand for hot water is detected the three port valve fitted diverts water to the top of the cylinder to heat the internal hot water cylinder.

Pulse Services Ltd also wanted to combine a Solar solution that would provide additional hot water input during the sunny periods negating the need for heat pump to run during these periods, thus creating a very efficient system.



Outcome

The outcome was a very efficient heating and hot water system providing automated controlled heating to different parts of the building as and when required. It is a modern practical solution combining the style and efficiency of a De-Longhi-Climaveneta high temperature unit with Solar and an intelligent control system. The High level of control, with basic interface has enabled the system to operate very efficiently with limited user input and removing any potential of operator error.

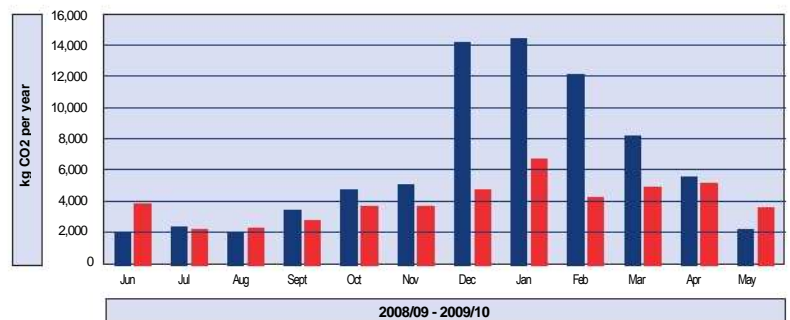


Significant savings have also been achieved. Source Fig 1- Based on SWAST Energy calculations

1. The installation of the heat pump has given a carbon use reduction of 25 tons if it is compared with what the system would had used if the electric storage heater had not been remove
2. With a project cost of £18000.00 this installation will give a pay back, based on this years ambient temperatures of 4.5 years.
3. From data graph shown (fig 1) it can be seen that the electrical energy used during January 2010 has been reduced by 12000 kWh or 6.5 T of carbon use.

Installation of heat pump & solar panel at Blandford

Fig 1. Heat Pump Installed September 2009 & Solar Panel Installed February 2010



Predicted energy if storage heaters had remained

