

Project cost
£154,093

Estimated Savings
£20,000 / 90 tonnes of CO₂e per year

Equipment / Installer
Improvements to air tightness of building structure (Westmade), Installation of two closed radiator systems (Watertite Ltd), Specialist consultancy (Architype)

Grant awarded:
£61,637

Estimated Annual Savings: £20k / 90 tonnes of CO₂e*

The Project

In a bid to reduce the high energy costs of housing historic archives, Dorset History Centre has become one of the first institutions of its kind to move to a largely passive air-handling system. This innovative approach involved improving the air tightness of the structure of the building and replacing existing air handling and heating systems with much simpler smaller scale systems better suited to minimal heating and humidity control.

It is expected that this project will save the centre around 90 tonnes of CO₂e and £20k in energy costs each year, reducing their electricity energy consumption by 80%.

Getting started

Dorset History Centre is the archives service and local studies library for Bournemouth, Christchurch, Dorset and Poole. Back in 2012, driven by their very high energy costs, the Dorset History Centre team started looking at how they could better deal with the requirements of housing their archives. The idea of passive technology to reduce energy usage was first suggested to them by buildings physicist Tim Padfield. This prompted the Centre to commission a full report into retrofitting their building to take a much more 'passive building' approach, which had the potential for considerable energy cost savings. The team then contacted the



*CO₂e, or carbon dioxide equivalent, is a term used to describe different greenhouse gases in a common unit. For any quantity and type of greenhouse gas, CO₂e signifies the amount of CO₂ which would have the equivalent global warming impact. And allows us to express a carbon footprint consisting of lots of different greenhouse gases as a single number.

architects behind the construction of a new passive building Archive Centre in Herefordshire who confirmed that a passive environmental control scheme would be technically possible for the Dorset History Centre in Dorchester. It was the combination of these reports, and the evidence they provided on a passive-building approach, which prompted the centre to contact Low Carbon Dorset.

Passive air-handling system

This innovative approach sought to make the fabric and structure of the Dorset History Centre airtight – essentially sealing walls with impermeable paint and filling cracks to prevent air ingress/egress. Making the Centre a more stable environment in terms of temperature and humidity. Two new closed radiator systems with lower energy requirements were installed – and are also quite unusual to find in an Archive building.

The scheme has been project managed through Dorset Council (as the building owner). There has been a minor teething problem in one small part of the building which is being resolved. Overall, it has worked well, proving that this novel approach can work in an Archive setting.

This innovative project has reduced the History Centre's electricity energy consumption by about 80%. Before, annual energy costs for electricity and gas were around £30,000. Now they are down to about £5-10,000. The Centre already benefits from a solar PV array on the roof (installed about six years ago) so sometimes they can be virtually cost neutral on electricity costs.

The novel approach taken at the Dorset History Centre is one that other archive services could learn from, and the team has already received requests from other centres in the UK wanting to know more about their project.

Other recommendations measures:

The Low Carbon Dorset report highlighted other actions that could also be taken, such as installation of heat pumps and further use of LED lighting. Opportunities are now being explored by the History Centre team to take these forward and build on the benefits that the Low Carbon Dorset supported scheme has made.



'This has been a great project, radically improving the efficiency of the building'

Sam Johnston, Service Manager for Archives, Dorset History Centre



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