

Sustainable building design at Harper Adams



Centre for Rural Innovation
at Harper Adams University College



PROJECT SUMMARY

The modern, eco-friendly library represents a significant investment in the future of all our students. The building, in the centre of the campus, is designed to be conducive to study and houses a wide range of learning resources and services. A computer controlled natural ventilation system and automatic lighting that responds to the light levels outside makes the library an environmentally friendly addition to the University College.

Mechanical ventilation systems have been kept to a minimum by the use of a natural ventilation system. The system is remote controlled, and responds to remote sensing of CO₂ and temperature within the building and the temperature and wind speed outside, by automatically opening the windows and roof vents to provide fresh air. The first floor vents are above the wooden louvres at roof level. The ground floor is vented via two glassed chimneys on the first floor.

A large amount of concrete remains exposed on the ground floor ceiling of the building to act as a thermal mass. This stores heat in the winter, which is gradually released to compliment the mechanical heating system. In the summer, the ventilation windows open to allow cooler night air to be 'stored' in the concrete and released during the daytime.

The lighting responds to light levels outside the building. If it is bright outside, the system will dim internal lights to reduce power use.

The toilets are connected to a rainwater harvesting system. Rainwater is collected from the roof and stored in a large underground tank. When rainwater is available, it is pumped to the lavatory system. In dry periods, the system is bypassed and the normal water supply is used.

Whilst the ground floor of the building is of typical construction, the first floor has a wooden frame. The contractors involved in this element were Greenoak Construction, who were short listed in 2002 for the Stirling prize (the RIBA's premier award) for their 'Greenshell' building at the Weald and Downland Open Air Museum in Sussex. We have been told that this is probably one of the most significant buildings in the UK with a softwood frame since the 19th century, so it is somewhat unique. The large slits down the side of the columns are deliberate, as they have been provided to allow for natural expansion and contraction in the wood.

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KEY FACTS:

Lead Group: Sustainable Technologies Network

Key Theme: Sustainable Technology & Rural Economy

Contract Value: £3 million

Project Leader: Paul Moran

Project Duration: Two years

Sponsor/Client: CB, The Parker Bequest, The Frank Parkinson Agricultural Trust/ Higher Education Funding Council for England.



Centre for Rural Innovation

at Harper Adams University College

Accessing the research and consultancy work at Harper Adams University College

The main purpose of the Centre is the sharing of knowledge to support innovation in the rural economy by:

- the provision of technical research services and business consultancy
- making our facilities available to support the needs of businesses
- supporting business networking
- the development of new technologies
- providing training programmes and work-based qualifications to businesses and individuals

www.cfri.co.uk

The website is designed to allow you to interpret the range of research and consultancy work undertaken using seven key Themes:

- Rural Entrepreneurship and Social Enterprise
- Innovation for Sustainable Farming
- Food Chain Safety
- Linking Urban and Rural Economies and Communities
- Sustainable Technology and the Rural Economy
- Rural Advisors and Agencies
- Rural Professional Practice

General enquiries

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