

Sustainable Construction

Winner: University of Newcastle upon Tyne - The Devonshire Building Makes A Statement

Key Points

- BREEAM 'Excellent' rating
- An internal design which maximises flexibility and space utilisation
- 30% less energy consumption than current 'best practice'

In 2004 the University commissioned the Devonshire Building to house its new Institute for Research on Environment and Sustainability, the Informatics Research Institute and the North East Regional e-Science Centre. Two key aims were to have a striking design which symbolised the University's general and environmental-specific research ambitions, and to encourage greater interdisciplinary collaboration.

The building has a number of sustainable features and systems to utilise local climate conditions and natural resources. To maximize natural lighting, the south facade is 70% glazed. Solar gain and glare is reduced by the use of computerised Brise Soleil, which tracks the sun's path. This is supplemented by low 'E' solar reflective glass. Photovoltaic panels on the roof generate 25kW (peak) of electricity.

Inside there is intensive usage of floorspace through easily reconfigurable open plan offices, hot desking and large multi user labs. There are also distinct climate zones, ranging from closely controlled laboratories to a loosely controlled central atrium. The atrium acts as a 'climatic buffer', benefiting from passive solar heating and reducing heat loss and heat gain in adjacent spaces. This is one element in reducing energy consumption to 30% less than a current 'best practice' building. Overall, there is a high use of natural ventilation and heat exchange systems. Low velocity fume cupboards cut energy running consumption by 40%, reduce ductwork and plant sizes, and free up space within the building. Other energy efficiency elements are pre-heating of domestic hot water with heat recovered from office spaces and cold rooms; use of condensing boilers; sophisticated lighting control to maximize natural lighting and allow point control of consumption; and automatic opening windows to provide natural ventilation when the external conditions are correct, and also to facilitate night purge ventilation.



All materials used on the project were assessed for their recycling capability, life cycle cost and environmental impact, based on "The Green Guide". The large roof area of the building also collects rainwater for use in toilets and urinals. The rainwater is stored in a 20,000 litre primary, and a 40,000 litre overflow, underground tank which also provides a heat sink for the cooling water circuit.

These features enabled the University to achieve an 'excellent' BREEAM rating – the first of its kind for a building combining of-fice facilities and laboratories.

Clare Rogers, Director of Estates, University of Newcastle upon Tyne

"Good space management is environmentally, as well as economically, beneficial. More intensive utilisation of buildings can greatly reduce the need for new build to meet expansion, and therefore avoid the impacts of construction, and the production of building materials."

