

Hadlow College RRC

Eurobuild

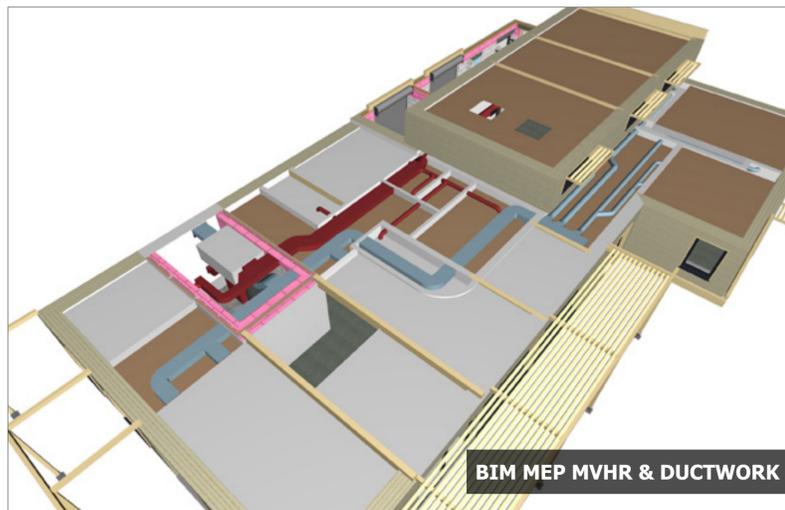


RURAL REGENERATION CENTRE, FROM SOUTH

The Rural Regeneration Centre (RRC), part of Hadlow College, was designed and built by UK company Eurobuild in 2009-2010. It was the first certified PassivHaus building in the Education sector in the UK and has now been occupied for about 2 years. Built for less than the standard cost, it costs the client less than £14 per month on average for heat energy and performs to the PassivHaus standard (as designed) when the building is operated by the users with commissioned settings. Artificial lighting is barely used due to the effective daylighting design strategy. Constructed in a factory off-site, the building was erected on-site in less than three days, and airtight ($0.34h^{-1}$) to PassivHaus standards in under 10 days, saving a six week construction period over a standard build and further reducing waste and emissions. Overall, the clients are delighted with the building. It is popular with staff and students, as well as with visitors as a conference venue.



EXHIBITION AREA



BIM MEP MVHR & DUCTWORK



MAIN SEMINAR ROOM



SOLAR SHADING COLONNADE

Project Overview

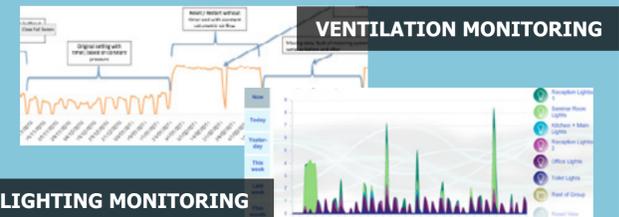
Name: Hadlow College Rural Regeneration Centre
 Location: Tonbridge, Kent
 Building Type: Education/ Community
 Construction type: Timber frame
 Completed in: February 2010
 Occupancy status: Occupied since February 2010
 Construction Cost: £1484/sqm

Sustainability features

Primary Energy Demand: 86 kWh/(m²a) [PHPP]
 Heating and Cooling Demand: 14.8 kWh/(m²a) [PHPP]
 Ventilation strategy: D&W AeroCentro; free night cooling
 Heating strategy: Ground source heat pump
 Shading strategy: Fixed window louvres; canopies
 U values: Exterior wall - 0.10, Roof - 0.11, Floor - 0.13,
 Windows (glazing - 0.48, frames - 0.89), Doors - 0.8
 Other features: Brownfield, >90% aggregate recycled on site; waterless urinals, low flush toilets, timed water-saver taps & low flow showers; only 2x1m steels (100x50mm) in the entire structure; Low energy T5 lighting is used throughout and was carefully planned using Dialux software. All timber was from FSC sources or from sustainably managed forests and apart from two 1m lengths of steel section (100 x 50) there is no metal in the superstructure. This was a conscious decision in planning with respect to life cycle and embodied energy. Concrete block internal walls & slate floor for thermal mass.

Measured Performance

Headline energy results: Actual 9.7 kWh/(m²a) for heating compared to the PHPP calculated 9.78 kWh/(m²a). Further detailed analysis is required to establish greater than predicted energy consumption of circulation & brine pumps.



Analysis of actual energy use: The building performed as designed for the first 4 months until the 'as commissioned' detailed settings were adjusted by users. This resulted in an increased ventilation rate and set point which went undetected for nearly 6 months, notably because the building still felt comfortable to the users. This, along with a lower COP from the heat pump, lower occupancy (1st year only) and reduced lighting has resulted in a higher than predicted actual total energy consumption of 124 kWh/(m²a) including fuel source calculation using the PE factors in PHPP, but shows the resilience of PassivHaus designed buildings despite less than ideal user operation. Air pressure result: 0.34 ach @50Pa

Occupant Feedback:

"One of the things that I like best, and some people find hard to get used to at first, is the consistency of the temperature. We're so accustomed to draughty, poorly insulated buildings that have air currents creating hot or cold spots that we tend to wear layers of clothes."
 - Sue Brimlow, Hadlow College Sustainability Co-ordinator

TEAM CREDITS

Client: Hadlow College Architect: Eurobuild
 Consultants: D Kraus Contractor: Eurobuild
 Certifier: PHD GmbH

Non-domestic award sponsored by

