Certified building - Passive House

Building type school | campus | university
Location UK - BT74 Enniskillen (Northern Ireland)

Description The Centre for Renewable Energy and Sustainable Technologies (CREST) for South West College in Northern Ireland, is an example of integration of the sustainable design and energy efficiency principles. The large areas of glazing to the south assist with solar gain and allows natural light to penetrate deep into the floor plan, reducing the amount of artificial light required to the exhibition spaces at the same time the Passive House design requirements are achieved.

Treated Floor Area according to PHPP 455 m^2
Construction type timber construction
Year of construction2014

Thermal Envelope
Exterior wall SIPS panels (polyurethane, 200mm) with an internal layer of mineral wool (50mm) U-value = 0.121 W/(m^2K)
Basement floor / floor slab Concrete slab insulated with rigid thermal insulation (250mm) U-value = 0.086 W/(m^2K)
Roof SIPS Panels (polyurethane, 200mm) U-value = 0.16 W/(m^2K)
Frame Munster Joinery, Passiv AluP+ Insulated aluminium frames U_w-value = 0.75 W/(m^2K)
Glazing Triple glazing unit, low-e and argon filled. U_g-value = 0.57 W/(m^2K) g -value = 61 %
Entrance door Aluminium glazed door U_d-value = 0.8 W/(m^2K)

Mechanical systems
Ventilation Zenhder Group Nederland B.V., ComfoAir550 & Comfo Air XL 800 Two different units are used in this project, ComfoAir550 with heat recovery rate of 84% working in the Lecture Hall, and Comfo Air XL 800 with HRR of 80% for the rest of the building, eff. specif. HRE: 78%
Heating installation Air to water Heat Pump, with underfloor distribution.
Domestic hot water Direct electric water heater

PHPP values

Air tightnessn_{50} = 0.6/h
Annual heating demand 13 kWh / (m^2a) calculated according to PHPP
Heating load 12 W/m^2
Primary energy requirement 66 kWh / (m^2a) on heating installation, domestic hot water, household electricity and auxiliary electricity calculated according to PHPP