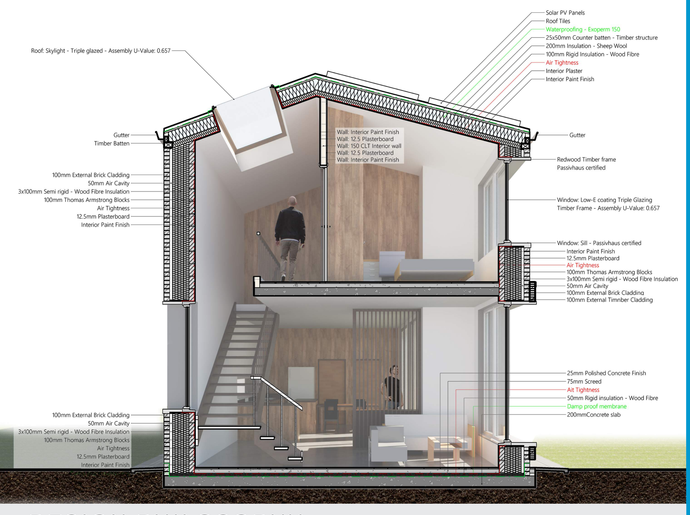
PASSIVHAUS
Student Competition

SERGIO, SAHIL & SANTIAGO

House-S Project

in partnership with

TARMAC
A CRH COMPANY



DESIGN PHILOSOPHY

A traditionally shaped house with two storeys which separate the resting private area from the social and kitchen spaces. The project is fully oriented towards the south to maximise illuminance levels and activating the thermal mass in winter months. The building's fabric is made of locally resourced brick for the exterior, as well as thick wood fibre insulation layers and CLT interior walls. The combination of white painted walls with exposed concrete slabs and timber details enhance the simplicity of a home at the same time it plays an active role in thermal comfort with low-impact materials. The space planning works in a way that all rooms, living and dining areas are in the south to naturally heat them during cold seasons, while the services are set on the north side. Skylights are also important part to achieve adequate illuminance levels.

PROJECT FACTS

Residential	Sheffield	164 m²
Building Use	Location	TFA

PASSIVHAUS STRATEGY

House-S Project aims to achieve high energy efficiency levels by using low impact materials and high insulation levels. The project incorporates a Mechanical Ventilation Heat Recovery system to bring filtered fresh air in as well as extracting stale air. The success of the MVHR implies air tightening the building to achieve 0.6 air changes per hour. Underfloor heating will be incorporated to distribute heat in a uniform way.

As a residential small house, the windows are operable to give control to the user over the environment and their individual comfort. Mixing small external fixed shading devices with operable internal shading to reduce the risk of overheating during summer months. The exposed concrete slabs will also play an important role of passive night cooling.

PREDICTED PERFORMANCE

U-Values	6.5 kWh/m²/Year	2.61
Walls 0.100 Floor 0.220 Roof 0.110 Windows 0.490	Heating Load	Form Factor

Living & Dining areas

Vertical circulation

Room

Exterior view

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UK PASSIVHAUS STUDENT COMPETITION

The University Of Sheffield.

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