

Project Brief for Architecture Students

Project Title: Active House

Background: An Active Building is described as *“a building which integrates solar generation and storage technologies for both electricity and heat within its construction, and which is controlled by an intelligent system to optimise energy management and comfort for inhabitants. Active Buildings aim to be net energy generators and have the potential to utilise the surplus energy to trade.”*

Site Location: Active Building site, Swansea University Bay Campus, Fabian Way, Swansea, SA1 8EN (Figure 1)



Figure 1: Swansea University Bay Campus: Location of Active Buildings

Project Scope: Prepare a design for a three-bedroom Active House using the draft 'Code of Practice for designing Active Buildings' and with reference to two case study buildings - the Active Classroom and the Active Office.

Project Objectives: to design an Active House that integrates solar energy generation technologies for both electricity and heat within its fabric and energy storage, with the aim of being a net energy generator. Key design considerations:

- Orientation
- Shading
- Renewable energy generation technologies
- Energy storage
- Fabric efficiency
- Materials – sustainability, sourcing, life cycle
- Use of local supply chains
- Control systems
- Value/Life cycle costing

Suggested Further Reading:

Evans, H.M.A. 2016. *How Buildings Work*. RIBA Publishing, RIBA Enterprises Ltd, Newcastle-upon-Tyne, UK.

Lelyveld, T. & Livingstone, M. 2018. *Good Practice in the design of homes, CIBSE TM:2018*. The Chartered Institute of Building Services Engineers, London, UK.

Pelsmakers, S. 2015. *The Environmental Design Pocketbook, 2nd Edition*. RIBA Publishing, London, UK.

Rawlings, R. 2009. *Capturing solar energy, CIBSE Knowledge Series: KS15*. The Chartered Institute of Building Services Engineers, London, UK.

Roaf, S. Fuentes, M. Thomas-Rees, S. 2013. *Ecohouse*. Routledge, Oxon, UK.

Useful Resources:

SPECIFIC IKC: www.specific.eu.com

Usable Buildings Trust: <http://www.usablebuildings.co.uk/>

Supply Chain Sustainability School:

<https://www.supplychainschool.co.uk/wal/sustainability/construction/default.aspx>

The Green Register: <https://www.greenregister.org.uk/>

The Association of Environment Conscious Buildings (AECB): <https://www.aecb.net/>

The Carbon Trust: <https://www.carbontrust.com/home/>

The Zero Carbon Hub: <http://www.zerocarbonhub.org/>

Global Building Performance Network: <http://www.gbpn.org/>

UK Green Building Council: <https://www.ukgbc.org/>