

The POD: Proving the Buildings as Power Stations Concept



Our first complete building as a power station was built at Baglan Energy Park in 2014. The pod has fully-integrated technology that enables it to generate, store and release its own heat and electricity from solar energy.

The POD demonstrates an energy positive building concept as well as individual technologies being developed at SPECIFIC; and has proven that it is possible to power and heat a building without connecting to existing services. This reduces the cost and time for installation, reduces running costs, and makes it suitable for sites with no or limited grid connection.

This demonstrator is now being used by security staff at Swansea University's Bay Campus. It has also provided a platform to develop new demonstrator buildings >>>



> In 2016, the award-winning Active Classroom proved the buildings as power stations concept on a larger, occupied building.

> In 2018, a two storey Active Office is being constructed to demonstrate the technology on a building with a different energy-profile



Led by:



Swansea University
Prifysgol Abertawe

Funders:

EPSRC

Engineering and Physical Sciences
Research Council

We work with
Innovate UK

Mae'r ddogfen hon ar gael yn Gymraeg hefyd



UNDEB EWROPEAIDD
EUROPEAN UNION



Llywodraeth Cymru
Welsh Government

**Cronfa Datblygu
Rhanbarthol Ewrop
European Regional
Development Fund**



➤ **Heating is provided by a novel glazed solar air collector, supplemented by an electrical floor system developed at SPECIFIC.**

The floor system uses SPECIFIC’s heated coating and the long-established principle of resistive electrical heating, in which electrical energy is converted into heat energy. The floor panels are quick to install, zone-able, energy saving and compatible with building management systems – which allows the system to determine the best method of heating depending on climatic conditions. This was a key milestone in the development of the technology, which went from concept to commercialisable product in just three years.

➤ **Electricity generated by the Building Integrated Photovoltaics (BIPV) on the roof is stored in batteries. This electricity is used to power lighting, small electrical appliances and heating within the space.**

The BIPV roof consists of amorphous silicon solar modules of approximately 7.5% efficiency, adhered to Tata Colorcoat Urban® roof panels. This prototype roof was installed by BIPVco as a precursor to their current more advanced BIPV roof product, which utilises CIGS (Copper, Indium, Gallium and Selenium) solar modules, with an efficiency of up to 17%. This roof installation enabled them to test the fitting and connection methods, as well as to measure the efficacy of the product in use.

➤ **A simple interface panel displays relevant information on the operation of the system and allows the user to control the temperature within the building.**



PORTABLE



TO SUIT THE CHANGING NEEDS OF AN ORGANISATION

HEATED FLOOR



IS ZONE-ABLE AND SPACE SAVING



INTEGRATED INTO THE BUILDING MATERIAL