



## Case Study – Solar Water Heating Solution for Elderly Care Facility

**Filsol were appointed by Gwalia Housing Trust to design, supply and install a solar water heating system for a new-build elderly care facility in Burry Port, Carmarthenshire. The system installed provided a communal hot water facility with the solar operating in conjunction with wood pellet boilers.**

### Design Requirements

The Plas Y Mor development at Burry Port consists of 38 self-contained flats and communal facilities. The design of the building was driven by a strong commitment to environmentally sensitive construction methods, with the primary source of heating being provided by twin biomass boilers fuelled from locally procured wood-pellets. Solar water heating would also link to the communal hot water supply feeding all the flats and communal areas.

The Filsol design team worked closely with the main contractors and their M&E consultants at an early stage of the development in order to identify those issues to be resolved to achieve the most effective solar water heating system design. A key requirement was to ensure that the configuration of the different heat inputs from the solar and biomass boilers operated in such a way that would optimise each other's effectiveness.



### Optimum Design Solutions

The chosen design solution for the hot water storage configuration was a three store system with 'selective loading'. In this design, the solar water heating circuit first heats the primary store, then diverts to the second store, and then to the third store. By prioritising the input to the primary cylinder the solar water heating system makes best use of the solar energy available and achieves the optimum level of efficiency.

With no suitable south facing roof space available on the site, an effective method of mounting the specified 24m<sup>2</sup> solar collector array was also needed. The solution was a bespoke mounting frame which provides the optimum orientation and elevation for the collectors. The prominent position of the ground-mounted solar array, located at the heart of the Plas Y Mor care facility, also provides a very visual demonstration of renewable energy which fits in well with Gwalia's desire to promote sustainability throughout the development.

The combination of solar water heating and biomass technology provides almost 100% of the space and water heating energy requirements for all of the flats and communal areas. During the summer months, the solar water heating system is able to provide almost all of the hot water. Not only does this significantly reduce fuel bills over this period, but also enables the biomass boilers to be shut-down for routine maintenance.

### Installation Overview

**Client:** Gwalia Housing Trust.

**Project:** Solar water heating system operating with biomass boilers to provide communal hot water supply

**System:** 24m<sup>2</sup> frame-mounted collectors connected to 3 x 500 litre hot water stores connected in series