

Low Carbon Retrofitting for Wales' Listed Buildings

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Image 1 -
Sketty
Hall,
Swansea.



Image 2 -
Sketty Hall,
Swansea,
1852



Image 3 -
Sketty Hall,
Swansea



Image 4 - Manselton School, Swansea.



Image 5 - Bethlehem Chapel, Swansea.

What is Low Carbon Retrofitting?

Low carbon retrofitting is ensuring that the building has less impact on the environment, uses less energy to heat and reduce the amount of carbon emitted. An example of this would be to ensure airtightness and that the building is well insulated. This will result in using less energy to heat the building. Another example is installing renewable energy sources, such as solar panels, water harvesting or residential wind turbines. This will allow the building to generate its own energy. These examples decrease the impact on the environment by reducing energy usage, reusing natural sources and possibly giving back to the National Grid if the building does not use all the energy that it generates.



Image 6 - Solar Panels

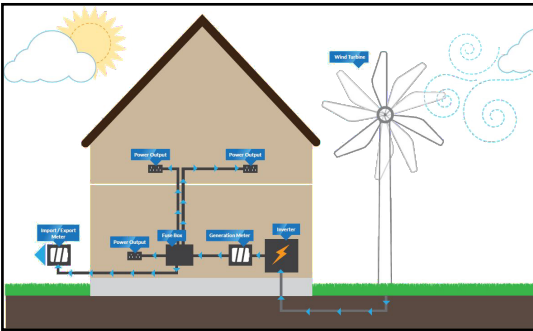


Image 7 - Residential Wind Turbine

Why Should We Retrofit Old Buildings?

The Welsh housing stock is the oldest in the country, with more than a quarter of homes being built over 100 years ago. To retain heritage and culture, it is important to ensure that historical architecture is restored. Advantages to the purchaser of an old/listed building would be the reduced energy costs incurred after retrofitting the building with low carbon methods and sources. Additional to these benefits, the UK does not have the skilled trade workers to restore buildings to their original state, e.g. Stone Masons. Modern techniques are easier accessed, and effective.

Sketty Hall, Swansea

Sketty Hall in Swansea, was built in the early 1700's and is now a Grade II listed building. Originally it was built as a home, but now serves as a college and houses social functions. The building has seen many modifications and extensions over the years and owners, however has retained the original facades, Georgian architecture and style to the exterior. The interior still retains some original features and Georgian style, as well as being well-kept, replastered and insulated. The building has not been installed with additional features such as solar panelling or water harvesting yet. It is also unsure whether the building has been installed with double glazing glass, however it will be assumed it has been due to the recent refurbishments and modern features. Further refurbishments were scheduled, but due to Covid-19 they have been delayed. A building on this scale, and material will not necessarily be 'zero carbon', although with the works completed so far, as well as installation of energy saving methods, the building has the potential to be low carbon.

Manselton School, Swansea

Manselton Primary School, was built in 1900 in Swansea, and is now owned by a property management company. The Grade II listed school was planned to be turned in to flats with communal cafe and gym. This could be an effective way to retrofit the building to retain Welsh building stock with creating more much needed homes homes. With new insulation, glazing, improved ventilation and energy saving installations, the building would be on its way to become

Bethlehem Chapel, Swansea

Bethlehem Chapel, built in 1866 is a Grade II listed building. The Chapel has had a pitched roof installed in 2000, but unsure whether it is warm. This could cause heat loss, especially with the traditional stone build and single glaze stained windows. The interior vestry has been fitted with basic kitchen, yet retains significant amounts of original features. To become low carbon, insulation, glazing, vapour barriers and warm roof should be fitted. Later to be considered, solar energy and small turbines with the large grounds.

References

- Image 1 - Sketty Hall, Gallery Image, Gower College Swansea, (<https://www.gcs.ac.uk/sketty-hall-1>) [Last visited 2/1/21].
- Image 2 - Sketty Hall, John Dillwyn Llewelyn, 1852, (<http://www.swanseamuseum.co.uk/swansea-a-brief-history/old-houses-and-places/sketty-hall-swansea-1852>) [Last visited 2/1/21].
- Image 3 - Sketty Hall, Swansea, Historic Building decorations, (<https://www.hainesdecorating.com/2020/10/16/historic-building-decorations/>) [Last visited 2/1/21].
- Image 4 - Manselton School, Barry and Genesis Eveleigh, 2015, (<https://www.itv.com/news/wales/2015-06-23/calls-to-save-wales-at-risk-buildings>) [Last visited 2/1/21].
- Image 4 - Bethlehem Chapel, Fforestfach History, (<http://www.fforestfachhistory.com/cadle.html>) [Last visited 2/1/21].
- Image 5 - Solar Panel, Mass-produced European solar panels on the horizon, 2020, (https://ec.europa.eu/research/infocentre/article_en.cfm?artid=52665) [Last visited 2/1/21].
- Image 6 - Residential Wind Turbine, HOW A WIND TURBINE WORKS, 2018, (<https://www.renewableenergyhub.co.uk/main/wind-turbines/how-does-a-wind-turbine-work/>) [2/1/21].