The Power of PV

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As we move towards low and zero carbon buildings, the role played by renewable sources of energy will become more and more significant. Whether fitted retrospectively or as part of a new build, installing technology such as photovoltaics represents a major investment, and it is vital that such an investment proves to be both effective and viable.

A primary step is to insulate - ensuring that demand for heating or cooling is first reduced through the energy efficiency of the building envelope. The use of insulated panel systems can help to achieve this in both new and refurbishment projects, providing reliable high levels of insulation and airtightness.

The second step is to generate, and the rapid developments in photovoltaic technology have made solar PV a very effective vehicle to do this. A whole range of photovoltaic options is now available to integrate easily with insulated panels, optimising the benefits of both systems and enabling the client to make a good return on their investment.

But the real proof of the pudding is in the eating they say, so how effective can the combination of energy efficient insulated panels and state of the art photovoltaics be? A project in St Austell demonstrates how putting your roof to work really can achieve outstanding results, even in the gloomiest winter weather.

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Case Study: Stennack House

Stennack House is the corporate headquarters of Ocean Housing Group Ltd. The initial phase of the project, which was completed in October 2010, involved replacing an old asbestos roof with over 1200 m^2 Kingspan KS1000 RW insulated panels – a first key step in achieving an energy efficient building envelope. Comparisons between high performance insulated panels with low air leakage and old single skin asbestos sheets show energy savings as high as 90%, so any investment in this kind of improvement will start to save money immediately and will continue to do so over the life of the building.

Having ensured that an airtight and well insulated roof would significantly reduce energy demand, the next step was to provide a source of energy generation with the addition of the latest PV technology. In this case the Kingspan Roof PowerPanel system was integrated with the energy efficient BREEAM A+ rated insulated panels, allowing the building owners to take full advantage of the government's Feed In Tariff (FIT) scheme, and make the investment one that achieves not only a significant building fabric improvement, but also carbon reduction, energy self-sufficiency and energy/income generation.

Matthew Goddard, Commercial Manager for main contractors MITIE Tilley Roofing commented *"The programme went really well, and we were very impressed with Kingspan who pulled out all the stops to make sure that the project was delivered on time".*

Two hundred and seventy three Sharp is sold back to the grid, making us more money," says David. "*And what makes this project really exciting, is that we can now assess the technology for future use in a significant proportion of our homes, with the aim of making fuel poverty a thing of the past for our residents.*"

Kingspan's PV team of engineers were involved throughout the project, from assessing the structural capability of the existing building to support the new roof with the additional weight of the PowerPanel system, to optimising the system design and successfully project managing the complete installation of the PV system. Building modelling was used to simulate the likely output of the system and early comparisons of this data with the actual energy produced are already demonstrating the effectiveness of the system. In the period between 1 December 2010 and 31 July 2011 the system produced 43835.66 kWh of energy, and saved 23.24t of CO_2, - significantly better than the 37391 kWh and 19.33t CO_2 predicted for that same period.

The output will continue to be tracked, providing valuable information on the actual performance of the systems in place. It is estimated that the electricity produced will save over £20,000 annually, with a predicted lifespan in excess of 25 years.

Stennack House provides a clear example of how effective the combination of insulated panels with the power of PV can be, and that putting your roof to work is truly the way forward to achieve zero carbon.

Kingspan Insulated Panels offers the advantage of a single-source integrated roof, wall, facade and solar PV provider. A full project analysis / viability, design, supply, installation, testing, commissioning and handover service is available. The systems are optimised and value-engineered for rapid installation, and provide maximised investment return and the potential for 'feed-in tariff' income.

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