South Wiltshire GREENDOORS

New Close, Bourton

Completely refurbished 1970s terraced house, with three different sources of renewable energy, achieving an EPC energy efficiency rating of 97%.

Key features

- LEDs
- Underfloor heating
- Air source heat pump
- Solar thermal (hot water)
- Solar PV

The Story

The property was bought at the start of 2013, when it required major renovation. This was an opportunity to create more space, through gutting it back to a shell, making use of the roof space, and building a new porch in the same style as other porches in the terrace, but running the whole length of the facade. Energy saving was also an important consideration: since the house was off the gas network, with no space for an oil tank, electricity was the only possible energy source. Daniel, the owner, managed all the work himself, working with a local builder, Mark Kendall of Marnhull. It is now a modern, spacious, warm and ultra-efficient home, with low energy costs, and an income from the renewable energy installations. This year it won the North Dorset District Council Best Sustainability Project – Building Excellence Award.

The Home

Insulation: All floors were insulated between the joists. New insulation was applied to party walls in the roof conversion, and to the roof and walls of the new dormer flat roof. The ground floor was insulated around the underfloor heating pipes. All stud walls have wool sound insulation.

Windows: New upvc double glazed windows were installed throughout.

Lighting and appliances: There are 68 LED downlighters, using less than 240 watts in total if all on at the same time. They have an 100,000 hour bulb life. Appliances are A+ rated wherever possible. There is also a sun pipe to the internal first floor corridor.

Heating, hot water and electricity generation: There is underfloor heating (wet) on all three floors, with a 12Kw air source heat pump and 2 Kw solar thermal plate. In summer, solar thermal is the primary source of hot water, with a top up from the air source heat pump when required. Last summer no additional heating for hot water was needed. There is a 3.5Kw solar PV installation, which on an average day provides the power to run the air source heat pump and the house electrics, as well as providing an income. Wessex Group supplied the electrical and plumbing installation and their Eco-Division completed the renewables packages.

Energy Saving

The building achieved an EPC Energy Efficiency Rating of 97%. On a three year estimate, fuel costs (all electricity) come in at between £8.25 and £11.40 per week. Last autumn's fuel charge was just over £6.25 per week.

It is not easy to quantify the component parts of the building work as the plumbing, electrical, building and eco systems were all interconnected. Furthermore there was no stripping out or "making good" once the house was initially gutted. From an educated guess, the "pay back on the eco systems is estimated to be 5 ½ years when the initial costs, installation grants and recently announced running grants are taken in to consideration. The house value is currently estimated to be equivalent to the purchase price in early 2013 plus the value of work done. The benefit is vastly reduced energy costs, and a home to Dan's own design. After 5 1/2 years the benefit will increase year on year as the payback period has elapsed and energy costs rise.