

## EcoGrady - Think Low Carbon Centre (Barnsley)

The ethos of the Think Low Carbon Centre is to require very little energy, produce the majority of what it needs and reuse energy wherever possible. It is in the area of maximising the use of produced energy that the EcoGrady product is really beneficial.

When you originally came to see me and brought an example of your revolutionary new product for low energy water heating I could immediately see how this product could enhance existing renewable technologies to perform better.

The combined use of the EcoGrady with renewable technologies (Sun, Wind and Wave) is where I see the real efficiency benefits. Due to the nature of the climate there are times when renewable technologies produce plenty of energy and times when they produce very little. It is the times when there is very little energy being produced that the EcoGrady comes into its own due to its low current draw.

An example of this would be:

If the EcoGrady is fitted to the tank this low level of energy can still be used to continue to heat the water. This would extend the length of day for water heating which is particularly important during the winter months. The higher the water temperature achieved in the tank, produced through the longer day or using very low renewable energy production would maximise the capacity of the tank.

Solar Thermal panels are a good example of this. The sun heats the collector panel to say 30°C, which then raises water in the tank to that temperature. If the sun continues to shine for another five hours but does not raise the panel temp any higher than 30°C then the water temperature remains at 30°C. There has then been a loss of five hours of energy production. It is exactly this scenario that the EcoGrady is most effective at overcoming. The EcoGrady linked to PV panels would continue to use the five hours of sunlight to continue to heat up the tank to a usable temperature and reduce the need for a none renewable energy top up.

As you are aware I am working with range of different companies in developing PassivHaus buildings to produce more, if not all of their own energy requirements. The EcoGrady built into a hot water tank will be a key component within this strategy.

The EcoGrady has not to be compared directly with other water heating systems, as it is not there to replace any of these. There is no point in working out the efficiency of heating a hot water tank in a comparison to gas or oil etc. as all the energy produced by the EcoGrady is directly transferred to heat the hot water. There is no loss of energy in the system, and the system when used in conjunction with renewable energy, is only using energy that would be either wasted or exported for minimal remuneration from the energy supplier. The use of this product has to be looked at in a creative way as this technology has not been available until now and is aimed at reducing the use of none renewable energy and the cost of heating water to the consumer. It is not there to directly replace systems already available.

It therefore makes perfect sense to install an EcoGrady system in any situation where renewables are used to produce hot water. This can be retro fit with the single pad EcoGrady if customer fits PV panels/wind turbines to an existing property or installing your new triple pad system built into the hot water tank in new build. If all new hot water tanks were fitted with the EcoGrady then as more renewables are used in the future they will be able to plug straight in to the tank, therefore future proofing and adding value to any hot water tank fitted with an EcoGrady.

The above methodology is aimed at using the EcoGrady in the United Kingdom or anywhere in the world with a similar climate e.g. Northern Europe. But the EcoGrady has a huge potential in climates with plenty of sun. An EcoGrady tank like the ones developed and tested at the TLC, linked to a couple of solar panels (Without the need for an inverter) can produce hot water at no cost to the end user. This system of a single tank with only a couple of PV panels in a self-contained system would be very cheap to install. Any other PV led system would require a much larger PV array and therefore a corresponding cost and space requirement. There is also the advantage of no moving parts and therefore no maintenance costs. This would be an ideal system for hot water generation in third world countries as the upfront cost is relatively low, no further costs incurred and particularly important where there is no mains electricity, no electricity grid or intermittent supply. This system could also work effectively where wind or water is the main source of renewable energy.

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