

## Micro-generation and exporting to the grid.

Application notes

Many businesses and homes now have a renewable energy installation which can be used as energy offset, therefore saving the purchase of another energy type, for example a Solar Thermal can save you having to use fossil fuels to heat water. Some other forms of renewable energy, Solar PV and Wind systems allow owners to use some or all of what they generate and sell the excess energy to the electrical grid.



One problem with the use of these systems is users' education and awareness of the availability of energy and their need to use it, their energy behaviour if you like. For example, the owner of a domestic property with a Solar PV installation should decide whether or not to turn on the washing machine based upon whether or not the system is generating electricity. Over the years we have become used to the instant availability of power at the flick of a switch. You can see that a behavioural shift can benefit our demand for centrally generated electricity to a local need driven by local climatic conditions, this is not such a revolutionary idea, people still consider the weather when putting clothes out to dry!

Many government incentive schemes are based upon both generating electricity and either using or exporting it. For example in Northern Ireland, you get the standard unit price of £0.17 for every unit you generate, if you then export that unit (to the grid) you get a further £0.06, giving you a total of £0.23 per unit. However if you generate a unit and then use it, you effectively get £0.34, £0.17 for generating it and you save having to buy that unit, saving of a standard unit price of £0.17. Clearly to optimise the savings (generate and use), you need to maximise your local load when you are generating electricity.

There is therefore a need to log the general usage and demand for imported electricity, which will allow users to be informed and educated as to when your generally need electricity and allow them to consider which demands can be shifted to times when you have excess energy. This has the double impact of fully utilising your local generation and minimising your power company's need to generate.

The RE-2VAD is a logger designed to record AC Voltage and AC Current within a property that has local micro-generation, it can record the direction of flow of energy, either from or to your power company, this in turn can inform the user about the times when excess locally generated energy is available for use, and conversely show when they are demanding energy from the power company, which will allow them to consider changing their behaviour to demanding energy to period when it is being locally generated.

### RE-2VAD

The RE-2VAD is designed to allow users to monitor single phase current import or export from local generation to and from the grid.



*"It proved quite instructive to display the solar panel output on the same chart and scale as the logger, so helping people to understand what is going on and therefore how to adjust the time when you turn things on in order to maximise the use of your own electricity... We were also able to show people the background electricity use during the night with variations caused by the fridge and freezer going on and off and how there were periods during the day when we had to import electricity because we were not generating enough."*

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