Mis-selling on the rise in the solar photovoltaic sector – Buyer beware

As reported in the Chartered Trading Standards Institute (CTSI) online publication "TS Today" – February 2017[1], Trading Standards (TS) started to raise concerns that mis-selling was growing in the low-carbon (renewable) energy sector [in this instance concern centred on potential mis-selling of battery storage systems].

In parallel to the TS Today article, at the Solar & Storage Live 2017 event at the NEC, the solar photovoltaic (PV) industry hosted an interactive discussion entitled "Shady Practices: Inverter Upgrade Mis-Selling". At that extremely well-attended session were participants from solar photovoltaic (PV) sector trade bodies including Solar Trade Association (STA) and Renewable Energy Consumer Code (RECC), as well as manufacturers, installers and other interested parties (including Microgeneration Certification Scheme (MCS)).

It was widely accepted [within the industry] that instances of mis-selling are on the increase and as such the sector is desperate to protect its reputation and fear that mis-selling may do permanent harm. What was more of an issue however was identifying what if anything could be done to stamp it out.

Initially focussed on inverter upgrade mis-selling, that is, the selling of an inverter to an existing solar PV owner when none was necessary, the conversation also included mis-selling within the sector more generally. That included the selling, or mis-selling of ancillary products such as [comparatively] expensive battery storage systems (where the homeowner neither had use nor could benefit from such a product), or *voltage optimisers* (where the homeowner was sold a product based on the mistaken belief that they need to reduce the income voltage into their home), or some other latest gadget that is *designed to increase electricity being produced and hence increase their Feed-in Tariff (FIT) rate by x%* or, on occasion, for safety reasons (such as to prevent fire).

So how did we get here?

There has been significant growth of small-scale domestic solar PV installations since 2010, when the government introduced the FIT incentive scheme to kick-start the sector[2]. Before 2010 the sector was in its infancy and was rife with rouge traders and *ex double-glazing* sales people using pressurised sales techniques. But to the greater extent these were gradually weeded out by government linking the eligibility of the FIT incentive scheme to MCS, a nationally recognised quality assurance scheme that certified both products and installers.

Supported by the likes of MCS, RECC and latterly, Home Insulation & Energy Systems Contractors Scheme (HEIS), the solar PV sector was able to slowly drive up standards and drive out rouge companies. Mis-selling still occurred but at a significantly reduced level.

That was all well and good however, from its peak in mid-2011, the FIT rate has decreased from 43.3p/kWh for each unit of electricity generated to its current level of around 4p/kWh and the need to seek an MCS certified installer has correspondingly reduced.

One downside of the FIT reduction has contributed to fewer MCS certified systems being installations and as a result many installers have ceased trading, specifically as there is more of a barrier to buying a solar PV system (especially when the homeowner had not previously looked at installing solar).

Ofgem reported in its Feed-in Tariff Quarterly report [released in December 2017] that the number of installations during 1st April – 30th June 2017) was the second lowest number added in any quarter since the scheme began in April 2010[3].

This trend is likely to continue with the FIT scheme coming to an end in April 2019.

On the positive side the reduction in FIT rate contributed to significant price reductions of the products themselves including solar panels and inverters, which, under normal circumstances, should have been sufficient to offset any loss of FIT income.

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[1] TS Today – February 2017 "Smart move? By 2020, smart meters will have been rolled out to every household – but, after widespread mis-selling of the Green deal, is another consumer scandal in the making? [Corina Bailey]

[2] The Solar Trade Association reported that that there were 875,000 homes with solar in the UK, STA (2017) Budget Briefing http://www.solar-trade.org.uk/wp-content/uploads/2017/11/BudgetBriefingFINALAutumn17.pdf

[3] Ofgem Feed-in Tariff Quarterly Report (issue 30 (2017)) https://www.ofgem.gov.uk/system/files/docs/2017/12/feed-in_tariffs_quarterly_report_issue_30.pdf

Latest solar PV cost data[4] show that the mean cost per kW of a small-scale domestic solar PV installation (0-4kW) decreased from £1,977 in April 2016 to £1885 in March 2017. Therefore a solar PV system costing £15,000/£18,000 in 2011 will now, for example cost less than half that amount, however, with current FIT rate for solar PV at around 4p/kWh, it is now seen as less of a financial incentive [although in practice Return on Investment (ROI) should be about the same, which is typically seven to ten years].

So nowadays it is comparatively easier to sell additional or ancillary products to 'enhance operational performance' or will 'save you money' to someone that had already invested and installed solar PV a few years ago (especially when the FIT rate was substantially higher than it is today) and, with so many companies going under, there are a lot of mailing lists available and as a result, aggressive targeting, cold calling and mailshots are on the rise.

Pressurised selling coupled with inaccurate and unattainable claims of products promising major system enhancement [and, as a direct consequence, significant cost-savings] is rife. Additionally products are being sold in order to solve problems that do not exist (or at best, exist in part).

Examples of areas of potential mis-selling of solar PV ancillary products are as follows:

Energy Diversion Devices

The FIT scheme payment works by metering the amount of solar PV generated electricity being generated and paying a rate per kilowatt hour [known as the "generation" rate] and payment is made to the system owner by their FIT provider (i.e., which is usually but not always their utility company). Locally generated electricity can then be used either within the property or is exported to the grid. As very few people have an export meter fitted as standard the Government has "deemed" that the home owner uses 50 per cent of the electricity generated and the remainder is exported to the grid [i.e., irrespective of the actual amount used]. This may change through the use of smart meters, which can measure the actual amount of exported electricity.

As the Government assumes that 50 per cent of the generated electricity is being exported, this then effectively "saves" an equivalent amount from being imported from the grid [i.e., at whatever rate the home owner pays their utility company].

Energy Diversion Devices (EDD) work by monitoring the electricity being used within the home and the electricity being produced by the solar PV panels and as soon as there is a surplus they divert this into a designated load, normally a water heater such as the domestic hot water cylinder. As the amount of exported electricity is deemed to be 50 per cent by default, this is in effect a double saving as payment will still be made irrespective of the actual amount of electricity exported.

It should be noted that EDDs will only generate in daylight hours and the amount of surplus electricity available for use will constantly vary based on the amount of sunlight available.

Opinions differ on the cost saving benefits of doing this - even within companies.

Voltage Optimisation

Voltage Optimisation through the use of a voltage optimiser (VO) is a technology designed to regulate, clean and condition the incoming (grid) supply.

Typically seen in industrial and commercial environments i.e., where supply conditioning and supply reduction can demonstrate real savings, this technology has migrated through to domestic properties, where VOs are being sold and installed to reduce the supply voltage to the PV inverter. The pseudoscience being that by lowering the supply voltage to the inverter, the inverter will be ON for longer periods, which in turn will increase the amount of electricity generated and hence increase the amount of FIT. Secondary is the claim by the VO manufacturer that the operational life of the inverter will be improved.

There is much discussion currently concerning the addition of a VO to an existing solar PV installation. One manufacturer states for example that their device, rather than a simple VO, is actually a single phase Grid Voltage Monitor, specifically designed to work with solar PV installations. Comprising a *buck-boost* transformer and associated control circuitry, the manufacturer states that the unit is designed to be connected in series with the main solar PV inverter AC voltage supply.

[4] Government Official Statistics (2017) Solar PV Cost Data https://www.gov.uk/government/statistics/solar-pv-cost-data

In this instance the manufacturer states that the unit is designed to prevent the inverter from switching off by monitoring and reducing the incoming grid supply AC voltage below 253 V[5] (i.e., effectively both prolonging operational life [of the solar PV inverter], and subsequently resulting in increased energy generation). In this example the manufacturer claims an improvement of up to 25 per cent.

It is also claimed that the voltage reduction through the use of a VO leads to reduced energy consumption, lower electricity bills and to a longer life for appliances in general. Manufacturers generally claim 'typical' savings in the region of 10 - 15 per cent however RECC has found **no objective robust evidence**, for example tests over time across a range of homes and incoming voltages that suggest a typical home can achieve this.

Battery storage devices

Currently there are three main reasons why a battery storage system may be included or added to a grid-connected solar PV installation. To store electricity so that it can be used or exported later in the day, to limit the amount of electricity that is exported to the grid, or to provide a back-up system for times of grid failure.

- ***To store electricity so that it can be used/exported later in the day***

This is typically done to allow the system's owners to increase their "self-consumption" (SC) rate; i.e., effectively storing electricity at a time when there is an excess, for subsequent use later in the day or evening.

SC rates vary according to occupancy profiles [i.e., encompassing occupancy demographic and lifestyle]. A research paper by Loughborough University and published by the Solar Energy Society entitled *Evaluating self-consumption for domestic solar PV: simulation using highly resolved generation and demand data for varying occupant archetypes* (2015)[6] estimates that for typical appliance load profiles for average domestic households related to occupancy archetypes, the average simulated SC levels is 36.5%.

- ***To limit the amount of electricity that is exported to the grid***

For some installations, a limit may be placed on the amount of electricity that can be exported. Adding storage to a solar PV system allows a larger system to be installed, as the occasional peaks otherwise exceeding the export limitation could be diverted to the battery.

- ***To provide a back-up system for times of grid failure***

For the first two cases, additional battery storage is usually only required for a few hours and is limited to storing excess energy from the SPV; consequently, the battery can normally be kept fairly small. However, systems designed to provide back-up during power-outage will typically require considerably larger battery packs as they will need to allow for longer storage periods; prolonged operation and the requirements of the loads they are expected to run.

A similar consideration applies to the rating of the inverter charger. A system that is required to provide electricity during grid failure power outage may need an increased rating due to the size of the loads it is expected to run.

While providing additional functionality, the addition of a battery to a grid connected solar PV system needs careful consideration. A key factor in any assessment is the efficiency of the battery system, as all systems will result in a proportion of the energy being lost. Furthermore, the lifetime of most batteries will need to be factored into the financial considerations as batteries will typically need replacing at least once within the system lifetime.

[5] BS 7671: 2008 Appendix 2 section 14 states that the UK grid AC supply voltage should be 230 V +10% - 6% (i.e., 216 V to 253 V). At voltages above 253 V solar PV inverters are designed to temporarily switch off until the supply voltages are reduced to below 253 V

[6] Loughborough University Evaluating self-consumption for domestic solar PV: simulation using highly resolved generation and demand data for varying occupant archetypes (2015) https://dspace.lboro.ac.uk/dspace-jspui/handle/2134/21092

Buyer Beware!

- When approached by a company offering 'add-on' goods or services you should first ask them how they got your contact details. If you're not happy with their response, you shouldn't pursue the call.
- If your number is listed on the Telephone Preference Service (TPS) you should not receive any cold calls at all. If you do you can consider reporting the matter to the Information Commissioner's Office[7].
- Offers come in several forms and may be perfectly legitimate and worthwhile. However, in some instances, these products are being mis-sold.
- Making the right choices is not always straightforward and you should consult the information available from impartial sources (such as YouGen, RECC, HIES or STA) to see if you are likely to benefit.
- Certainly, you should not agree to any offer of goods or services without considering carefully whether you need the product or service being offered. These types of products and offers can sometimes benefit consumers, but they do not always live up to the claims made for them.

[7] Information Commissioner's Office: https://ico.org.uk/for-the-public/nuisance-calls/