



RENEWABLE ENERGY STORAGE
AND MANAGEMENT SYSTEMS

6 Month Battery Storage Report

Customer Richard Hopper – (16 September 2015)

Electricity Generation and Usage Analytics

The Wattstor® battery storage system was commissioned on 14th March 2015. Its storage capacity is 6kWh and the peak battery-powered load is 5kW. Solar PV capacity is 3.78kWp.

Analytic 1 – Demand Reduction

'Demand Reduction' is the reduction in imported power for the current period with storage (as measured on the WPD Import Meter) compared with prior years' import for the same period with only Solar PV. The period starts from the date of the Wattstor® commission. $Demand\ Reduction = (1 - New\ Usage) \%$ (This is an exact, measured statistic, not an estimate).

Calculation of New Usage (Import Meter – WPD):

Readings for the period:	2015	2014	2013	2012	2011	2010	2009	2008	2007
From 14 March to 14 September	26007.9 26379.2	23689.1 24577.6	21266.8 22155.4	18913.4 19817.8	16660.4 17431.3	13813.2 15123.8	10991.6 12278.1	7767.6 9325.5	2728 5386.9
Imported power (kWh)	371.3	889	888.6	904.4	770.9	1310.6	1286.5	1557.9	2658.9
Average import pre-Wattstor® (2012-14)	893.8								

Comparison	New Usage	Demand Reduction	Interpretation
Imported power for period with Wattstor®, compared to solar PV only (taking average of the same period in 2014, 2013, 2012)	41.5%	58.5%	Battery storage has reduced aggregated grid demand for the period by 58.5% (i.e. 100 – 41.5) when compared with only Solar PV and with energy efficiency and lifestyle changes.
Imported power for period with Wattstor® and solar PV, compared with 2008 – with adaptations, but no solar	23.8%	76.2%	Battery storage with Solar PV has reduced aggregated grid demand for the period by 76.2% (i.e. 100 – 23.8) when compared with the 'adapted', house (with energy efficiency and lifestyle changes).
Imported power for period with Wattstor® and solar PV, compared with 2007 – house systems 'as found'	14.0%	86.0%	Battery storage with Solar PV and with energy efficiency and lifestyle changes has reduced aggregated grid demand for the period by 86% (i.e. 100 – 14) when compared with the house systems 'as found'.



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Analytic 2 – Local usage of locally-generated Solar PV power

'Local usage' is a comparison of imported power compared with locally-generated Solar PV power. True, absolute 'local' usage is not possible because small systems, including this, have no export power meter. Thus exact usage cannot be measured. The flows of electrical power in such systems (whether with or without storage) are complex and cannot be fully known unless two further meters are added: a meter to measure true exported power and a meter to measure gross demand ('load'), uninfluenced by the effect of generation and use of stored power. Hence this analytic is an indication of increased usage of locally-generated power showing the clear benefit of storage, rather than an objective metric.

Solar PV meter (TGM):

Readings for the period:	2015	2014	2013	2012	2011	2010	2009	2008	2007
From 14 March to 14 September	13073.4 15357.9	9751.1 12189.3	6671.7 8973.1	3677 5902	539.6 2767.4	n/a n/a	n/a n/a	n/a n/a	n/a n/a
Generated power (kWh)	2284.5	2438.2	2301.4	2225	2227.8	n/a	n/a	n/a	n/a
Imported power (kWh) vs PV generation for each year	16.3%	36.4%	38.6%	40.6%	34.6%	n/a	n/a	n/a	n/a

Local Usage in current period vs average of prior years:	43.3%	Imported power (during the period with the Wattstor®) has halved when compared with local PV generation within previous years.
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