

The Autonomous House – Brief Notes on Electricity Consumption

When interpreting the quoted figures in the low energy buildings database for electricity consumption, it's worth bearing a few small points in mind.

- The period for which the figures are quoted (Jan. 2013—14) includes an extended period of dull and overcast weather which persisted well into March 2013. This was a challenging time for a zero-heat house, as there was virtually no solar gain during this period, and on a few occasions a one-bar electric fire was used for short periods in the evenings. Also on a few occasions it was necessary to top up the hot water using the 1KW immersion heater, drawing power from the grid. This house is not monitored to the level of detail of a full research project, but a reasonable estimate for the additional consumption due to overcast weather is £25.

The current winter (Dec. 2013 — Feb. 2014) has seen less challenging weather and only necessitated the consumption of approx. £2.50 (roughly 18 units) of electricity on top-up heating throughout the entire winter. Since fitting a SolarImmersion intelligent diverter to the immersion heater, an acceptable hot water temperature has been maintained without needing any imported grid energy at all.

- The quoted total units used includes power consumed by electric garden tools, and occasional charging of a Vectrix electric motorcycle. I don't have a precise figure for this additional consumption, because we don't have monitoring down to individual appliance level, and some of the power consumed by these devices will have been offset by PV generated power at the time of their use. However, it should be borne in mind that the quoted overall consumption will include power used by these devices, so the total 'domestic' consumption will be somewhat lower.

- All mains-service-connected buildings, no matter how energy efficient in themselves, will have an additional 'power deficit' involved in providing water & sewage services. This (I assume) is not usually accounted for, perhaps because it's very difficult to measure, and varies depending on location, but it must be significant. Eliminating this additional consumption by bringing provision of water supply & waste-disposal in-house, and providing them at close to zero energy, sets The Autonomous House apart from these other dwellings, but there's no credit for this aspect of the design.

Mike Coe, March 2014.