

The Sheffield Solar Farm

Micro-Generation Database

October 2012, Report 17



Assessing Shading

One of the gaps in the information that we hold is the amount of shading that your system suffers. It is not trivial to calculate shading but it would be useful for us to have some idea for registered installations.

A good way for us to get some idea of your system shading is for you to take a photograph of the installation and another towards the horizon in the direction which your system faces. You can then post these into the gallery section of the website ([find out how here](#)).

Here is an example of an installation where these photos have been taken:



View of the installation



View to the horizon

The view to the horizon should be taken from as close to the array as possible, and facing in the same direction. Another photo taken towards the south would also be useful in cases where your array faces to the east or west.

If you have multiple arrays, then the same should be repeated for each. Be sure to label the direction that you are facing with each photo. Additional descriptions of shading objects would be useful too.

This may help us to diagnose problems with generation.

How Accurate was your SAP Calculation?

The analysis team at the Farm are currently researching how photovoltaic panels perform in the UK according to predicted generation figures.

Many of our users have told us that they are "over-producing" and we wish to test this hypothesis across the country. Therefore we would like to ask data donors to give us their Standard Assessment Procedure (SAP) prediction, which the installer should have stated on the quote.

The SAP figure is made up of several parts: the **maximum peak power** of the array (size in kWp), the **orientation** angle of the panels (N, S, SE, SW, E, W, NE, NW), their **elevation** angle or slope (0-90deg) and the **shading factor** (<80%, 60%-80%, 20%-60%, <20%).

According to the orientation and elevation, SAP calculates the expected generation from a one kWp system. This is then multiplied by the array size and the shading factor to give a final generation prediction.

The team would appreciate donation of the full SAP calculation components (size, orientation, elevation and shading factor), but the overall SAP prediction figure is the most important one for our analysis.

We aim to report the results to the SAP team at the Building Research Establishment (BRE) in the new year. Please fill in the [online form here](#) with your installation URN (found in the email about this report):

Thank you!

Lisa

Forum Posts

Rogerhoward posed a question about fuel cells after finding his battery system inadequate (presumably he's off grid) and wonders if anyone has any experience of fuel cells.

PhilR gives an interesting response.

[Read more here](#)

Another Problem Fixed

We have managed to alert another of our donors to a loss in generation. We contacted Arogers after we found what appeared to be an anomalous reading in October. This prompted him to contact his installers to find out what was going on.

He said "I have got to the bottom of my anomalous reading. I discovered, fortunately due to your intervention, that our system had been turned off. It must have been the electrician who disabled it and forgot to turn it on last time we had electrical work done.

"The system must have been switched off for over 1 month as that accounts for two identical readings. I am not sure exactly when the electrician came so don't know beyond that. Between 1 month and 6 weeks I imagine."

This shows that failure to generate does not necessarily mean failure of any components of the system. It can be as simple as an electrician forgetting to turn a switch.

Entering your data

Quite a number of you wrote in to say you were having difficulty with entering data at the end of November. This may be down to the number of people trying to enter their data at the same time, so we will do our best to monitor this to see if problems occur again.

We're seeing an increasing number of enquiries, so it sometimes takes a while to respond. If you find yourself waiting a while for a response then you're welcome to send in a reminder after a couple of days.

Performance Ratio reporting

Some people have asked for an explanation of the Performance Ratio (PR) measure which is used in the reporting maps. An explanation was given in the April report of this year, so this explanation takes a slightly different slant.

The Performance Ratio (PR) is used to identify failing systems. The PR of a system describes how much worse (or better) the system performed than a 'perfect system'. To do this we divide the amount your system actually generated by the amount that it should have generated.

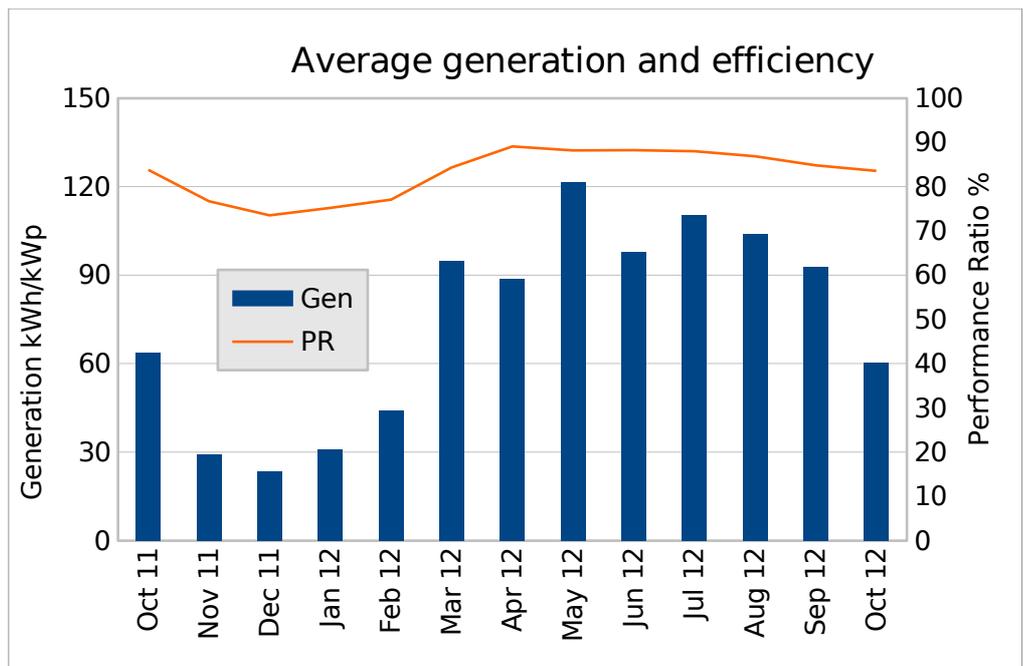
This requires us to assess the amount of light which your panels received and so the amount of energy that they should have generated, taking into account their efficiency. A perfect system should achieve a performance ratio of 100% all of the time. A well functioning system should achieve a PR of around 80%.

There are some factors which we can't include in our calculations which may affect the PR of a system. These factors include shading, cable losses and local weather conditions. If your system is free from shading and your PR is low, say 50%, then this might well indicate that it is failing in some other respect.

Some systems regularly show PR values of above 100% which may be because you happen to live in a sunny spot, but we have identified another cause of high PR values: systems which face east or west show high estimates of PR. We think that this is down to limitations to our calculations so this is a problem we are seeking to address.

Generation and efficiency

The group did a little worse this month than last October, with an average generation 5% lower. The PR showed no change, so the reduced generation is likely to be down to the weather.



Visit our micro-generation website at: www.microgen-database.org.uk
and our testing operations site at: www.sheffieldsolarfarm.group.shef.ac.uk