

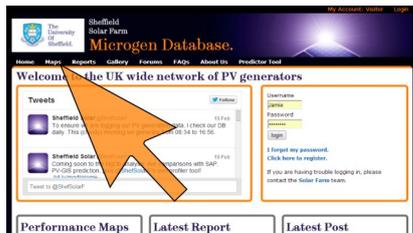


Identifying Under-performance Using MgDb Reports

Following feedback from one of our donors who came to see us at the Telford event last week, I promised I'd publish some help on how best to interpret the report results on the website to check your system is performing ok....

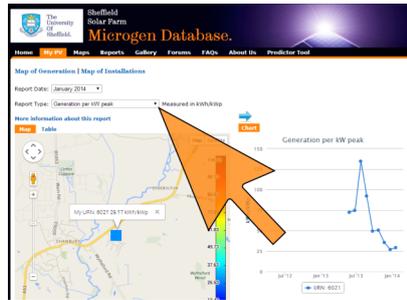
Performance Maps

You can find a link to the performance maps from anywhere on the site using the tabs along the top of the page...

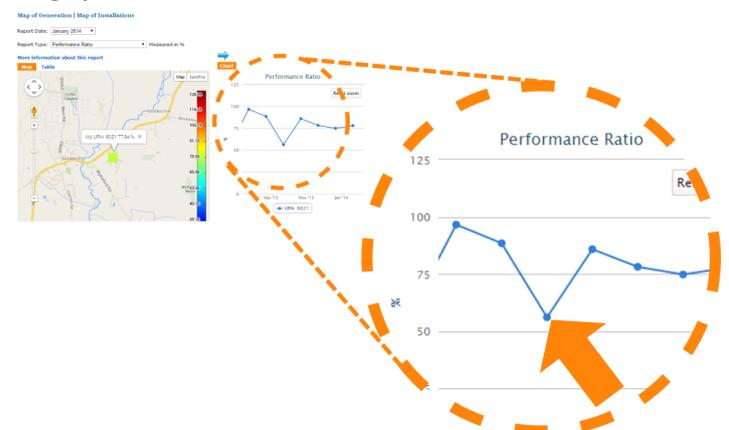


If you're logged in, and have submitted enough data to feature in the report, the maps will automatically load zoomed in on your installation.

You should start by check the 'Performance Ratio' (PR). Our analysis doesn't take into account shading or losses in the inverter or cabling, so a PR of 80% can be considered good.

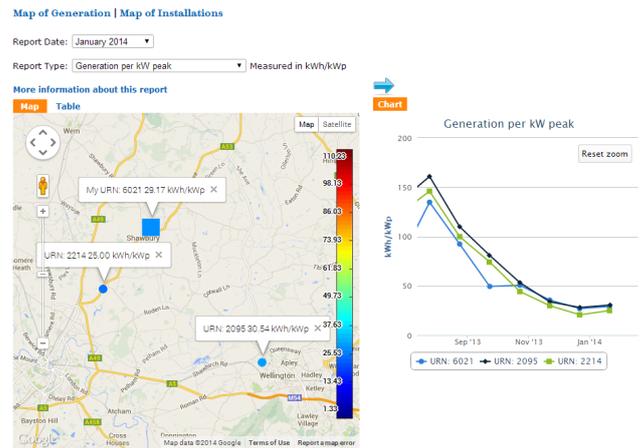


The expected PR varies throughout the year, with a gradual dip in winter. The variation shouldn't be more than roughly 15% though, so you should be on the lookout for any sudden drops in the PR of your system. In the image below (URN6021), you can see an example of such a dip, which corresponds to the inverter having broken for a period of roughly two-three weeks.

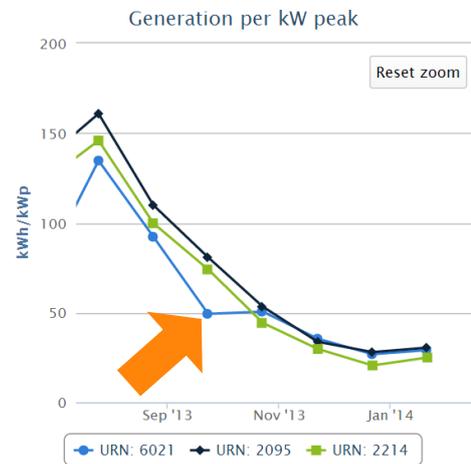


Low PR is a good indicator of underperformance and/or failure, but the method is subject to increased error when dealing with arrays PV generators oriented away from due south and does not account for changes in efficiency due to temperature.

For this reason, you should always follow up with a check of the Generation per kWp, preferably by comparing with your nearest neighbours. To do this, use the dropdown box at the top of the page to switch what's being graphed, and zoom out on the map until you seem some neighbour dots. Click these dots and they too will be plotted on the graph...



The screenshot above shows the Generation per kWp for URN6021 for the same period as the PR check. If we zoom in a little on the graph, we can see the same dip...



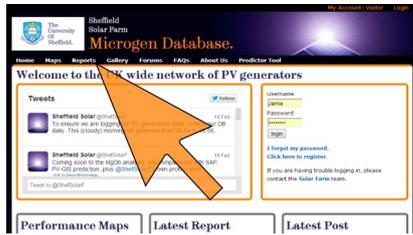
You can see that the graph for URN6021 closely follows that of the nearest neighbours, until the inverter breaks and the graph deviates from the others - this is the second indicator that something was amiss during this month.

Continue reading to see how the spreadsheet report can also help identify underperformance, and what you should do if you suspect your system is under-performing or failing...



Spreadsheet Report

The spreadsheet report can be downloaded from the 'Reports' section of the website...

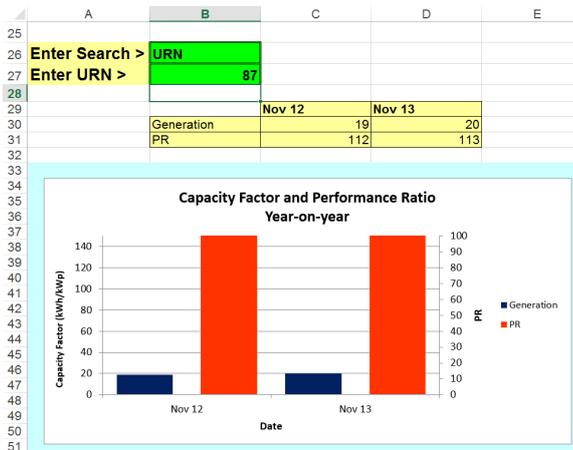


Clicking on the report tab will bring up all of the monthly reports. To view the contents of each report, click the 'read more' link.

You'll need Microsoft Excel to be able to open the spreadsheet with it's formatting in tact, but it's also possible to open it in the free Libre Office Calc program.

The spreadsheet contains the (anonymous) report results for all individual users. At the bottom of the data sheets, you see a graph of the monthly national results.

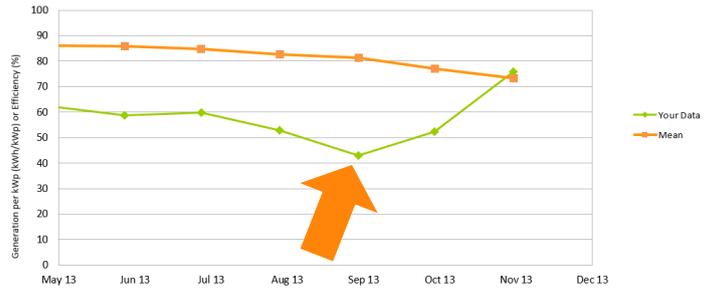
The 'Graphs' sheet has a section where you can enter your URN and view a graph of the year-on-year performance of your installation for the latest report month (fields you should change are highlighted in green)...



The year-on-year PR is a useful indicator of underperformance that has developed since last year.

Moving on to the 'Compare' sheet, you can enter you URN here to see how your performance stacks up to the UK average. This is very useful for identifying long-term underperformance!

The graph below shows the PR for the example explored on the previous page (URN6021) plotted alongside the national average...



Again we can see the dip in PR where the inverter broke. We can also see that the long term PR is only roughly 60% (about 20% below the national average). This could be a sign of long term under-performance of the system, which is often much more difficult to detect. Underperformance doesn't necessarily mean broken panels or inverter though, it could be something as simple as the array being shaded - even a very small amount of shading can have huge consequences for the overall performance.

What Should I Do?

If you think your system is failing or underperforming, you should first of all contact us via email (solarfarm@sheffield.ac.uk) so that we can verify the analysis results (we'll need you to double check all of the details of your installation). Once we've confirmed the analysis, we can offer advice, or sources of advice, as to what to do next. Most often the next step is to contact your installer with your concerns. They may offer a site visit to try and diagnose any problems. We're more than happy for you to use our analysis as evidence of under-performance, provided we've verified the results first.

Sheffield Solar have helped to identify several cases of failure / under-performance over the past couple of years. We're completely independent and not-for-profit, and are happy to consult with donors on a one-to-one basis to help them better understand their PV system and resolve any performance issues.