

Retrofit of 512 kWp in the UK with SolarEdge power optimisers and inverters

“We recommended to retrofit this project with SolarEdge power optimisers and inverters because we knew that it would significantly increase the system’s energy production. The SolarEdge monitoring system provides us with real-time data so we can immediately detect and address any issues. This not only improves the system owner’s financials, but it means that our O&M services are more effective and efficient. Because our customer was so pleased with our SolarEdge recommendation, we were awarded an additional 861 kW of future projects.”

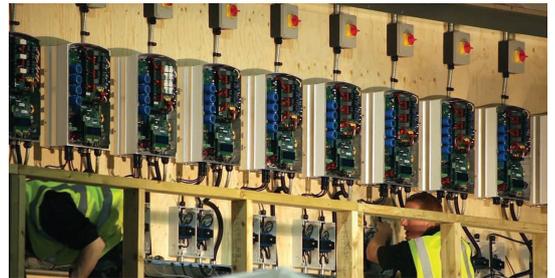
Malcolm Davidge, Technical Director of Empower Energy



By combining SolarEdge power optimisers with SolarEdge inverters, Empower Energy was able to lay the strings out in a logical and symmetrical pattern on the roof, which meant more modules on the roof (for the above site).

Improving PV System Performance with SolarEdge Technology

With large roofs that supported high PV yield and good return from FIT, the system owner, a prominent builders merchants with several depots and buildings, decided to install 512 kWp of PV across several sites. The system did not include any module-level electronics. After being disappointed by the PV system’s performance, the system owner awarded Empower a maintenance contract for the entire 512 kWp. Empower performed an initial inspection and discovered a number of issues that were unbeknownst to the system owner and causing significant financial loss. After reporting all of the system concerns, Empower Energy recommended that the system be retrofitted with SolarEdge power optimisers and inverters. As a pilot test, Empower Energy retrofitted a total of 67.6 kW with SolarEdge technology throughout different sites and succeeded in achieving an increase in energy yield, installing more modules on the roof, and enhancing maintenance capabilities.



More Modules of on the Roof

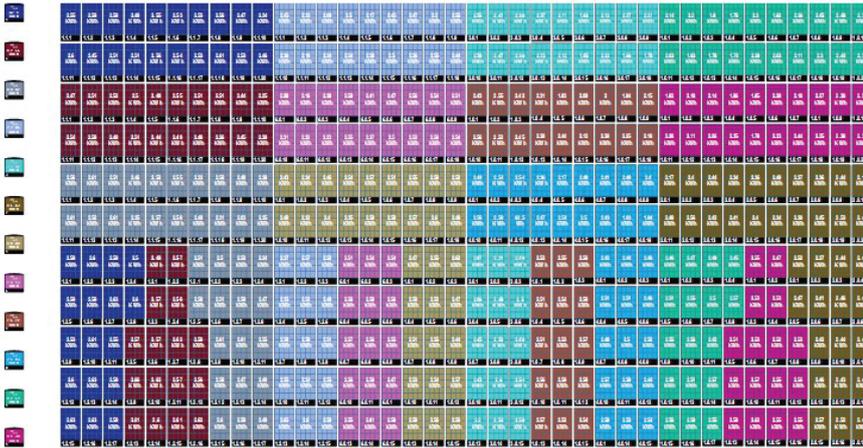
SolarEdge power optimisers maintain a fixed string voltage at the inverter’s input. This allows significantly longer strings. The flexibility of the system enabled Empower Energy to lay the strings out in a logical and symmetrical pattern on the roof, which proved to be a massive benefit because it simplified the design process and allowed more modules on the roof.

When one of the sites was initially installed using a traditional string inverter, there was a need for 54 strings of 15 modules. But with SolarEdge power optimisers and inverters, Empower Energy was able to design the

CASE STUDY



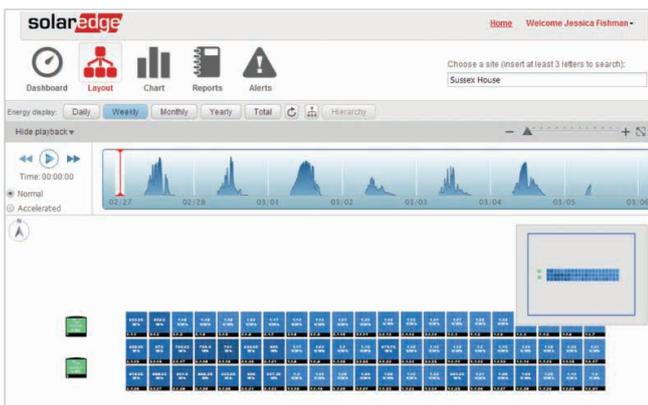
same site with only 18 strings of 40 modules. Another site had 6 strings of 21 module with a traditional inverter, but with the SolarEdge retrofit the string count was reduced to 4 with a total of 32 modules per string. The decrease in the number of strings results in a significant reduction in DC BoS costs. For one of the new sites, a 209 kW installation, Empower Energy estimates a 50% BOS savings.



With the SolarEdge technology allowing a string out in a logical and symmetrical pattern, the design process was simplified and more modules were allowed on the roof. Further simplifying the design process, the fixed string voltage of the SolarEdge inverters allowed for uneven string lengths.

Enhanced Maintenance and Yield Assurance

During the initial inspection, Empower Energy discovered that two of the sites had been switched off at its main breaker for more than two weeks and that a module had been smashed during installation and never connected, thus creating un-balanced strings for more than two years and resulting in significant power losses over time. Without a monitoring system, the system owner had no visibility into the system's real-time performance, was unaware of any of these issues, and was losing a significant amount of money.



Screenshot of one of the retrofit site's module-level monitoring from the SolarEdge monitoring portal in which alerts and underperforming modules are pinpointed on a virtual site map. The blue color code indicates the performance level of each module.



A module broken during the original installation created un-balanced strings and energy losses for more than two years without the system owner ever knowing.

Improved Partnership and Future Success

After Empower Energy installed SolarEdge on a section of this 512 kWp project, the system owner, pleased with the benefits, is now retrofitting the entire project. In addition, the system owner has decided to work with Empower Energy to expand its portfolio with an extra 6 sites that make up 861 kWp, and total 1.37 MWp of SolarEdge systems.