



Source: SunGift Solar

SolarEdge power optimisers mounted on the roof of Exeter City Council's Civic Centre.

# Generating more energy with panel-level power optimisers



**By Ellen Rodger**

*Traditional string inverters can lead to panel mismatches, with a consequential loss in power output. Ellen Rodger describes the use of panel-level power optimisers in a solar system and the benefits they bring with ease of use and greater energy generation*

**W**hen SunGift Solar quotes for work, it's important for us that the components we specify are not only of the highest quality but also deliver exceptional results that will maximise our customers' energy yield. This was certainly the case when we recently won a competitive tender to install a 70kW PV system on top of Exeter City Council's Civic Centre, specifying panel-level power optimisers.

Power optimisers have become a key tool in our arsenal, and we were the first UK company to import them almost two years ago. As a result we've experienced firsthand the positive difference they can make to a system's performance. Power optimisers manage the power output of each panel individually, eliminating mismatch-related power losses (caused, in the Civic Centre's case, by partial shading from air conditioners, eleva-

tor shafts, fences and other elements on the roof) and therefore they maximise the amount of electricity generated. When we were designing the Civic Centre's system it meant that we could maximise the system's financial benefits considerably.

As a leading partner of SolarEdge in the UK, we have so far installed more than 1MW of power optimisers at 200-plus other sites and our sister company SunGift Trade keeps a constant stock of them for our trade customers.

#### **No mismatch power losses:**

So, why does this technology outperform traditional inverters? Fundamentally, traditional inverters track the maximum power point (MPP) collectively for a whole string of panels. Partial shading on one or several panels creates a mismatch in the MPP of

the different panels in the string, as each panel provides maximum power at a different combination of current and voltage. This panel mismatch results in energy loss-es due to the average system performance in which weaker modules hamper the out-put of stronger modules in the array.

Even in perfectly designed PV plants that avoid partial shading, panel mismatch can't be completely avoided, being caused by many other factors such as panel damage during transportation, temperature variance, and unequal soiling. As PV installations age, uneven panel degradation occurs, resulting in an increasing mismatch between panels.

Panel-level power optimisers, on the other hand, track MPP individually for each panel, allowing it to work at its optimal

current and voltage and guaranteeing that panels produce maximum power at all times. In fact, independent tests by the Photon laboratories have shown that power optimisers can increase the amount of electricity generated

#### Up to 50% cost reduction through design efficiency

The design flexibility enabled by panel-level power optimisers allows for longer strings, which reduce the expenses on wiring, combiner boxes, fuses and other balance of system components in commercial installations by up to 50%. That's a considerable cost saving for many residential and commercial systems. The new SolarEdge OP600 power optimisers we've been using further reduce our installation cost, as they enable the connection of two panels per power optimisers, making them the most cost efficient optimisation solution for commercial systems.

#### Increased system uptime and superior safety

It's not only their performance though – end users are delighted with how easy the optimisers make it to analyse system performance to ensure everything is working



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70kW system installed on the roof of Exeter City Council's Civic Centre.

as it should be, as the electronics enable high resolution monitoring and accurate troubleshooting. Here at SunGift we're also able to monitor all our systems from one portal, so that we can keep a track of every SolarEdge installation we've completed.

The location of each panel on the roof is shown with its specific energy level, for fast and easy troubleshooting and increased system production.

What's more, panel-level electronics automatically shut DC voltages down whenever AC voltage is shut down or an inverter is disconnected. This ensures maximum protection of the property and of

installers, system maintenance personnel and firefighters. ■

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#### Want to know more?

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