

SOLAR PV

How our products work with Solar PV
& Battery Storage



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This guide takes you through the various options for integrating Solar PV & battery storage systems with EHC's products. Ultimately, any electric boiler can benefit from solar PV generation; however, the more directly we integrate it as part of a holistic package, the greater the benefit we can gain from the PV system.

We have a number of solutions as follows:

1. The Super Simple Setup

Using a standard PV installation alongside an electric boiler, the boiler operation naturally benefits from the default flow of PV-generated electricity when available.

2. Simple Off-Grid Direct Hot Water Integration

In this setup, a small array of PV panels are directly connected to the hot water cylinder only, either in addition to an existing grid-tied PV array or as a sole standalone PV array for the property.

3. Standard Grid-Connected PV installation With Solar Diverter

This method harvests PV-generated power to directly heat the Domestic Hot Water Cylinder by integrating a solar diverter to monitor for any excess solar PV generation being exported to the grid. The value of exported power is automatically diverted to heat the hot water cylinder.

4. Standard PV installation With Solar Diverter & Battery Storage

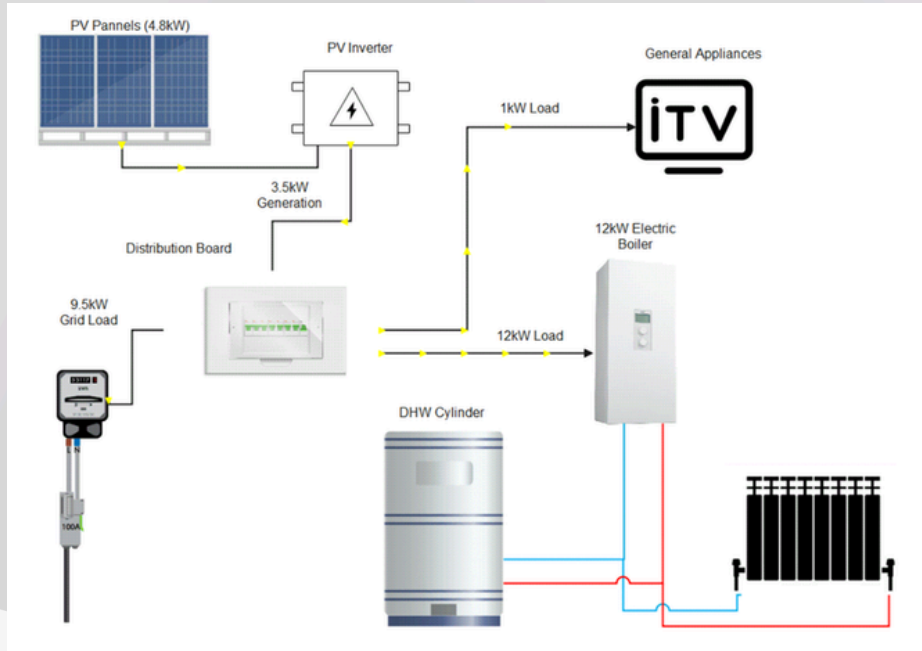
This method harvests PV-generated power to charge battery storage for later. Once the battery storage is fully charged, any additional power generated by the PV panels can be used to directly heat the Domestic Hot Water Cylinder by integrating a solar diverter to monitor for any excess solar PV generation being exported to the Grid. The value of exported power is automatically diverted to heat the hot water cylinder.

5. The Ultimate PV solution

Using EHC's Comet PV electric system boiler with an intelligent smart Inverter, with or without battery storage for maximum utilisation of solar PV generation. This setup automatically diverts excess solar PV generation via the electric boiler to heat the Domestic Hot Water cylinder and the general heating system, rather than wasting it by exporting it back to the grid.

The Super Simple Setup

Using a standard PV installation alongside an electric boiler, the boiler operation naturally benefits from the default flow of PV-generated electricity when available.



Equipment Required:

- Solar PV Panels
- Inverter
- Electric Boiler
- Hot Water Cylinder

Benefits Of This Solution:

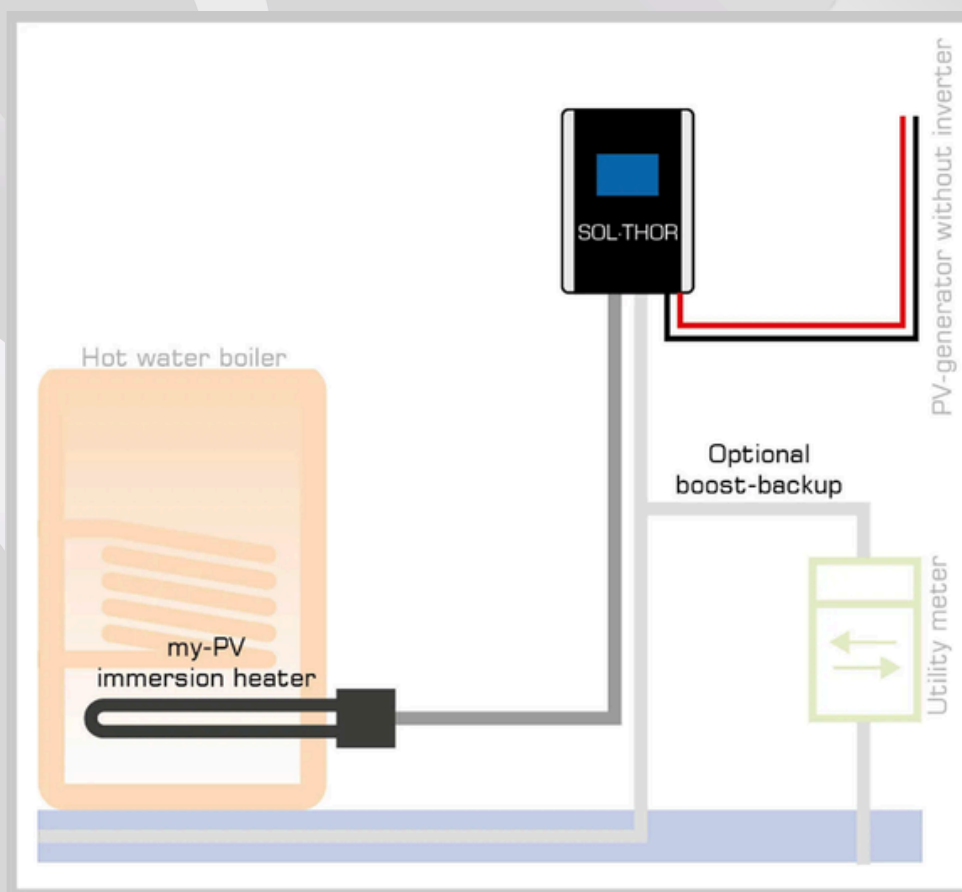
- All electric boilers and appliances are compatible out of the box with a Solar PV installation, requiring no additional specialised equipment to benefit from generated power.
- When power is being generated, all appliances in the property will naturally consume the generated power.

Shortcomings Of This Solution:

- If the appliance load is less than the power generated from the PV array, the excess generation feeds back to the grid. Power exported back to the grid is considered wasted generation.
- The percentage of generated power that is consumed vs. wasted is simply down to luck.
- The percentage of generated power that is consumed vs wasted is simply down to luck, and consumption needs to be controlled manually.

Simple Off-Grid Direct Hot Water Integration

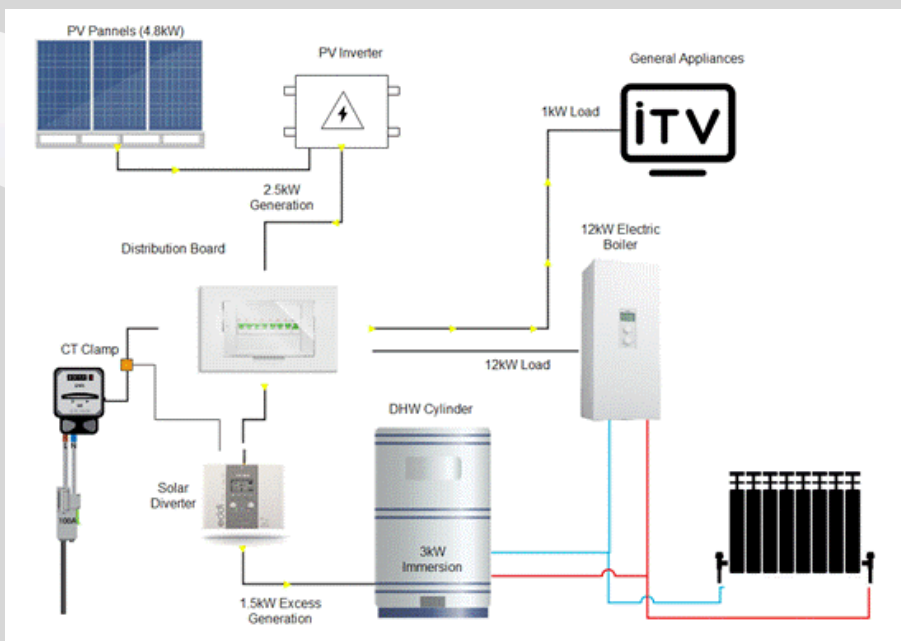
In this setup, a small array of PV panels are directly connected to the hot water cylinder only, either in addition to an existing grid-tied PV array or as a sole standalone PV array for the property. This method can be used in an installation where you don't want the PV panels grid-tied, i.e. feeding back into the domestic electricity network, or where the DNO has imposed a restriction on the number of panels which can be connected to the network.



In the latter of the two, the property may have sufficient roof space for additional panels; these can be installed independently of the standard PV system without requiring a second inverter. Instead, the additional PV panel array can be directly connected to a Sol-Thor Controller, which then supplies a 3kW immersion heater in the Domestic Hot Water Cylinder.

Standard Grid-Connected PV installation with Solar Diverter

This method harvests PV-generated power to directly heat the Domestic Hot Water Cylinder by integrating a solar PV diverter. A PV Diverter is a 3rd party piece of equipment which monitors power flow between the Grid and the property's distribution board. When excess power is exported to the grid, the diverter switches on a connected resistive load, driven by a variable-voltage output, to match and consume the same power. In 95% of installations, this would be the Hot water cylinder immersion element. The value of exported power, which would otherwise be wasted by exporting to the grid, is then automatically diverted to heat the hot water cylinder, which achieves a greater financial gain for the property occupants.



Equipment Required:

- PV Panels
- Inverter
- Solar Diverter
- Hot Water Cylinder
- Electric Boiler

Benefits Of This Solution:

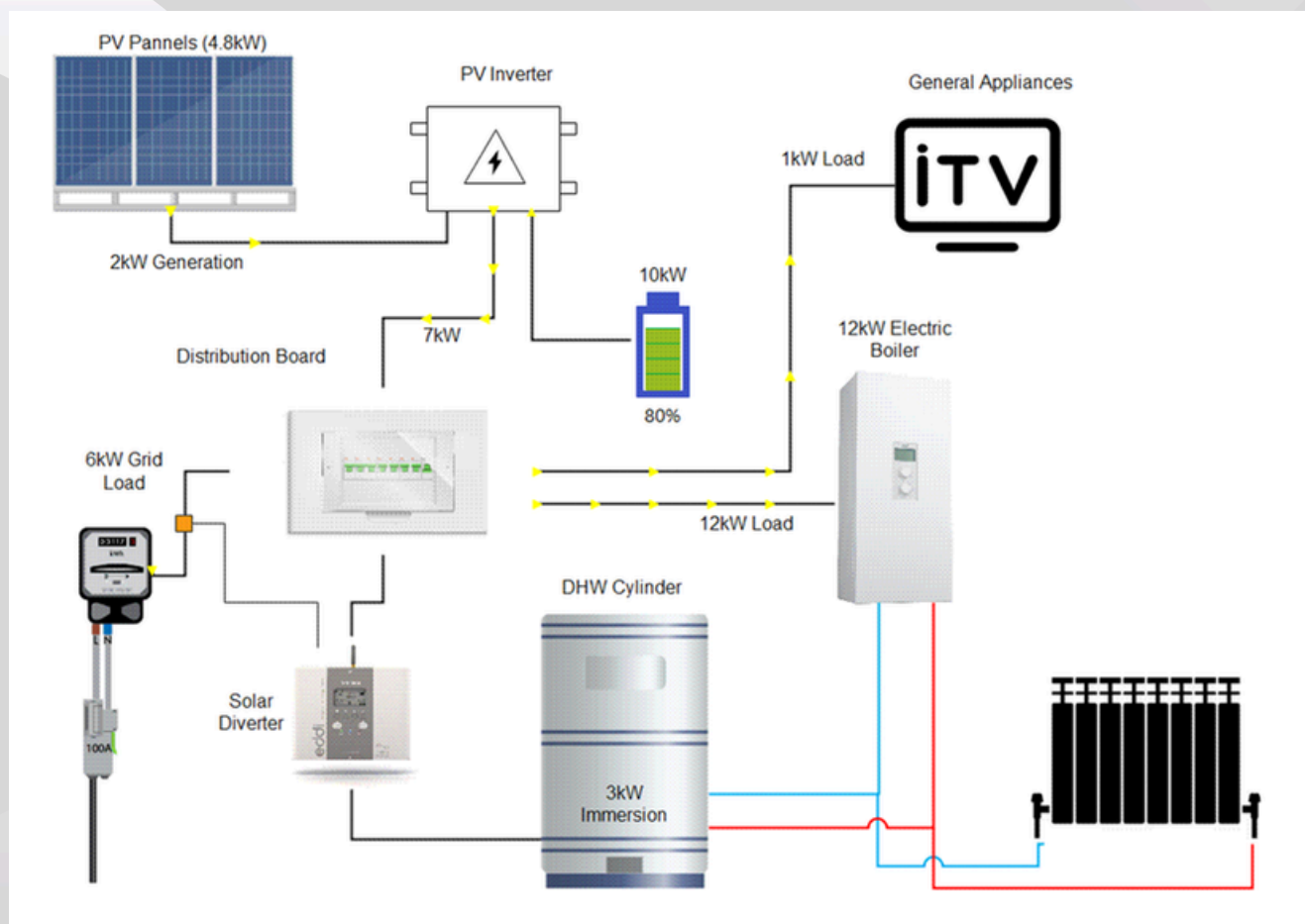
- Heat domestic hot water from PV-generated electricity automatically when the system starts to export excess generation back to the grid.
- Take otherwise-wasted generated power and automatically use as much of it as possible to theoretically heat the hot-water cylinder at zero cost most of the year.

Standard PV installation with Battery Storage

This method primarily harvests PV-generated power to charge battery storage for later use. The battery can then be set to discharge at a later time, during peak consumption by general appliances or when an electric heating system starts up in the evening.

Once the battery storage is fully charged, any additional power generated by the PV panels will naturally export back to the grid; however, a solar PV diverter can also be added to this setup to enable further controlled use of the generated electricity.

The generated power, which would otherwise be wasted by exporting it to the grid when the battery reaches full capacity, is automatically diverted to heat the hot water cylinder, yielding greater financial gain for the property's occupants.

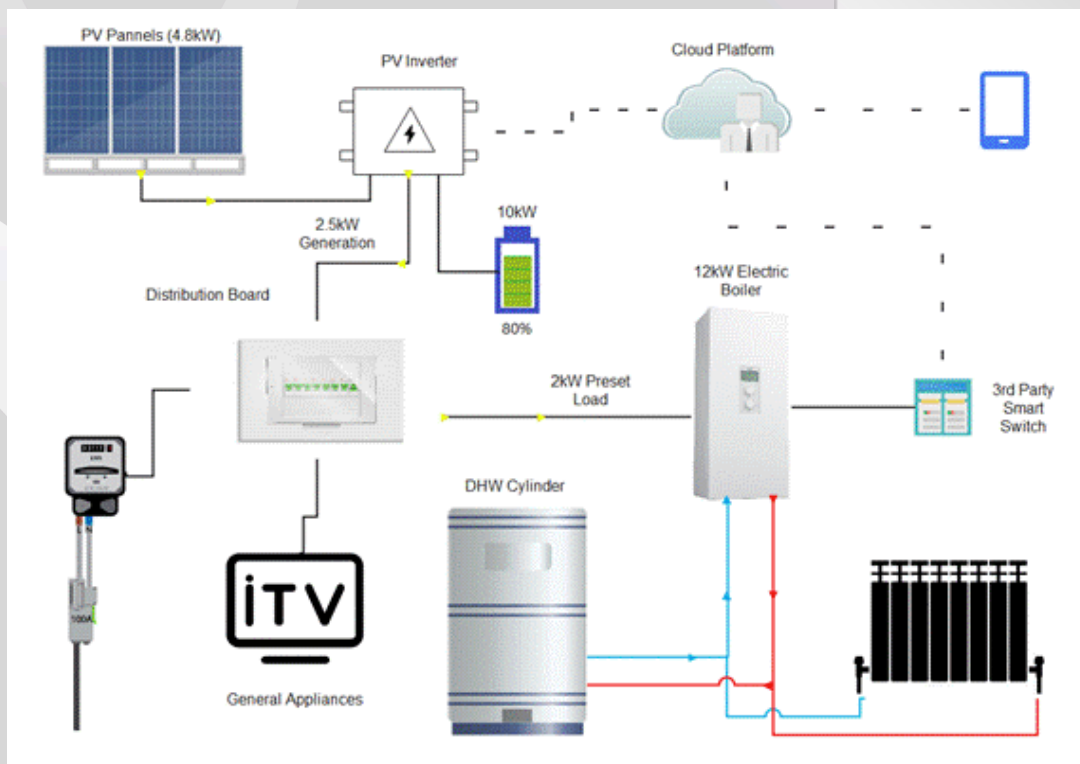


The Ultimate PV solution

This method utilises an EHC's Comet PV electric system boiler with an intelligent inverter, with or without battery storage, for maximum utilisation of solar PV generation.

This setup automatically diverts excess solar PV generation via the electric boiler to heat the Domestic Hot Water cylinder and the general heating system.

The unique advantage of this configuration is that excess PV generation can be utilised to heat the hot water cylinder, but then go a step further by ingesting the PV-generated power into the main heating system, effectively acting as a preheat within the radiator circuit.



Less electricity is then consumed from the grid during the boiler's timed period because the system is already at a higher base temperature, meaning the boiler has less work to do to reach the occupant's target temperature. Furthermore, the Comet PV boiler provides this capability without the need to purchase additional equipment, such as the Solar PV diverter mentioned earlier in this guide, which benefits only domestic hot water production.

The Ultimate PV solution

Benefits of this solution:

- The inverter is configured to prioritise charging the battery with PV-generated power before allowing the generated power to naturally flow into the property's electrical system and/or back to the grid.
- The battery is ideally programmed only to start discharging into the property at a later time in the day or evening, when panels are naturally producing less power or there is a supply peak rate period.
- If a solar diverter has also been installed, once the battery is fully charged and the inverter is supplying power to the property, the diverter again steps in and attempts to consume any surplus power for the hot water cylinder.

Shortcomings of this solution:

- In most cases, an appliance with a single load greater than 5kW will always draw some of its power from the grid, because most inverters are limited to 5kW output regardless of whether a 10 or 20kW battery is available. A few newer inverters entered the market in 2025 with an uprated output of up to 10kW.

Pioneering Innovation & Sustainability

The CometPV system boiler can be integrated with SolarPV if required, and also function as a standard electric system boiler.

- PV Integration (optional)
- Zero Carbon
- Energy Monitoring
- Weather Compensation
- Automatic Anti-Legionella Feature
- Adjustable Flow Temperature:
- 20°C – 85°C
- Smart boiler control using
- the EHC App*
- Capable of working on multiple
- heating circuits simultaneously at different temperatures
- Available in outputs from 2kw to 24kw, which can be adjusted on-site to achieve optimal performance
- Maximising energy brought from your solar panels. Minimising excess energy going back to the grid

Multiple outputs. Configurable on-site. With 3 models available:

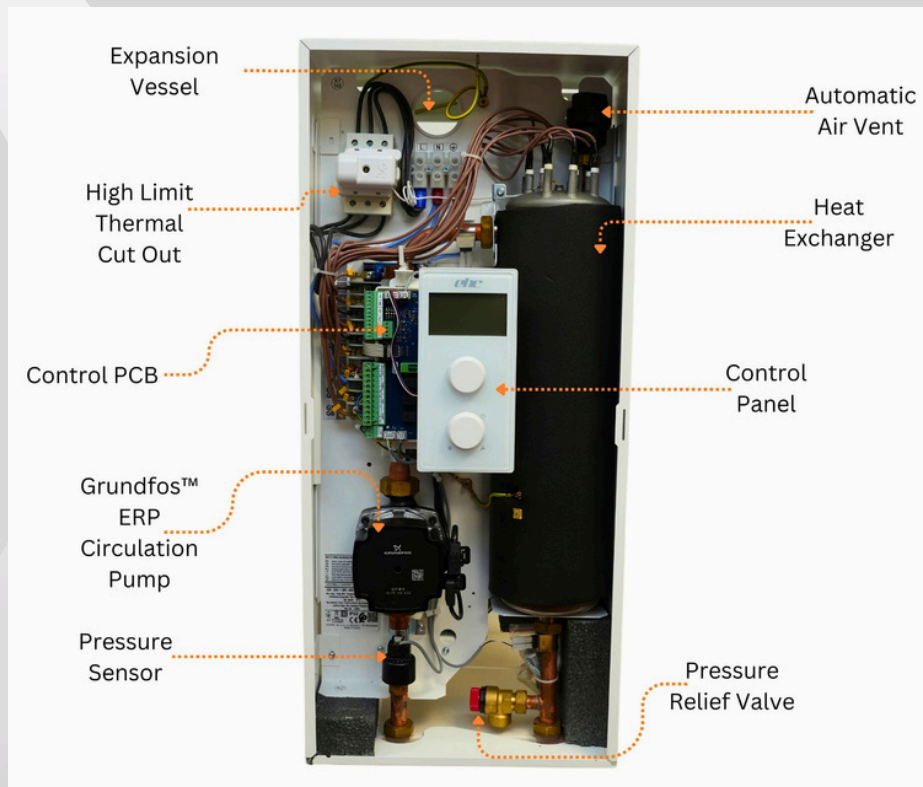
Model 1: 2, 4, 6, 8kW

Model 2: 7.2, 9.6, 12, 14.4kW

Model 3: 12, 16, 20, 24kW

*EHC C.MI2 Internet Module Required

CometPV Electric System Boiler Internal Diagram



716x316x235mm (height x width x depth) Weight: 20.5kg

The Electric Heating Company Limited

COMET PV[®]

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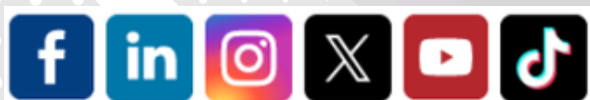


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