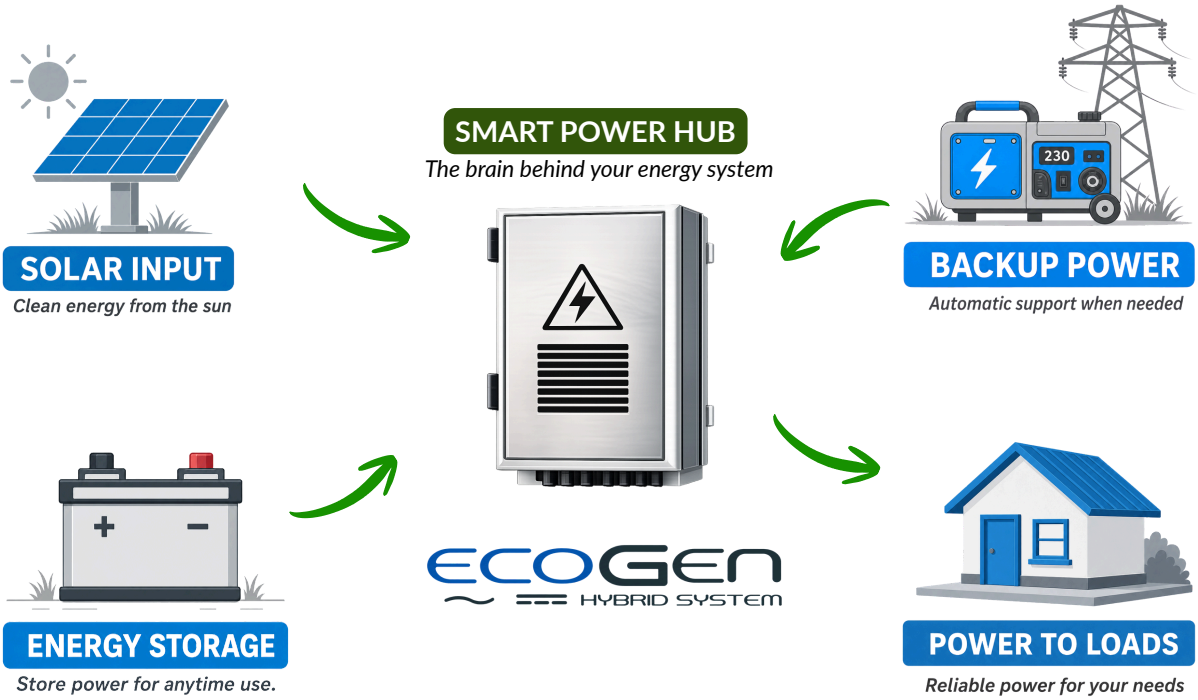
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Summary of the Hybrid System

The hybrid power system presents a practical and scalable solution for delivering reliable temporary power across a wide range of off-grid and grid-constrained applications. By intelligently integrating solar PV generation, battery storage, and diesel generator support, the system ensures continuity of supply while significantly reducing fuel consumption, noise, and emissions. It's ruggedised, IP65-rated and vandal-safe enclosure, combined with robust component selection, enables dependable operation in harsh and high-risk construction environments. Advanced controls and monitoring further enhance safety, efficiency, and ease of deployment. With flexible capacity options and future scalability, the system is well-suited to meet evolving site demands, providing an efficient, sustainable, and cost-effective alternative to traditional generator-only power solutions.

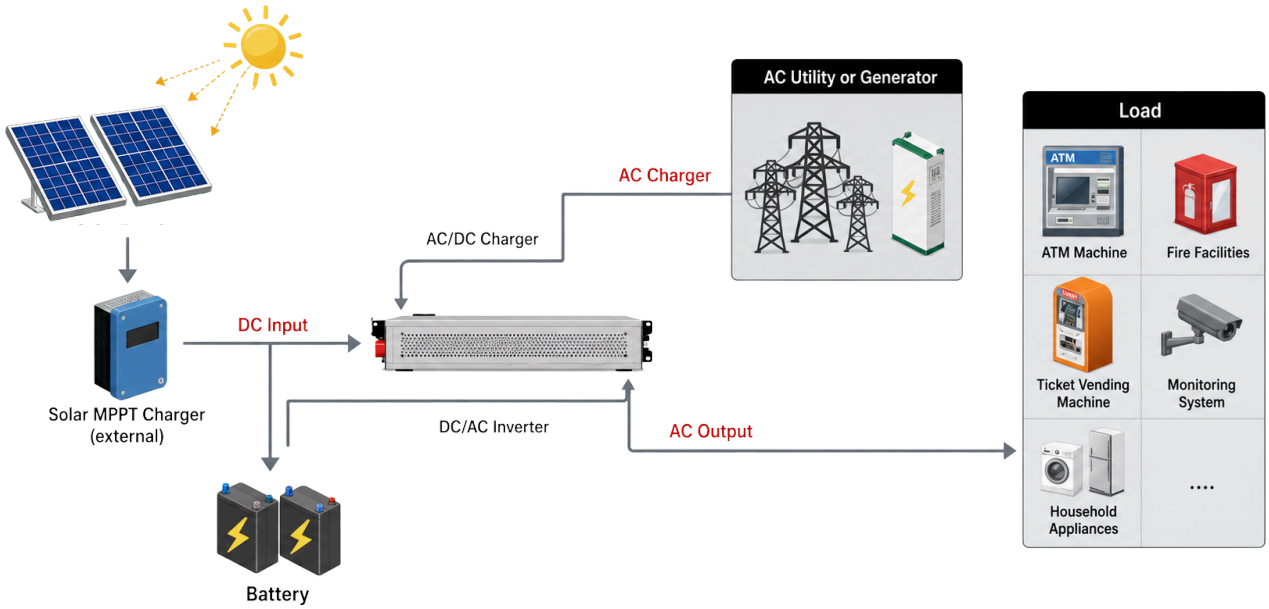
The hybrid system integrates a hybrid inverter/charger, battery storage, solar PV input and a diesel generator interface within a ruggedised enclosure to provide reliable temporary power for construction-site facilities. The system prioritises renewable generation where available, uses the battery to cover transient and low-load periods, and automatically calls on the generator when additional power or battery recharging is required.

Intended Applications

The hybrid inverter system is intended for temporary, off-grid or grid-constrained applications where a reliable AC supply is required, with reduced generator run-time through the use of solar generation and battery storage. Typical applications include:

- Construction sites powering welfare cabins, office blocks, toilet blocks and canteens
- Caravans and temporary accommodation units
- Clubhouses and community buildings requiring backup or supplementary power
- Campsites and glamping sites (shared facilities, lighting and amenities)
- Outdoor kitchens and remote food-preparation areas
- Mobile catering trailers and food trucks
- Schools (temporary classrooms, site works, resilience/backup power where permitted)
- Outdoor events, festivals and temporary venues

System Architecture



System Capacity Overview

The system is available with a continuous **single-phase** AC output starting at **5 kW**, with higher-output configurations available to order up to **30 kW** to suit larger site loads. Solar charging capability supports up to **6 kW of PV** input as standard, with higher PV input capacity available as an option where increased renewable contribution is required. The unit can also accept a **240 V AC** input for charging and/or load support, supplied either from a **diesel generator** or a **mains** connection (where available).

Components Specification

Inverter (Compact Specification)

- **Rated power:** 5 kW
- **Surge power:** 10 kW (motor starts, transient loads)
- **Waveform:** pure sine (THD < 3%)
- **AC output:** typically, 230 V, 50/60 Hz configurable
- **DC bus (typical):** 48 V models
- **AC charger (max):** up to ~4.5 kW
- **Charging profile:** 3-stage, adjustable
- **Battery types:** AGM, Gel, Flooded, Lithium
- **Scalability:** supports single-phase or 3-phase configurations up to 30KW
- **Protections:** reverse polarity, under/over-voltage, overload, short circuit, thermal protection with auto derating/shutdown

MPPT Controller (Summary)

- **Type:** MPPT solar charge controller (DC–DC) for PV-to-battery charging in off-grid systems.
- **Max charge current:** up to 120 A.
- **Battery systems:** 48 V; supports lead-acid and lithium.
- **PV configuration:** supports series/parallel array configurations (e.g., 2 panels in series with multiple parallel strings).
- **Cooling:** passive (natural convection).
- **Operating temperature:** approx. −35 °C to +40 °C.
- **Interface:** integrated LCD/indicators and local controls.
- **Protections:** overcharge/over-discharge, overload, and short-circuit protection.

Battery Specifications:

Starting configuration: **5 kWh** battery storage at **48 V** (LiFePO4).
To be confirmed: final battery capacity options, maximum continuous discharge/charge current, BMS communications, and cycle-life warranty terms.

Rated Enclosure:

- Powder coated 3mm Steel construction.
- Filtered forced air cooling, Internal temperature sensing for thermal management
- Generator trigger output: interface for automatic start/stop (specification to be confirmed for the selected generator controller).
- Battery monitoring: via internal display or Bluetooth option available.

Electrical Specifications

- Input DC voltage: 48 VDC
- Solar input: maximum 16 kW @ 48 V
- AC input: 240 V @ 30 A
- AC output: 240 V @ 5 kW (26 A)
- Safety and Environmental Considerations
- IP Rating: IP65 enclosure.
- Thermal Control: active cooling, sensors
- Operating Temperature Range -35°c to +35°c
- Compliance with relevant standards TBA

Safety and Environmental Considerations

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- Thermal Control: active cooling, sensors
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Expansion

- The base system starts at 5KW AC output with 10KW, 20KW and 30KW options available
- With battery options following in similar increments although other battery options can be discussed with our sales team depending on your requirements.

To find out more about the EcoGen Hybrid System please contact ECOPAC Power
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