



1 MW Grid-Tied Hybrid Power Generator

Stand Alone Capable Operation but  
welcomes input from Solar and Wind



## Dramatically Reduces Fuel Consumption While Producing Pure Sine Wave Power!

Power is often generated by inefficient fossil fuel generators which run constantly, regardless of the power consumed. This creates noise, pollution and dirty power which damages equipment and electronics. With a generator running continuously, maintenance and fossil fuel costs are significant and often exorbitant.

In contrast, power generated by CEG renewable energy systems is drawn from proprietary long amp-hour batteries which summon generators (typically only 1/3 of the time, and often not at all) only when batteries need charging, dramatically reducing fuel and maintenance costs. Even greater savings are realized in areas where fuel deliveries are challenging.

Energy stored in batteries is fed through inverters to produce clean power, free from voltage spikes, drops, ripples and noise.

Stand Alone Capable operation but can accommodate input from solar or wind!

### System Components

- Two MSZI 3880 modules for parallel redundancy to charge batteries when generative is active and to create a virtual grid when the generator is inactive
- MSXI Grid Tied Modular Inverter between batteries and grid for bidirectional flow capability
- MSXI 1367 Power Shifting Module (15 modules/mW)
- Proprietary 1,200 kWh Gel batteries
- ATS switches between generator and MSZI 3380 for virtual grid
- Four 280 kW Diesel Generator Groups
- 1,200 kVA Step up Transformer Pocket Station

ENHANCED BATTERIES, PROPRIETARY CHARGE CONTROLLER - CEG's proprietary batteries, manufactured by a large, international battery company, contain a custom dielectric frame between positive and negative ions. The frame's impact on the ions enables faster charging and more storage hours. CEG's charge controller optimizes battery efficiency via a unique algorithm that monitors and controls the entire system and receives automatic software upgrades via Wi-Fi.

INTEGRATED PROPRIETARY POWER FACTOR UNITS - CEG Hybrid Power Generators incorporate proprietary Power Factor Capacitors which supply power to meet demand surges, thereby enhancing efficiency and prolonging battery amp hours.

Only 500 kW of solar panels required per megawatt of pure sine wave stored energy. Yes, we understand this is hard to believe.



**CEG**  
Catalyst Energy Group  
[www.CatalystEnergyGroup.com](http://www.CatalystEnergyGroup.com)



## Company Overview

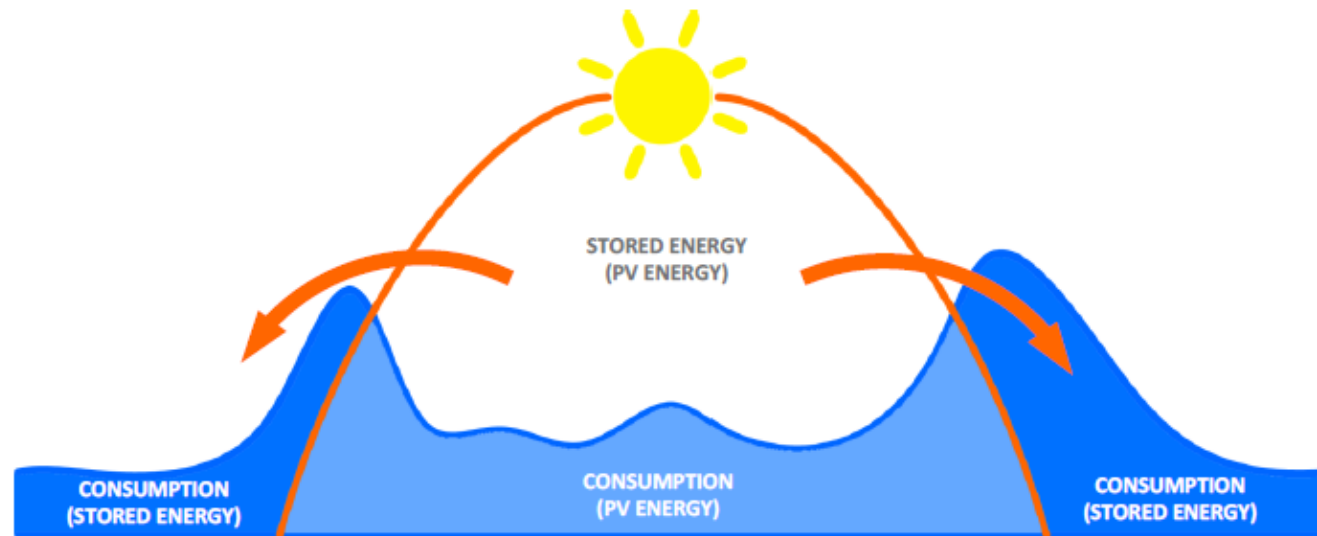
The inevitable ascension of renewable energy has now occurred, fostered not only by the emergence of innovative, economically attractive technologies but by the ability to connect those technologies to the appropriate customers. Incentive driven enterprises will be replaced by companies featuring both technologies and products that are financially and environmentally attractive and are supported by marketing and sales platforms that will let them access their appropriate markets. Those are the companies that will complete the transformation of renewable energy from a subsidized peripheral source of power into a mainstream supplier of overall energy needs.

Catalyst Energy Group (CEG) is precisely that combination. Possessing a large multi-national manufacturing capability, a cutting edge design and engineering laboratory and a sales and marketing team with international reach, CEG offers an innovative, uniquely effective and adaptable array of energy generation and storage products that feature unmatched performance in extraordinarily durable configurations. CEG's decades of manufacturing and engineering capabilities provide the capacity to accommodate the needs of large multi-national customers while its creative design laboratory relentlessly integrates refinements and innovation into each of its products.

The effectiveness of energy generation and storage systems is determined by some simple math. How efficiently does the product accumulate and store power and for how many KW or MW hours can it provide that power? In terms of KW hours, many of the smaller, and sometimes mobile "solar" units available, are actually conventional fossil fuel generators disguised as renewable products and too often the larger Megawatt units are one size fits all ponderous devices that output very few hours of stored energy. CEG products are different. In every configuration, they provide the vast majority of their power from the renewable source and in the larger sizes can be customized to specifically address the needs of the customer.

CEG systems range in size from 3 kW to 1 mW and are available in both mobile and stationary configurations with proprietary firmware capable of optimizing functionality to meet each customer's operating conditions. These systems don't function simply as a conduit, accumulating power and then transferring that power, but as a legitimate storage facility as gathered energy is always sent to batteries initially and then distributed at the times and at the volumes required by the customer. All products are engineered as plug and play, are designed to accommodate new technologies as they become viable and can be daisy chained to meet demand of any size.

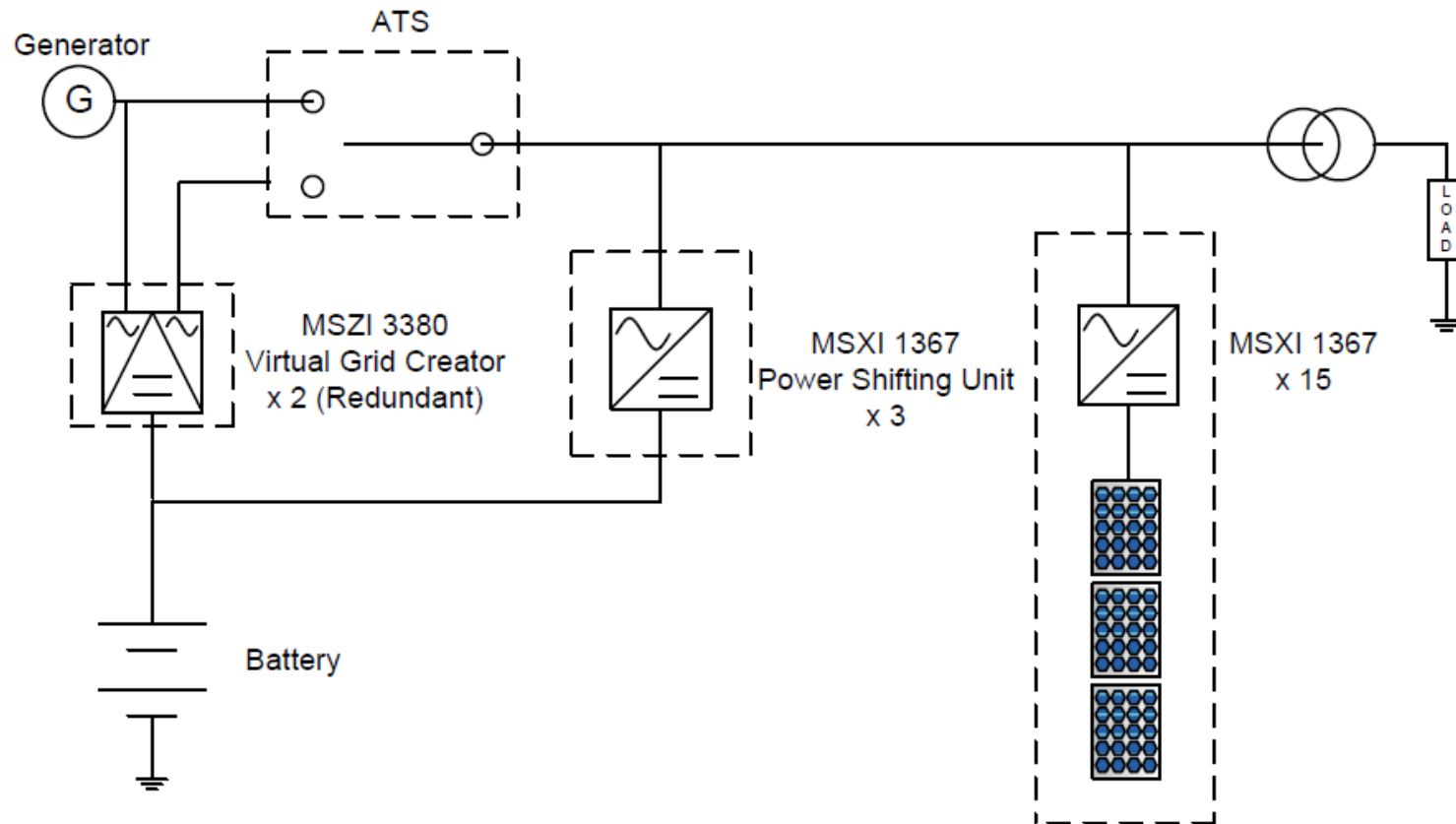
# Catalyst Fuel Reduction System



Typical PV Production & Consumption Profiles and Power Shifting Property

Excess PV Energy is stored in batteries for later use

## 2. Single Line Diagram



# Data Logger and Remote Monitoring System

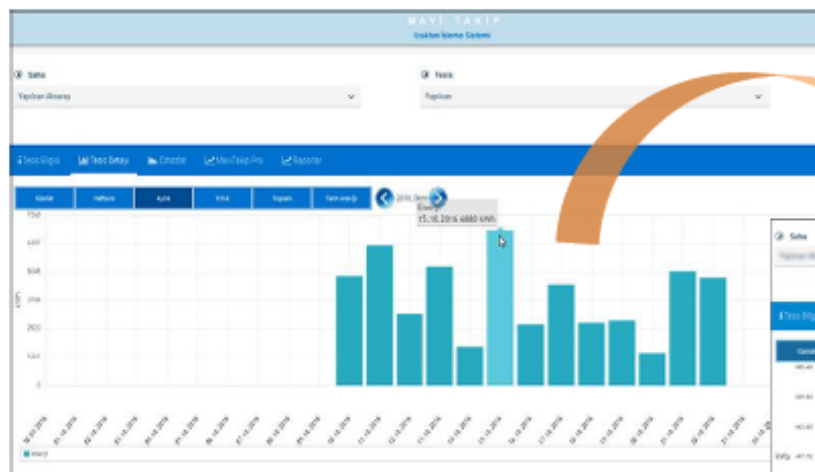


Our customers can follow their plants from all over the world 7/24 via their personalized password and user name.



Compatible with every mobile platform thanks to its Responsive architecture

# Data Logger and Remote Monitoring System



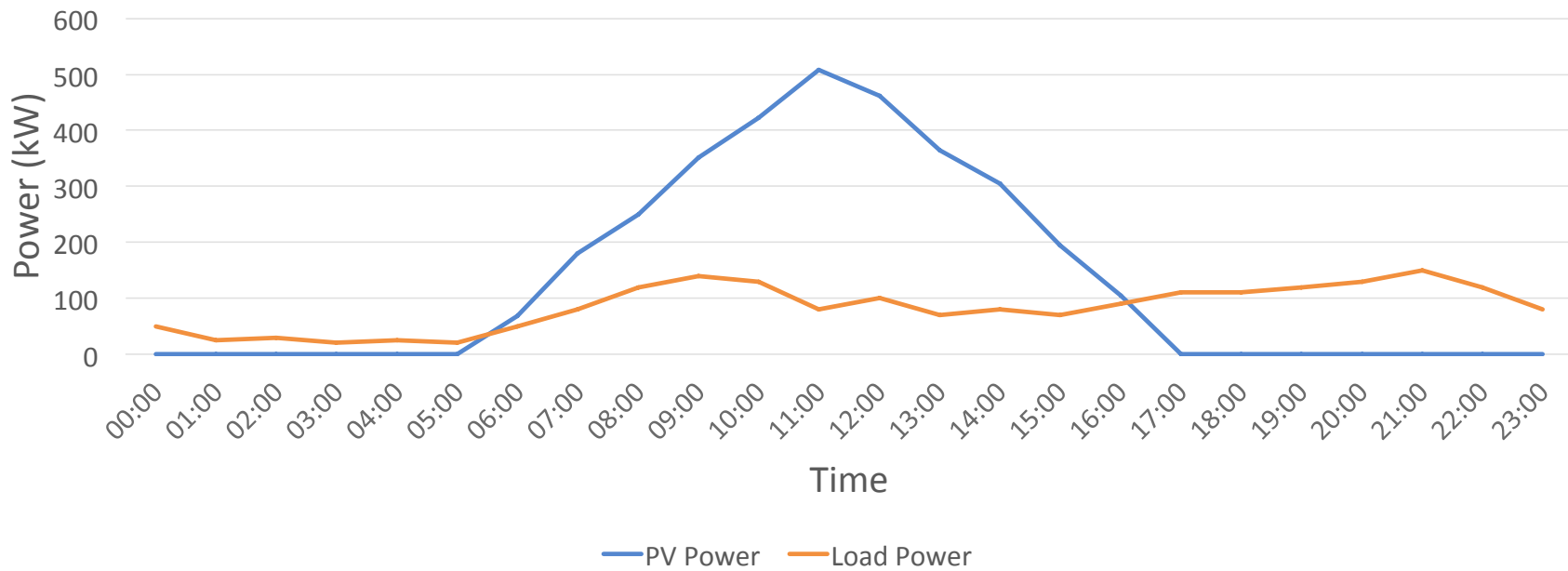
Daily, Weekly, Monthly and Annual data of PV ESS can be monitored between specified dates from monitoring interface.

Thanks to interactive graphical feature, if the user clicks on a column given in a bar chart, production data is shown automatically





PV Power and Load Power in a Typical July Day

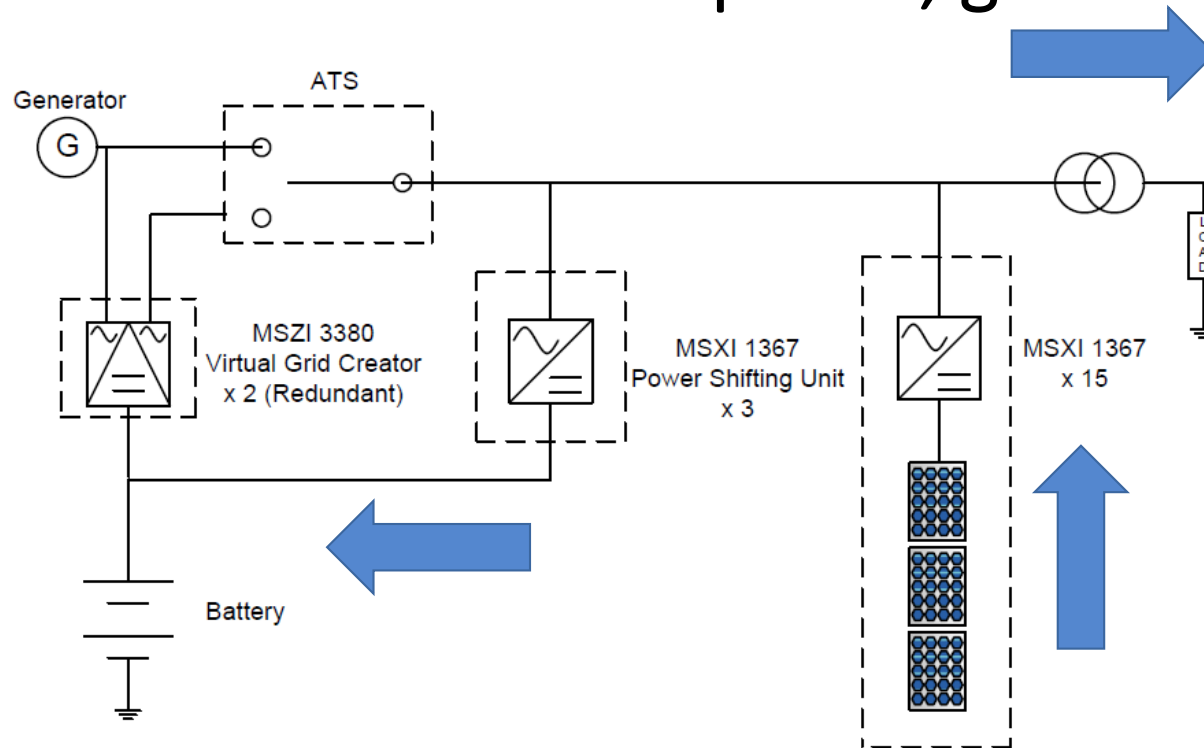


05:30 – 16:30: Battery Charging (PV Power > Load Power)



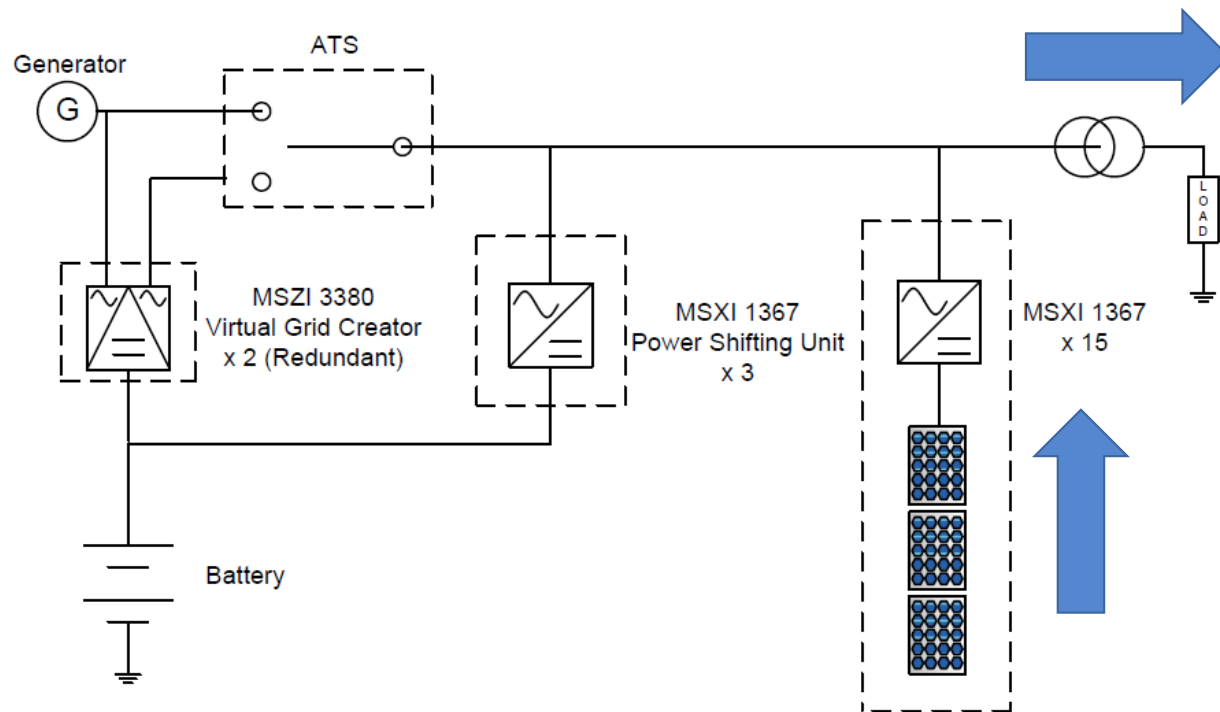
# SCENARIO 1-CHARGING

PV power is more than load power, genset OFF



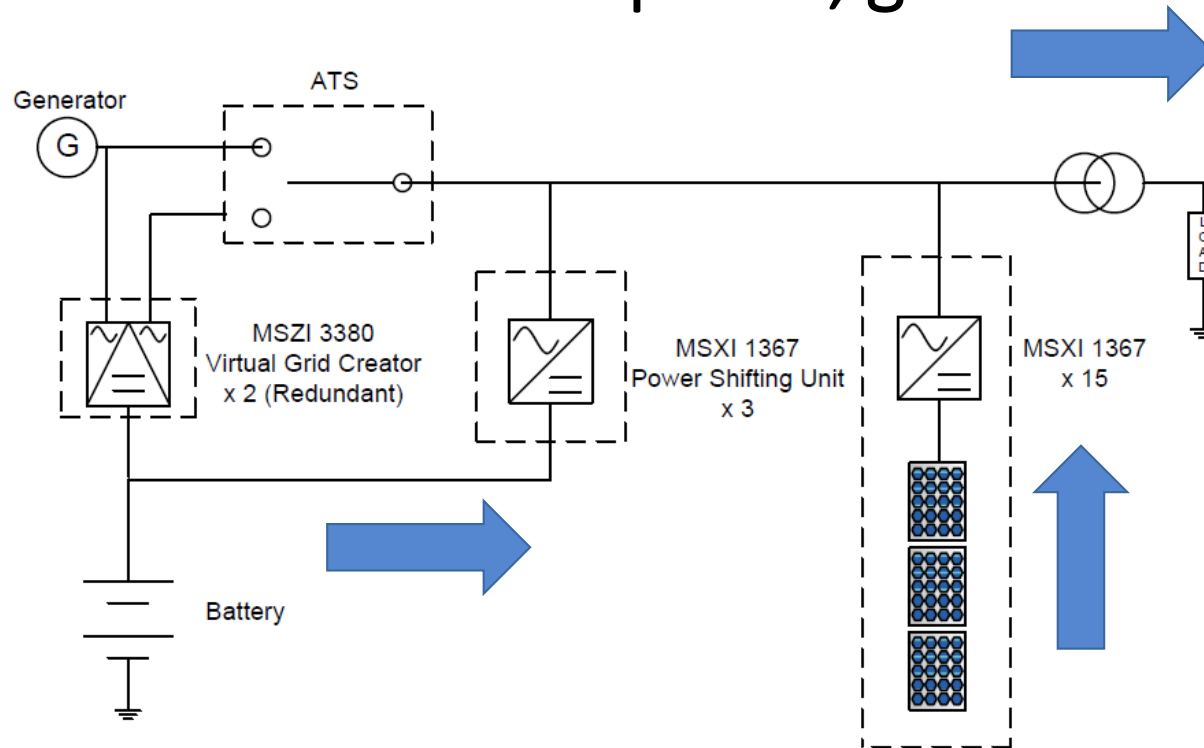
# SCENARIO 2-END OF CHARGE

PV power is more than load power, , genset OFF



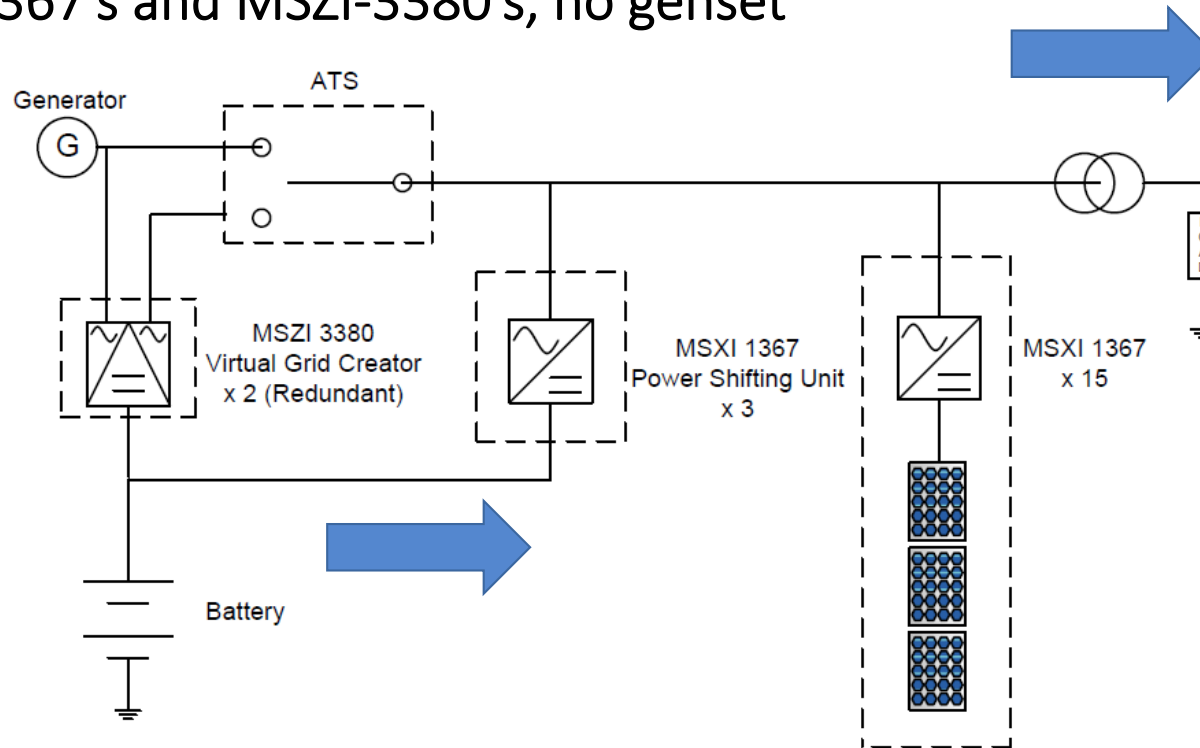
# SCENARIO 3 - PHOTOVOLTAIC + BATTERY

PV power is less than load power, genset OFF



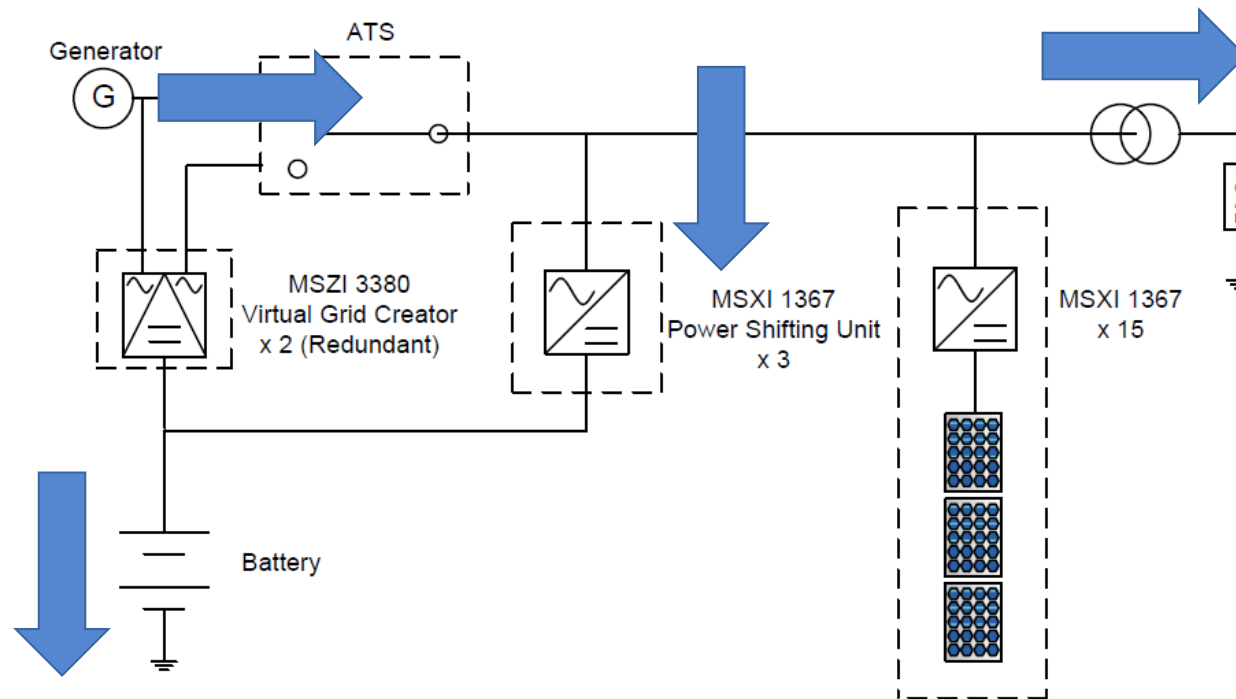
# SCENARIO 4-BATTERY OPERATION

no PV power , upto 250kW load power supplied by MSXI-1367's and MSZI-3380's, no genset

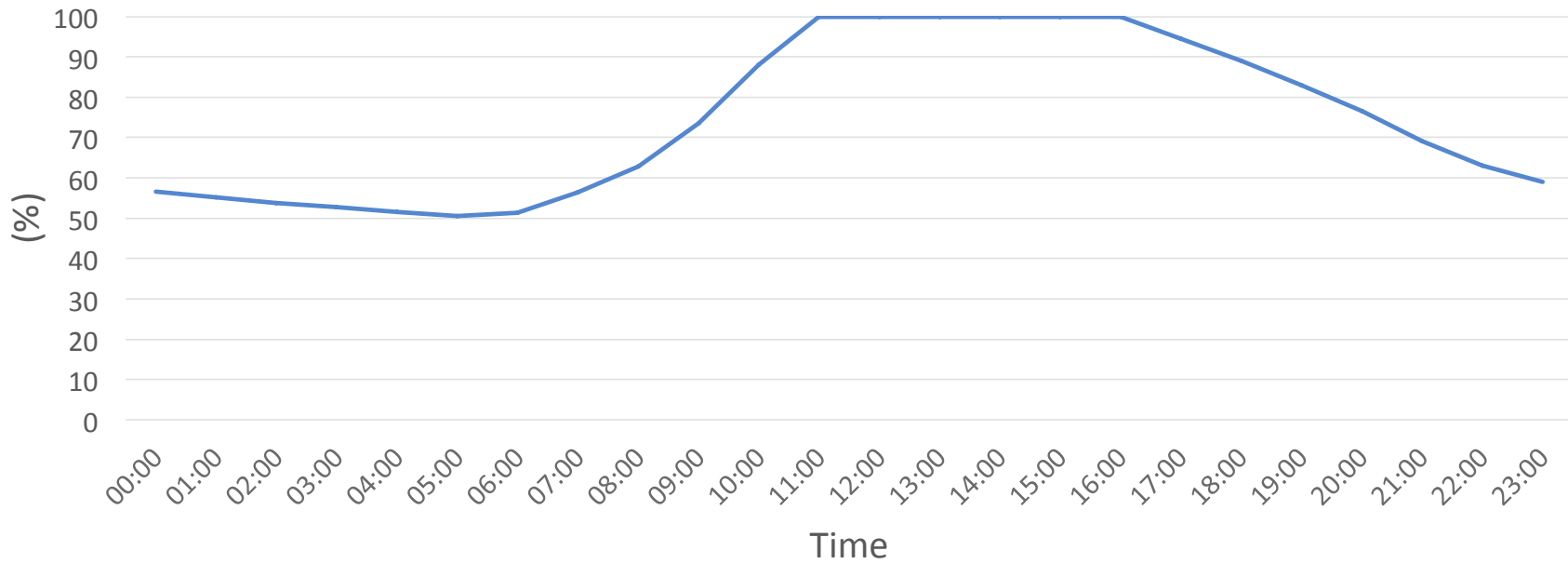


# SCENARIO 5-GENSET OPERATION

no PV power , batteries discharged or load power more than 250kW g  
enset operates at nominal power, batteries charged by the genset



### Battery Average State of Charge



Average State of Charge of a 1.200 kWh Battery



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