pv magazine spotlight

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Scalable, intelligent energy management for U.S. homes and businesses

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Rachel Sorenson
Manager Projects and Business
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Welcome!

Do you have any questions? ❓

Send them in via the Q&A tab. 👉 We aim to answer as many as we can today!

You can also let us know of any tech problems there.

We are recording this webinar today. 📹

We'll let you know by email where to find it and the slide deck, so you can re-watch it at your convenience. 👀 💡

BRIGGS&STRATTON

Introducing the

SimpliPHI™ Energy Storage System

About SimpliPhi Power

2010

Founding of OES Energy

2011-12

Residential, Military + Emergency Response

2013-14

Product Line Expansion

2015-16

Relaunch as SimpliPhi Power

2017-20

Ramping Up Manufacturing

2021-Present

Briggs & Stratton Energy Solutions

Designed and Manufactured In California

Energy Storage Industry Outlook Soaring

Demand for Energy Storage has grown **80% in the past year alone***

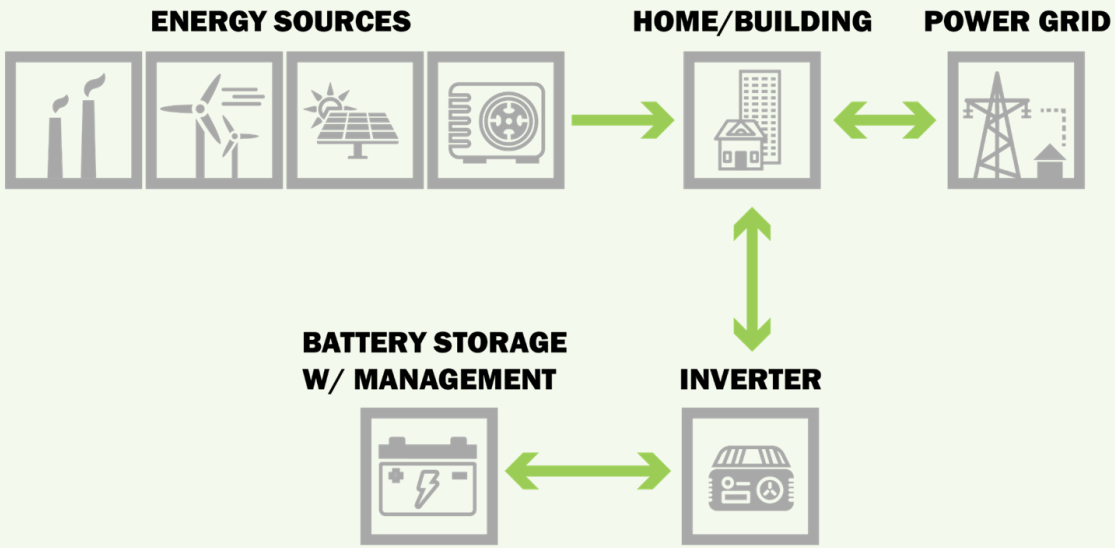
The primary market drivers for growth are:

- ✓ Consumers want reliable, uninterrupted power, cost savings and independence
- ✓ An increase in grid failures, utility planned outages, and extreme weather events that undermine consumer safety and resilience
- ✓ Utilities increasing daily rates, setting up TOU charges/limitations, and creating demand charge structures that battery storage can reduce or eliminate
- ✓ Solar is more affordable than ever. When combined with other generation sources - grid, generator, wind - batteries enable consumers to take advantage of increasing state and federal incentives for renewable and resilient power
- ✓ Policy changes and increased clean energy targets continue to drive valuable rebates and tax credits that offset the upfront costs of distributed, consumer-sited energy storage systems

*IHS Markit United States Energy Storage Market Briefing

A Look at Energy Storage Systems

At the core of an Energy Storage System (ESS) is a bank of high-capacity batteries that collect and store energy generated by the utility, generator, solar or wind. The stored energy can be utilized to provide critical backup, supplement an existing electrical system, or as a primary power source for a home or business.



Introducing the SimpliPHI™ Energy Storage System (ESS)

VERSATILE.
SCALABLE.
SIMPLIFIED.

Delivering a safer and more reliable ESS for any home or business – in the least complicated package.

Certifications: UL 1642, UL 1973, UL 1741SA, UN DOT 3480. UN 38.3, UL 9540, UL 9540A Fire Safety Testing in process.

Simplified to Give You Control

Energy requirements vary from house to house, regardless of size. It is important to have a system that scales energy capacity and power output independently to serve different customers needs.

Scalable energy solutions from Briggs & Stratton® and SimpliPhi™ Power give you the versatility you need to meet your customers needs with high performing components.

4.9kWh Battery

6kW Inverter

EnergyTrak™ Control System & App

SimpliPHI™ 4.9 Battery

The core of our system is the scalable storage building block, the **SimpliPHI 4.9 Battery**.

Utilizing advanced Lithium Ferro Phosphate (LFP) chemistry, we deliver efficient, reliable, safer advanced-level power storage that runs cooler and longer.

- Long lifespan – 10,000 cycles at 80% DoD*. 26.8 MWh of energy throughput.
- Scalable – Total capacity batteries to 358.5kWh.
- Closed-loop communications – simplifies installation, improves accuracy, and optimizes life.
- Safety-tested battery – state-of-the-art integrated BMS with Lithium Ferro Phosphate (LFP) and overcurrent protection provide peace of mind.
- IP65 - rated for indoor/outdoor use.
- Maintenance-free with a 10-year limited warranty.**

4.9kWh Battery
SPHIB-4.9

10,000
cycle lifespan

*96% round trip efficiency, with 80% retained capacity
**See https://simpliphipower.com

SimpliPHI™ 6kW Inverter

Hybrid inverter with integrated dual MPPT works seamlessly with the SimpliPHI 4.9 Battery to deliver the most efficient, easy-to-use backup power system available for home and business.

The self-monitoring SimpliPHI Inverter is designed to pair with solar, grid or generator in either AC or DC coupled configurations – whether on the grid or off, with or without batteries.

- Versatile – Scales up to 9 inverters for increased load support for a total of 54kW.
- Seamless Transition – Less than 8 milliseconds transition time protects sensitive electronics and minimizes downtime.
- Digital Interface – Easy programming and monitoring of primary system functions on the LCD inverter interface (w/o EnergyTrak*™).
- EnergyTrak™ Enabled – Remote monitoring and quick 5-step commissioning through EnergyTrak™ app.
- IP65 - rated for indoor or outdoor installations.
- 10-year limited warranty**

6kW Inverter
SPHI-IN-6

Single & Split Phase
120V / 240V

*Not required but recommended for system optimization.
**See operator's manual for complete warranty details.

EnergyTrak™ Control System

Provides advanced system monitoring through a sophisticated mobile app for smartphones or tablets, delivering real-time status and updates with intuitive control over the entire SimpliPHI™ Energy Storage System.

Simple, smart, and reliable… EnergyTrak™ offers an ever-improving platform to maximize value over the life of the system.

- Streamlined 5-step commissioning for fast, frustration-free setup from a mobile device.
- Fleet management of customer installations to maximize system uptime.
- Remote re-configuration of commissioned systems to minimize the need for a site visit.
- Automatic over-the-air updates ensure systems and apps are secure and code-compliant with the features customers want.
- WiFi, ethernet, and Bluetooth for simple, flexible connectivity.

Control System & App
ET-GWY-10

The Power of ESS
in the palm of your hand

SimpliPHI™ – The industry's most versatile Energy Storage System

Modular Components
Configure the system to meet any site requirements

Scalable Power
Add batteries and increase capacity to meet changing energy needs over time

Versatile Installation Options
IP65 rated for outdoor or indoor installation

Closed-Loop Communication
Optimize battery performance with a bi-directional feedback loop seamlessly pairing inverters and batteries

Energy Management System
Platform with multi-layered monitoring gives you and your customers the information needed to manage energy

Superior Warranty*
Up to 10 years backed by the power experts at Briggs & Stratton®

Maintenance-Free
No ongoing maintenance on the system, receive notifications remotely through the app

*See operator's manual for complete warranty details.

Best in Class Expertise & Technical Support

EXPERTISE
Briggs & Stratton® and SimpliPhi™ Power are leaders in power innovation, joining to develop advanced power and energy solutions.

SUPPORT
With a vertically integrated platform, you have one point of contact for the life of the system. Our Elite IQ training programs and technical support provide 24/7 expertise that guarantees success.

SAFETY
Our Energy Storage Systems utilize Lithium Ferrous Phosphate (LFP) battery chemistry creating a superior level of safety and performance. SimpliPHI Batteries carry UL 1973 certification*.

QUALITY
Utilizing Tier 1 materials, components and manufacturing processes our American-engineered systems are held to industry-leading testing standards to deliver unmatched expertise and peace of mind.

*UL 9540A fire testing & UL 9540 certification in process

SimpliPHI™ – The System You Can Count On

SYSTEM	AGS	CAPACITY (KWH)	MAX CONT POWER OUTPUT	CHEMISTRY	CYCLE LIFE	INSTALLATION
SimpliPHI	✓	4.98 - 358.5	54 kW	LFP	10,000	Modular, Indoor/Outdoor, UL 9540 & 9540A (in process), minimal SKUs. Batteries & inverter are backwards compatible
Generac	✗	39.4	8 kW	NMC	3,554	Two cabinets (one size) for indoor/outdoor. Can only pair with Generac inverter
Enphase	✗	3 - 40	15.36 kW	LFP	4,000	10T is heavy and lacks power density, can only pair with Enphase
Tesla	✗	13.5 - 135	54 kW	NMC	3,924	Large and heavy, scales in larger increments. All in one does not allow power and capacity to scale independently
Sonnen EcoLinx	✗	12 - 30	7 kW	LFP	15,000 (temp)	Very heavy large units, indoor only, all in one solution creating CS issues
Kohler	✗	10 - 20	7.6 kW	LFP	600	Limited power output, limited scalability
SunPower	✗	13 - 26	6.8 kW	LFP	4,000	Can only be paired with SunPower solar, increasing costs

Where We Win- Scaling Power and Capacity Independently

- **THE MOST** scalable battery capacity in its class
- **HIGHEST** maximum continuous power output
- **SAFER** LFP battery chemistry
- **LONGER** battery life with retained capacity
- **VERSATILE** DC or AC Coupled configurations with one inverter
- **INCLUDED** MPPT charge controllers & automatic generator start (AGS)

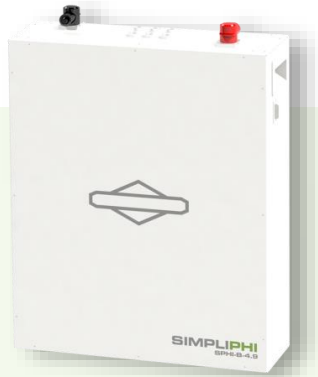
Battery Solutions for Every Application

PHI Battery
3.8kWh

The workhorse of the SimpliPHI line. With over 200MWh installed in the field and over ten years of performance the PHI battery is universally compatible with leading inverters in the market.

AmpliPHI Battery
3.8 kWh

Building on the same high performance of the PHI battery, the AmpliPHI battery adds closed loop communications in a sophisticated BMS. This allows for increased optimization, reduced inverter programming and even more control in your system.



SimpliPHI™ Battery
4.98kWh

Leveraging over ten years of battery expertise, the SimpliPHI Battery continues the evolution of innovation with the same safe LFP chemistry in a larger capacity module. Next level BMS in a wall mountable, IP65 outdoor rated case.

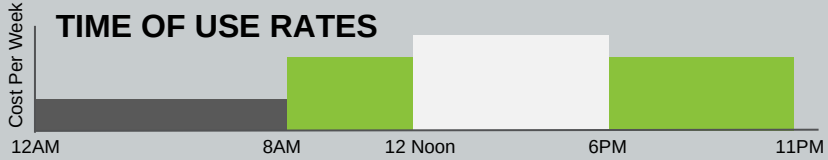
One Integrated Platform for Multiple Use Cases

- Upgrading Existing Solar Homes
- Time-of-Use (TOU)
- New Solar + Storage Incentives
- Sell Back Power to the Grid
- “Solar Ready” New Homes
- Off-Grid Living
- Backup Power
- Replace Existing ESS
- Eliminating Peak Demand Rates

Real World Applications

GOAL: TIME OF USE (TOU)

Time of Use charges are becoming commonplace as utility companies adopt a rate structure that charges more for energy during high-demand periods.



- Electricity rates may be higher during peak demand periods and lower during off peak hours
- Energy storage allows customers to store power during off-peak hours and use for a later point in time when energy prices are more costly

SOLUTION

Particularly appealing to those homeowners in areas with higher energy rates, a SimpliPHI™ Energy Storage System can collect power generation during off-peak times and be utilized during expected peak rate periods to lower overall energy costs. These systems installed in response to TOU require a smaller investment as the battery is sized for just a period of hours, and ROI is calculated based on the elimination of peak rates.

Additionally, battery storage can be leveraged for outages as well, further increasing the use and value of the ESS.

CONSIDERATIONS

1. **TOU Schedule.** Determine the specific time frame when TOU charges occur.
2. **Load calculations.** These should be based on energy consumption during TOU period along with peak power demand.
3. **Backup allowance.** If allowing additional reserve for backup, a depth of discharge to preserve capacity should be set.
4. **Operation.** The system will automatically switch back to grid power once the time period has been reached, or battery capacity drops to levels set within the system.

Real World Applications

GOAL: ELIMINATE PEAK DEMAND RATES

Many utility companies are applying Peak Demand charges to homes and businesses that use more than a certain amount of power.

SOLUTION

A SimpliPHI™ Energy Storage System (ESS) can collect and store energy generated during off-peak times, which can mitigate these charges by drawing energy from the battery instead of the grid when the power threshold is met, reducing energy costs.

CONSIDERATIONS

1. **Configuration.** In most cases, DC-coupled is required or suggested due to the system's ability for self-consumption.

1. **Size for Efficiency.** SimpliPHI ESS can be sized to eliminate peaks and demand charges and scale the investment to cover those costs.

1. **Preparedness.** Including solar in these installations is an ideal way to increase cost savings and ROI by adding storage capacity to cover potential outages.

Real World Applications

GOAL: NET METERING & DEMAND RESPONSE

Many utilities looking to optimize the grid and eliminate peak surges are providing financial incentives to their customers in exchange for being allowed to tap into their home Energy Storage System (ESS).

SOLUTION

Through Community Choice Aggregators, Distributed Energy Resources, Distributed Energy Management Systems and other utility programs, many offer to pay a customer up to $125/kWh for drawing power from their ESS, which can significantly reduce the purchase and installation costs of a system over time.

CONSIDERATIONS

1. **Sales tool.** These programs reduce the costs related to the SimpliPHI™ ESS equipment and installation.
2. **Win/Win.** The customer still gets all the benefit of reducing utility bills on a regular basis, as well as having backup power should the utility go out.

Real World Applications

GOAL: UPGRADE EXISTING SOLAR HOMES

Customers who currently have PV only – with no battery backup – are ideal candidates for a SimpliPHI™ Energy Storage System (ESS). These are great opportunities to reach out and investigate adding battery systems.

SOLUTION

Solar customers without storage cannot utilize their PV systems during outages. Because those owners are now experiencing continued planned and unplanned outages they are open to incorporating SimpliPHI ESS into their homes. New incentives also make adding battery storage financially attractive (IRA/ITC).

With the growth in electronic communication, distance learning, and remote work – plus incentives through government and utility programs – the move to battery storage has never been more appealing and cost-effective.

CONSIDERATIONS

1. **Age of existing system.** Systems that were installed with UL 1741 inverters may not be capable of AC coupling to an inverter that is UL1741SA or UL1741SB.
2. **System ownership vs. lease.** Many leased systems do not allow modifications in the system or a home's loads.
3. **Net metering agreements.** Many net metering agreements are very specific as to how the system can be used.
4. **State/local regulations.** Government requirements related to energy storage could impact the system design.
5. **Charging capacity.** May require an upgrade to PV system – an opportunity to DC couple in the backup system instead of AC coupling, which is more efficient.

Real World Applications

GOAL: “SOLAR READY” NEW HOMES

In progressive States, many homes are being built as “Solar Ready”, designed in a way to maximize roof orientation and solar production with service panels and PV inputs already in place.

SOLUTION

Because these homes are equipped with the basic PV infrastructure, installation and permitting time for solar panels and a supporting SimpliPHI™ Energy Storage System are minimized, reducing investment costs. Federal, state and local incentives can be applied to these “solar ready” homes to further offset upfront costs, which accelerate the ROI of a home solar and battery system.

CONSIDERATIONS

1. **Permitting.** The permit process in these solar-friendly states is streamlined, speeding up the time to get from install to commissioning.
2. **Inspections.** Authorities in these areas have more familiarity with solar and storage systems, making inspections easier.
3. **Utility Service.** These solar-ready homes typically have a predominance of energy-efficient, electrical appliances and may not have gas lines installed.
4. **Electric Vehicle Charging.** Homes in this class may have EV charging stations already installed.

Real World Applications

GOAL: BACKUP POWER

SimpliPHI™ Energy Storage Systems (ESS) provide a reliable, maintenance-free option for essential loads or whole-home backup power in times of grid outages and instability.

SOLUTION

Much of a family's work, learning and entertainment depend on electricity and many homeowners are looking for reliable backup power options. A SimpliPHI ESS provides quick transfer time to an at-the-ready, maintenance-free and quiet power source during utility outages, blackouts or grid instability.

Backup power from a SimpliPHI System delivers peace of mind and consistent quality of life where weather-related and planned utility outages (PSPS) occur.

With the new IRA incentives, adding battery storage later is still eligible for 30% ITC rebate.

CONSIDERATIONS

1. **Essential Load.** System sizing is typically based on instantaneous/peak demand or kWh consumption of loads for 1 day of autonomy. Renewables or generators should be sized to recharge the battery bank daily, typically 80% DoD.
2. **Whole House Budget Options.** Smart load panels can help maximize the benefits of systems with a smaller budget. Sizing based on power/peak demand or kWh energy consumption and multiple days of autonomy. Often customers size for 90% DoD.
3. **Hours of Need.** Systems can be sized for the duration of a standard outage time, which reduces the upfront investment for battery storage.

Real World Applications

GOAL: REPLACE EXISTING ESS

Expiring warranties on aging Energy Storage Systems (ESS) combined with new, more rigorous codes and compliance standards can make existing ESS obsolete and/or inefficient.

SOLUTION

Advanced LFP battery technology in SimpliPHI™ Batteries allows them to exceed safety standards, collect and distribute power more efficiently and operate virtually maintenance-free. Those efficiencies will provide a greater return on investment and upgrading to a new system brings the home into compliance with utility connection and safety standards.

Lead-acid batteries in existing systems have a 5 to 7-year lifespan. Whereas the original investment can be leveraged with SimpliPHI Technology, which means existing equipment can be used to minimize installation and component costs.

CONSIDERATIONS

1. **Battery Capacity.** Lead-acid batteries only allow 30-50% DoD, meaning that homeowners are paying for capacity they can never use.
2. **Battery Chemistry.** Lithium-ion batteries have a round-trip efficiency of 96-98%, which compares to 76% efficiency in lead-acid batteries, a 20% power loss.
3. **Recharge Rate.** Because Lithium batteries have a much quicker discharge rate of C/2, they charge faster, making more battery capacity available in a shorter period. Sealed lead-acid batteries typically have a C-rate of C/5, and flooded batteries have C/20, which means that those systems have just 1/5th or 1/20th of the capacity.
4. **Compatibility.** Unlike many other lithium battery manufacturers that have focused only on grid-connected systems, SimpliPHI Batteries are designed to be compatible with off-grid installations.

Real World Applications

GOAL: OFF-GRID LIVING

SimpliPHI™ Energy Storage Systems (ESS) are built with advanced battery technology that delivers reliable and long-lasting power, which makes the investment into energy storage practical and affordable to off-grid customers.

SOLUTION

Customers living off-grid are open to a reliable, maintenance-free solution for storing power collected by their energy-producing systems, which include any combination of power sources. An efficient and quiet SimpliPHI ESS provides security beyond a generator and also reduces fuel costs and complications associated with remote fuel delivery.

Due to limited options, many off-grid storage systems use flooded lead-acid batteries. Also, the cost of installing a SimpliPHI System can be significantly lower than running electrical lines in remote areas.

CONSIDERATIONS

1. **Generators as Back-Up.** Because most off-grid homes are also equipped with a generator, having an integrated AGS is critical.
2. **Configuration.** Off-grid systems must be designed and sized to deliver power 24/7, it's important to perform a detailed load analysis.
3. **The Sun.** If solar is used as the primary energy source, the storage system needs to be designed so that the solar array will provide enough charging on the shortest day of the year.
4. **Capacity.** Most off-grid systems require larger battery banks to account for multiple days without a charging source. To calculate, take the load profile and multiply by 3 to account for 3 days without sun. The SimpliPHI ESS allows systems to be scaled large enough to support off-grid homes.

Real World Applications

GOAL: NEW SOLAR + STORAGE INCENTIVES

Higher energy rates, plus growing instability of the utility grid, has homeowners eager and open to new solutions to meet their home power needs.

SOLUTION

Federal, State and Local incentives can reduce the cost of installing solar and a SimpliPHI™ Energy Storage System by more than 30%.

CONSIDERATIONS

1. **Incentives.** Learn the incentives that are available to the customers in your area. Visit DSIREUSA.org
2. **Requirements.** Understand the interconnection requirements from your local utility and any net metering agreements in place.
3. **Marketing.** Capitalize on the incentives in your area to promote homeowner purchases.

SimpliPHI™ Energy Storage System

Simply the best solution for reliable, safe, maintenance-free power

Electrical power has never been more critical to everyday life

Communication, work, learning, commerce all tied to energy

Because power matters, it matters who's behind it

SimpliPHI ESS from the power experts at Briggs & Stratton®

Advanced lithium battery technology makes SimpliPHI the most efficient, safety-certified systems available for home and business

On the grid or off, SimpliPHI is the most user-friendly system available to collect, store and distribute power when it's needed

Leading-edge technologies make SimpliPHI easy to use and monitor

Delivers true energy independence, resilience for permanent peace of mind and real energy cost savings

simpliphi

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Scalable, intelligent energy management for U.S. homes and businesses

Q&A

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Georgia Power proposes to apply $200 rooftop solar interconnection fee to its customers
by Ryan Kennedy

China's solar cell production capacity may reach 600 GW by year-end
by Emiliano Bellini

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Coming up next...

Thursday, 10 November 2022
11:00 am – 12:00 pm EST, New York City

Learning from PV module manufacturing nonconformities

Monday, 14 November 2022
9:00 am – 10:00 am EST, New York City

How a centralized monitoring platform makes your solar asset the center of attention

Many more to come!

In the next weeks, we will continuously add further webinars & Spotlights with innovative partners and the latest topics. Check out our pv magazine program at:

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Thank you for joining us today!

Rachel Sorenson
Manager Projects and Business
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