

# AlphaESS

AN ENERGY STORAGE SYSTEM INTEGRATOR  
COVERING FULL POWER RANGE



YOUR SMART ENERGY





Making clean energy beneficial to the greatest extent to everyone in the world.



AlphaESS is one of the leading energy storage solution and service providers in the globe. The company specializes in the residential and commercial market, aiming to deliver the most cost-effective and fit-for-purpose solutions. AlphaESS has 10+ subsidiaries providing local services and 40000+ systems actively running in over 50 countries, enabling millions of people to live with reliable, accessible and clean energy.



**8 Years**

Established in 2012



**40%**

Employees in R&D



**1GWh**

Annual production capacity



**100+**

Patents in the ESS field



**300%**

Annual revenue growth



**40,000+**

Shipments in over 50 countries

## GLOBAL PRESENCE AND AWARDS



product design award 2018



reddot design award 2018

IF & reddot design award



The finalist of ess award & the smarter E award



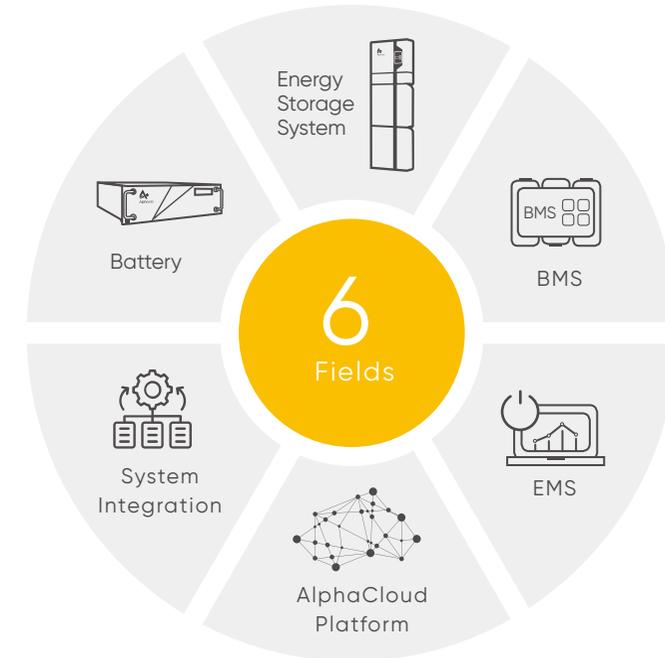
TOP 10

Top-10 residential ESS global suppliers in 2019 (IHS Markit)

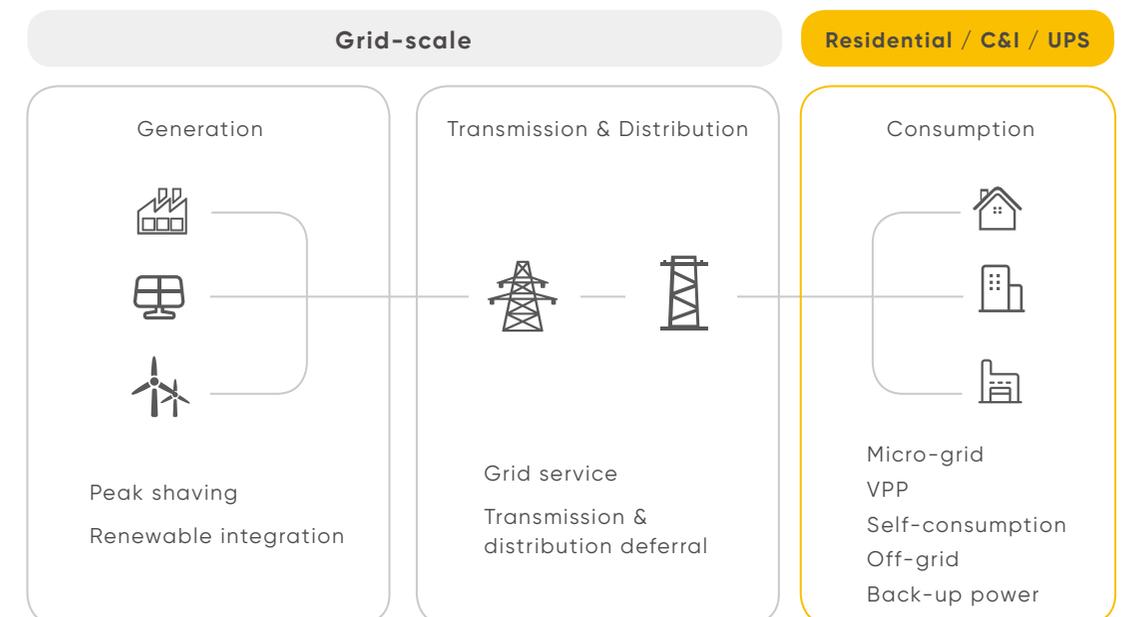


Australia's renewable energy award for outstanding contributor

## OUR EXPERTISE



## MAJOR APPLICATIONS



# WHY ALPHAESS

## 1. Safety First

**ONLY**

**The safest chemistry LiFePO4**

We only use LiFePO4 batteries to ensure our customers enjoy the premium electrical characteristics without suffering from safety issues.

**The most robust cell types**

AlphaESS never uses unreliable casing material to ensure long mechanical life-span and safety.

**Global TIER 1 cell manufacturer**

## 2. Core

<b>Application</b>	Energy Transformation Smart Home	Energy Conservation Capitalization	<b>Secondary Development from Our Partners</b>
<b>Platform</b>	Prediction AI Algorithm	Scheduling Big Data	<b>AlphaESS Core</b>  Building a "Windows or Andriod System" within the Energy Sector  ESS covering full power range / Power facilities
<b>Communication Control</b>	5G/4G Power Carrier BMS	Cloud Communication EMS	
<b>Hardware</b>	Power Generation/Transmission/ Distribution	Grid	

## 3. Smart Energy

### AlphaCloud Platform

Connects all the AlphaESS systems and enables monitoring, smart control, trading and energy service.

- Lifelong free access to monitoring via Web and APP
- New function and latest version upgrades available remotely
- Set parameters control and build VPP
- IoT compatible



### Battery Management System

#### Alpha BMS research institute

20+ BMS R&D veteran researchers with 10+ year ESS BMS experience

#### High SOC accuracy

Our SOC algorithm accuracy reaches 97%

#### Comprehensive protection

3-level software protection, Redundant hardware level protection

#### Functional safety

ASIL (Automotive Safety Integrity Level) hardware (Level D), software and system architecture  
 IEC61508 testing, the highest level (D).  
 Comprehensive and optimized protection including multiple monitoring items, POST, hardwired alarm system, multiple protection during operation



### Energy Management System

#### Multifunctional and powerful

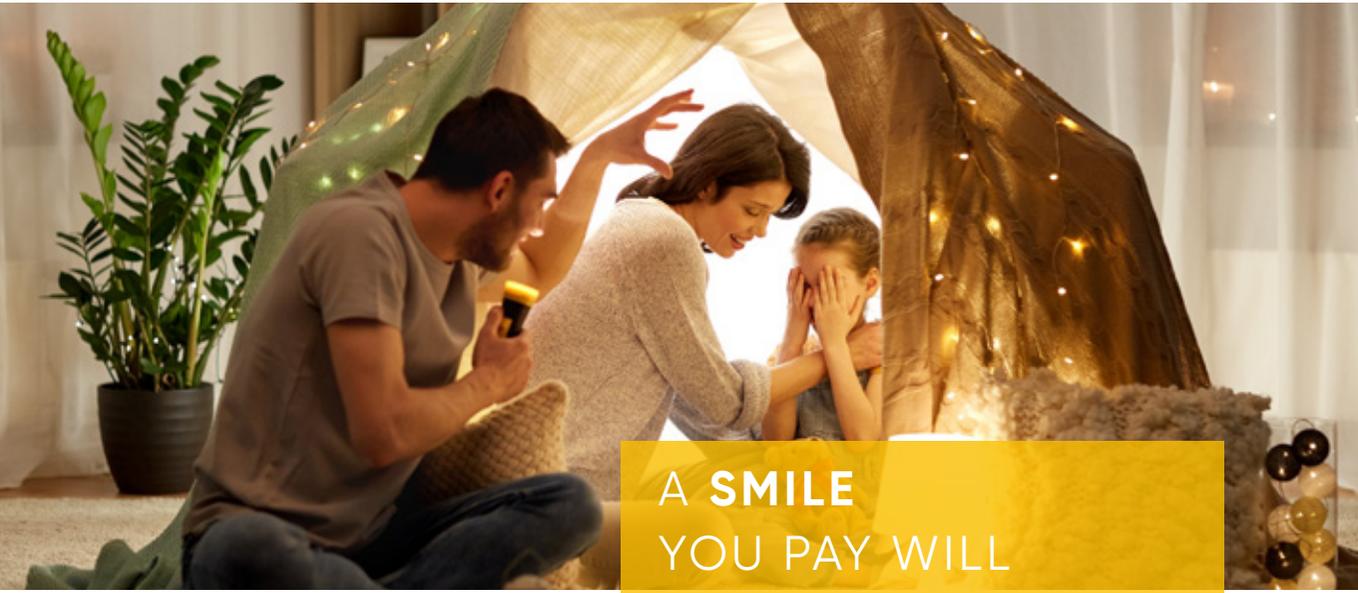
Local absorption, reducing wind and PV power abandonment  
 Peak and frequency regulation  
 PV and wind power self-consumption  
 Load shifting  
 Backup power supply, UPS / EPS  
 Peak shaving  
 Micro/Off-grid control  
 Demand charge management

#### Highly compatible

Enabling external control through SCADA, MODBUS, ETHERNET etc.,

#### Safety

Safety control designs



A SMILE  
YOU PAY WILL  
ALWAYS RETURN



Safe



Uninterrupted Power Supply (UPS)



Fast response



Easy installation



Virtual Power Plant (VPP) ready



24/7 monitoring

# Residential

3 kW - 10 kW

- SMILE-B3
- SMILE5
- SMILE-T10

- S**elf sufficient
- M**odular battery
- I**ntelligent control
- L**ong lifespan
- E**legant design

3 kW



SMILE-B3

5 kW



SMILE5

10 kW



SMILE-T10

**SMILE-B3: 3kW / 2.9kWh Expandable to 17.2kWh**

**All-in-one Module**

**Battery inverter 3kW**  
**2.9kWh storage integrated** (1C, 96% DoD, 51.2V)  
 610 x 236 x 625mm (W x D x H) / 45kg  
 IP65 (Outdoor) / IP21 (Indoor)  
 Free online monitoring  
 Wifi communication (optional)  
 Open API, modbus control portal



**Expandable Battery Module: M4856-P**

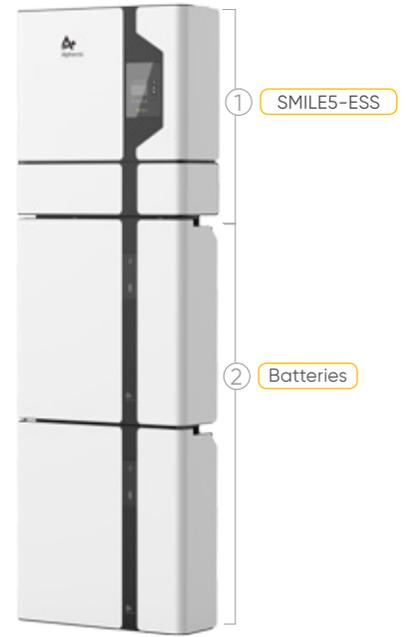
2.9kWh battery ( 1C, 96% DoD, 51.2V )  
 610 x 236 x 303mm ( W x D x H ) / 42kg  
 IP65 (Outdoor) / IP21 (Indoor)  
 Max. 5 units to the main unit (parallel)



**SMILE5: 5kW Expandable to 80kWh**

**① SMILE5-ESS**

Hybrid inverter  
 Max. PV input 6.6kW DC.  
 Nominal output 5kW AC.  
 100Amp integrated charger  
 610 x 236 x 615mm (W x D x H) / 60kg  
 IP65 (Outdoor) / IP21 (Indoor)  
 UPS 4kW continuous for critical loads  
 Open API, modbus control portal  
 An integrated cable box with PV and battery isolator, AC circuit breaker



**② Battery Module Options**

IP65 (Outdoor) / IP21 (Indoor) 6 Max. modules in parallel



M4856-P	SMILE5-BAT	SMILE-BAT-10.1P	SMILE-BAT-13.3P
1C, 96%DoD, 51.2V	0.5C, 96%DoD, 51.2V	0.5C, 90%DoD, 48V	0.35C, 100%DoD, 48V
42kg	65kg	92kg	120kg
610 x 236 x 303mm (W x D x H)	600 x 250 x 600mm (W x D x H)	610 x 236 x 693mm (W x D x H)	610 x 236 x 812mm (W x D x H)
2.9 - 17.2 kWh	5.7 - 34.4 kWh	10.1 - 60.6 kWh	13.3 - 80 kWh

## SMILE-T10: 10kW / 11.5-23 kWh

### ① SMILE-T10-ESS

Hybrid inverter

Max. PV input 13kWp/12kWp\* DC. (2MPPT)

Max output power 10kW. 3 phase.

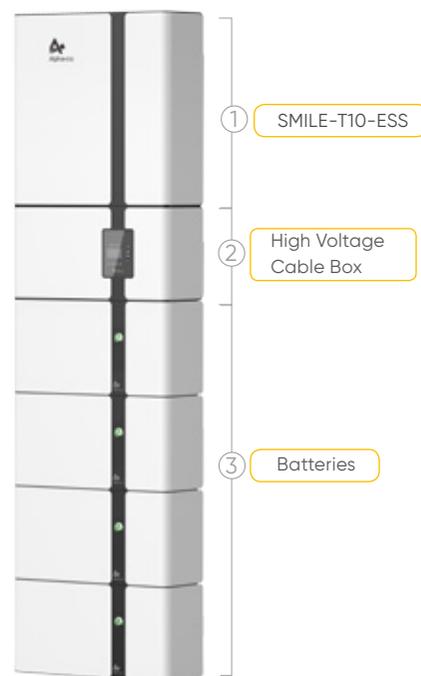
610 x 236 x 605mm / 610 x 236 x 655mm\* (W x D x H)

40kg

380V/400V rated voltage

IP65 (Outdoor) / IP21 (Indoor)

\*only for Australia and New Zealand



### ② High Voltage Cable Box

An integrated cable box with PV and battery isolator, AC circuit breaker

BMS & EMS integrated

Multilevel protection for over-temperature, over-voltage and over-current

System operation monitoring, includes power, energy and other parameters

Intelligent energy management algorithm supported

### ③ Battery Module: M4586-S

1C, 90%DoD, 51.2V

42kg

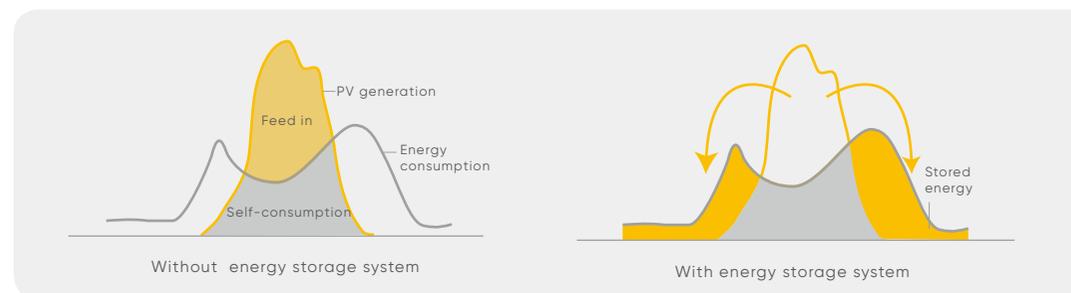
610 x 236 x 303mm  
(W x D x H)

11.5 ~ 23 kWh



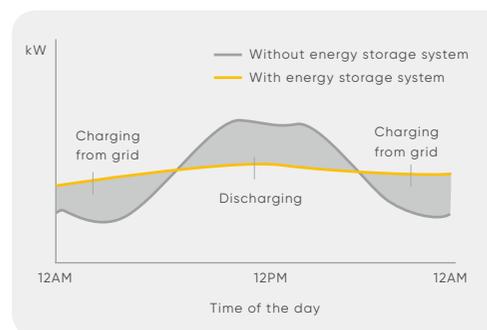
## HOW TO SAVE MONEY

### 1. Self-Consumption Optimization



Store the surplus PV generation in the battery and smartly discharge the energy to match your electricity usage. You can cut electricity bill by minimizing the energy consumption from the grid.

### 2. Load Shifting



#### User-end: Load shifting

Store electricity during off-peak time and shift energy to be used at peak time. You can save money by avoiding electricity peak rate.

#### Transmission & distribution: Peak shaving

Avoid the upgrade of substation and power line to supply the peaks of variable load, where energy storage provides a fast response and emission-free solution.

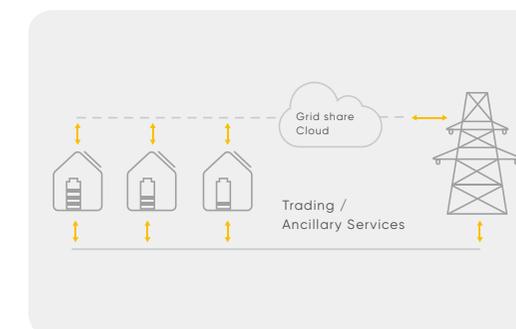
#### Ancillary services

The combination of several flexible production and consumption units, controlled by a central intelligent system, is the core behind a VPP, which can stabilize the grid by balancing energy supply and demand.

#### Electricity arbitrage

Optimize trading strategies to maximize returns. VPP can utilize the aggregated power to react to changes of the electricity price on the exchanges, quickly adapting to the existing supply of power in the grid, and thus execute trades.

### 3. VPP Revenue





Running in  
**50+** countries  
 around the world



*" AlphaESS storage system - product good, concept good, advice good, implementation good. I am still satisfied with my photovoltaic system and integrated power storage and can only recommend the system to everyone. "*





## Commercial & Industrial

30 kW - 10 MW+



Back-up power



Off-grid



Micro-grid



Fuel saving solution



Self-consumption



Demand charge management

A **WIDE RANGE** of hybrid and battery PCS solutions for all your C&I projects with various requirements

### T30 / 50 / 100

30 / 50 / 100kW hybrid PCS

**A double inverter capacity PV input for off-grid**

**Flexible power modular design**

80 / 110 / 200kWp Max. PV input

1 MPPT

Optional STS module

Transformer integrated

Battery DC voltage range: 250-520 V



### TB50 / 100 / 150

50 / 100 / 150kW battery PCS

**Multiple MPPTs for flexibility**

**Grid-forming with solar inverters**

**Keep operating off-grid**

AC-coupled solution

1 / 2 / 3 x 60kW PV string inverters

4 / 8 / 12MPPT

STS / Transformer integrated

Battery DC voltage range: 250-520 V



### TB250 / 500

250 / 500 kW battery PCS

**Heavy-duty industrial application**

AC-coupled solution

With max.10 x 50 kW PV string inverter

250kW transformer integrated

500kW transformerless

Separate STS / ATS cabinet required



A **FLEXIBLE** battery pack solution to meet all your C&I energy storage capacity needs

### M48112-S

The 1C battery solution

**Small capacity modular with flexibility**  
**High C-rating battery solution**

Energy capacity: 5.7 kWh  
Depth of discharge: 90%  
Nominal voltage: 51.2 V  
Operating voltage range: 48-57.6 V  
Module connections: 4-13 in series  
Max. charge and discharge: 112 A (1hour)  
weight: 65 kg



### M38210-S

The 0.5C battery solution

**High energy density solution**  
**Cost effective solution**

Energy capacity: 8.1 kWh  
Depth of discharge: 90%  
Nominal voltage: 38.4 V  
Operating voltage range: 36-43 V  
Module connections: 6-20 in series  
Max. charging and discharging current: 105A (2hours)  
Weight: 62 kg



### M48240-S

The 0.5C battery solution

**High energy density solution**  
**Cost effective solution**

Energy capacity: 11.5 kWh  
Depth of discharge: 90%  
Nominal voltage: 48 V  
Operating voltage range: 45-54 V  
Module connections: 6-16 in series  
Max. charging and discharging current: 120A (2hours)  
Weight: 105 kg



A **LARGE VARIETY** of battery storage racks or container solutions to be different scenarios in C&I installations

### Battery Racks

22.8 -161.3 kWh each rack

**Perfect for installation in rooms**

22.8 -74.1 kWh (M48112-S)  
48.6 -161.3 kWh (M38210-S)  
Easy to parallel to MWh



### Outdoor Battery Cabinet

Max. 103 kWh each cabinet

**Perfect outdoor solutions for remote areas**

28.7 -103 kWh (M48112-S)  
64 - 97.2 kWh (M38210-S)  
Easy to parallel to MWh



### 10/20/40 ESS Container

Max. 2MWh in one container

**A truly turn key ESS solution**

10feet: up to 300 kWh (1C)  
20feet: 600 kWh (1C) / 1.3 MWh (0.5C)  
40feet: 1.6 MWh (1C) / 3.3 MWh (0.5C)



# GLOBAL PROJECTS



**Project:**  
100 kW / 250 kWh

**Application:**  
Solar + Diesel + Storage  
for oil pumps sites

**Location:**  
Moomba, SA, Australia

**Project:**  
2.5 MW / 12 MWh

**Application:**  
Storage + Peak Shaving

**Location:**  
Nanjing, China



**Project:**  
100 kW / 412 kWh

**Application:**  
Solar + Storage + Diesel  
for Rural Electrification

**Location:**  
Pet Pye village, Myanmar



**Project:**  
500 kW / 1.26 MWh

**Application:**  
UPS+ Load Management  
for Pharmaceutical factory

**Location:** Cambodia



**Project:**  
50/100/150 kW (49sites)

**Application:**  
Solar + Storage + Diesel  
for Rural Electrification

**Location:** Myanmar



**Project:**  
500kW / 1.1MWh

**Application:**  
UPS + Load shifting + Self-  
consumption, Renewable  
Demonstration Park

**Location:** Yangzhong, China





**Project:**  
500 kW / 1 MWh

**Application:**  
Energy Independence for hospital

**Location:**  
Accra, Ghana

**Project:**  
60 kW / 68 kWh

**Application:**  
Storage + Peak Shaving for EV charging

**Location:**  
China



**Project:**  
2 MW / 8 MWh

**Application:**  
Storage + UPS + Peak Shaving

**Location:**  
Changshu, China



**Project:**  
1 MW / 2 MWh

**Application:**  
Energy Self-sufficient Shopping Mall

**Location:**  
Accra, Ghana



**Project:**  
100 kW / 670 kWh  
50 x SMILE5 5 kW

**Application:**  
Energy Self-sufficient Community

**Location:** Australia

**Project:**  
50 kW / 103 kWh

**Application:**  
Solar + Storage + Off Grid

**Location:**  
NSW, Australia





## An Energy Storage System Integrator Covering Full Power Range

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