

# SUNNY BOY STORAGE 2.5

## INDEPENDENT ELECTRICITY FOR YOUR HOME



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### Technical Data

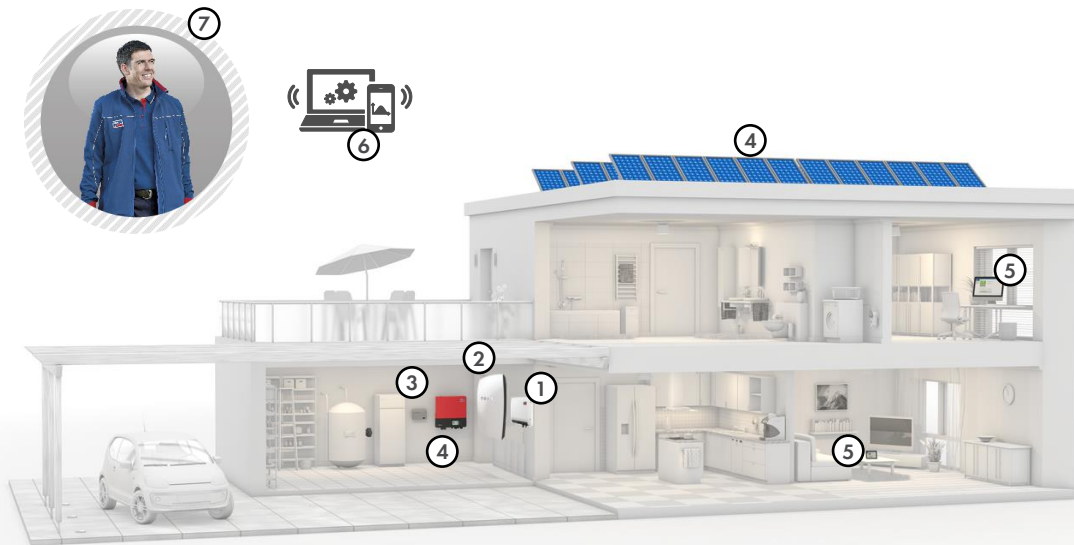
Battery integration	AC-Coupling
Power (ch./disch.)	2.5 kW
DC-Voltage (Batt.)	120 V – 500 V <sub>DC</sub>
DC-Current (Batt.)	10 A
Efficiency (max.)	97 % (Batt. → Grid)
Weight:	9.2 kg
Dimensions	450 x 357 x 122 (W x H x D mm)
Packing Dimensions	600 x 240 x 400 (W x H x D mm)
1-phase, transformerless, highvoltage	

### Advantages:

- > **Flexibility** due to AC-coupling
  - > New and retrofit PV systems
  - > Flexibility for independent PV-design
  - > Compatible with String and Module inverters
  - > Free choice of Battery (e.g. TESLA, L.G., etc.)
  - > Zero export capable to meet restrictive network connection requirements
- > **Cost-effective and efficient** using String-technology
  - > Lowest cost battery -inverter
  - > Efficiency up to 97%
  - > 5 year warranty
- > **Quick and easy** to install
  - > 1 person-installation
  - > W-Lan and simple web user interface
  - > Direct integration into Sunny Portal/Sunny Places via WiFi or Webconnect

# SUNNY BOY STORAGE 2.5

## WHAT IS THE TYPICAL APPLICATION?



- **NEW PV + STORAGE INSTALLATIONS**

- **STORAGE RETROFIT INSTALLATIONS**

(1) Sunny Boy Storage\* incl. local and wireless access to the inverter for commissioning via the web user interface

(2) LV Battery (not SMA offer)

(3) SMA Energy Meter

(4) New or Existing PV System (SMA or other)

(5) Sunny Places, Sunny Portal

(6) Access via Web User-Interface

(7) Offered with the standard SMA warranty and Service

\*SBS2.5-1VL-40



Local WebUI, Wireless LAN  
and Speedwire interface with  
Webconnect functionality



Monitoring and  
commissioning on board

# SUNNY BOY STORAGE 2.5

## KEY PRODUCT ADVANTAGES

- Sunny Boy Storage 2.5 **perfect** for **adding storage** to a residential PV system or to be included in **New Residential PV + Storage** Systems
- **Rapid installation** and **commissioning** with a lightweight inverter and an **innovative installation concept**
- **Local** and **wireless access** to the inverter for commissioning via the wireless user interface
- **Lowest cost** option to add storage to **New** or **Existing** PV systems
- No variants: **simplified portfolio**
- Direct connection of **SMA Energy Meter** for simplified installation and monitoring
- Capability to add **backup** for power during **grid blackouts** (via retrofit kit due Q4)
- Improve financial return through **charging battery from grid** during **off-peak tariffs**



# SUNNY BOY STORAGE 2.5

## ADVANTAGES FOR DISTRIBUTORS

- **Reduced** logistics costs through optimised portfolio (*less SKUs + no variants or add-ons*)
- **Attractive pricing** compared to market alternatives (*faster moving product*)
- Product **leverages marketing pull** from battery manufacturers (i.e. TESLA)
- Perfect inverter for installer/customers wanting to install battery storage for both **New & Retrofit** systems market
- Perfect **solution** to address “*loss of feed-in-tariff*” market
- Suitable for **SMA** or **other Inverter** manufacturer PV systems
- Reduces costs for **installers** with:
  - Lightweight **1 person** installation
  - Wireless Commissioning of inverter via Smart Phone
  - Built-in WiFi for fast connection to internet
- Capabilities of product create **opportunity** for **additional sales** (e.g. Sunny Home Manager, Backup Retrofit Kit, etc)



# SUNNY BOY STORAGE 2.5

## ADVANTAGES FOR INSTALLERS

- Simple, fast **1-person** installation and commissioning
- Simplifies provision of **monitoring** through **Wireless**, Home Networks and **Sunny Portal**
- Perfect inverter for **adding storage** to a new PV system
- Perfect inverter for **adding storage** to an existing system without taking on any risk or liability associated with PV system (no working at heights)
- Capability to **sell additional features** to customer through addition of Sunny Home Manager or Backup Retrofit kit (*charge battery from Grid, backup during blackout, etc*)
- Perfect **solution** for customers **coming off Feed-in Tariffs**
- **Flexibility** to allow future changes to PV system
- **Full power benefit** from both PV inverter & Sunny Boy Storage
- Works with both **SMA** and **3<sup>rd</sup> Party** PV inverter systems
- Best-in-Class **Quality** from the world's leading inverter manufacturer



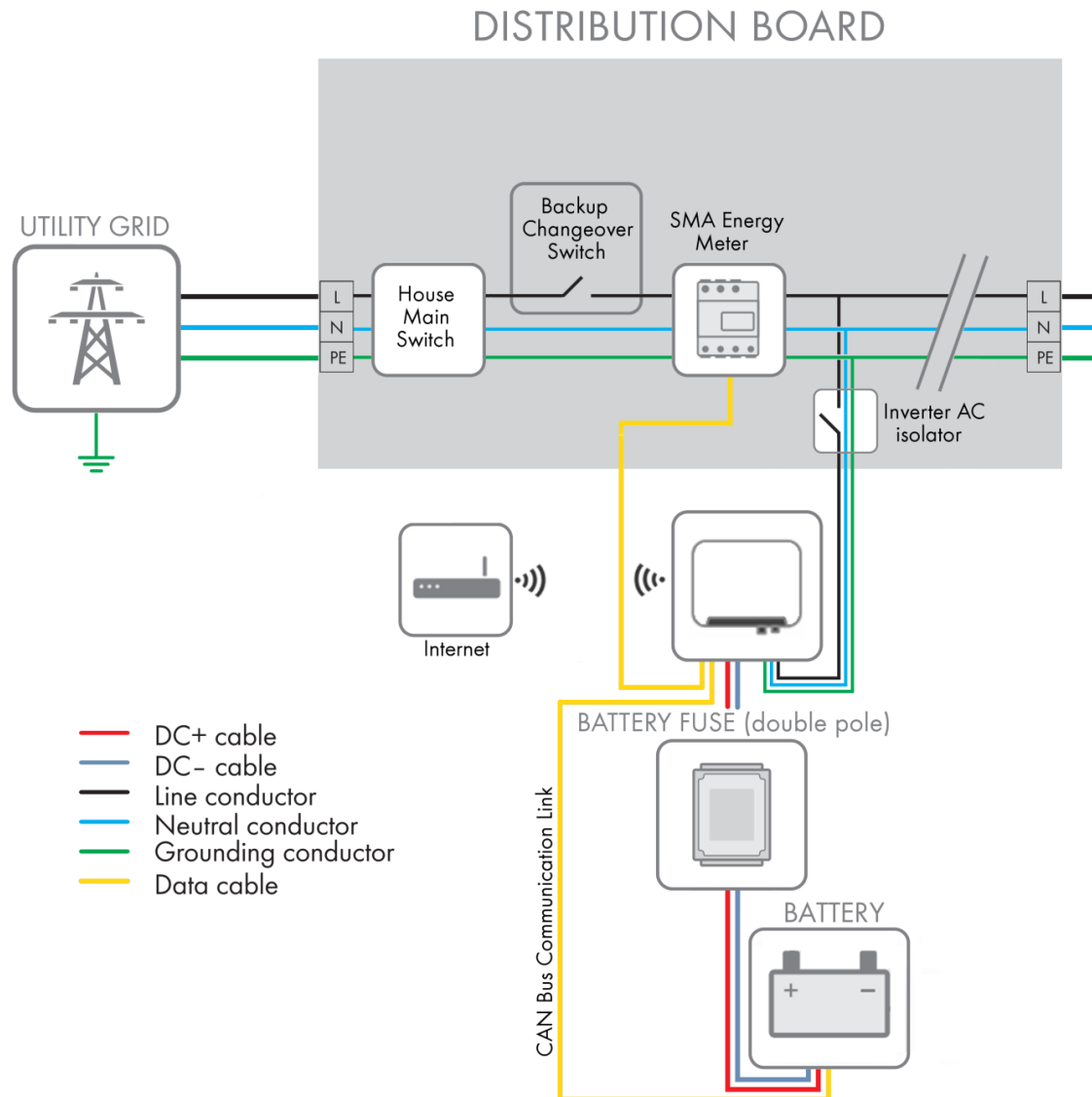
# SUNNY BOY STORAGE 2.5

## ADVANTAGES FOR SYSTEM OWNERS

- Simple, Fast installation and commissioning **reduces the installation cost**
- Simplifies provision of **monitoring** through **Wireless** Home Area Networks and **Sunny Portal/Places**
- Perfect inverter for **adding storage** to a **new PV system**
- Lowest cost and lowest risk option for **adding storage** to an **existing PV system** since no work required to change or modify an existing PV system
- **Flexibility** to allow you to change, upgrade or add to your existing PV system in future
- Get **full power benefit** from both your PV inverter & Sunny Boy Storage
- Works with both **SMA** and **3<sup>rd</sup> Party** PV inverter systems
- Best-in-Class **Quality** from the world's leading inverter manufacturer
- Possibility to **charge** your battery **from the grid** during Off-peak electricity
- Capability to add **backup** functionality **during grid blackouts**



# SUNNY BOY STORAGE 2.5 BASIC SINGLE LINE DIAGRAM



> Backup planned to be available with an additional retrofit kit + firmware update during Q4/2016



# SUNNY BOY STORAGE 2.5

## SYSTEM SCOPE – BASIC SYSTEM

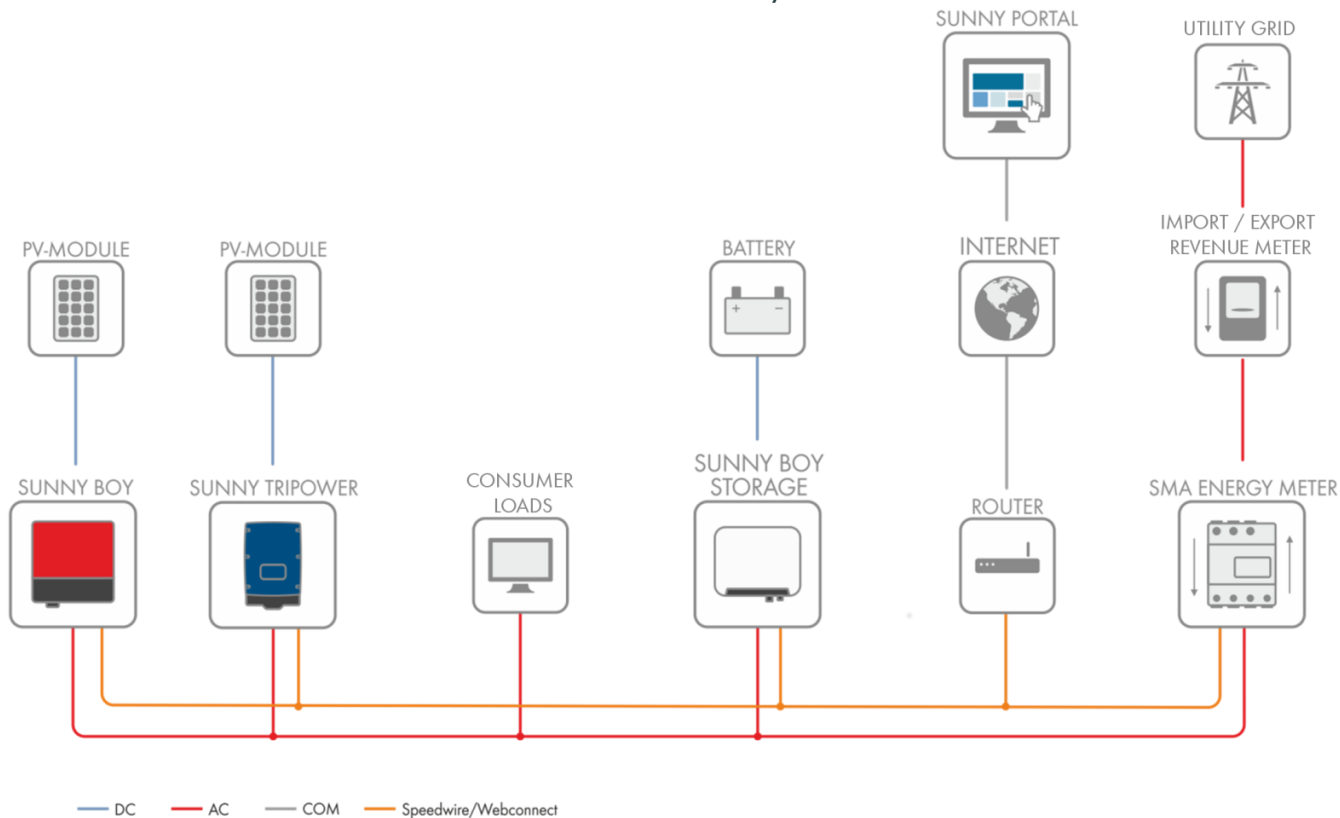


### System Components

- > SMA 1ph./3ph. PV-inverter with Webconnect
- > SMA Energy Meter
- > Sunny Boy Storage

### Functions

- > Control of Grid connection point via E-Meter
- > Dynamic limit of export to the grid between 0-100%
- > Visualisation in Sunny Portal
- > Modbus as an external interface
- > CAN-BUS Battery interface
- > Emergency power function (can be retro from Q4/16)



# SUNNY BOY STORAGE 2.5

## SYSTEM SCOPE – ADVANCED SYSTEM

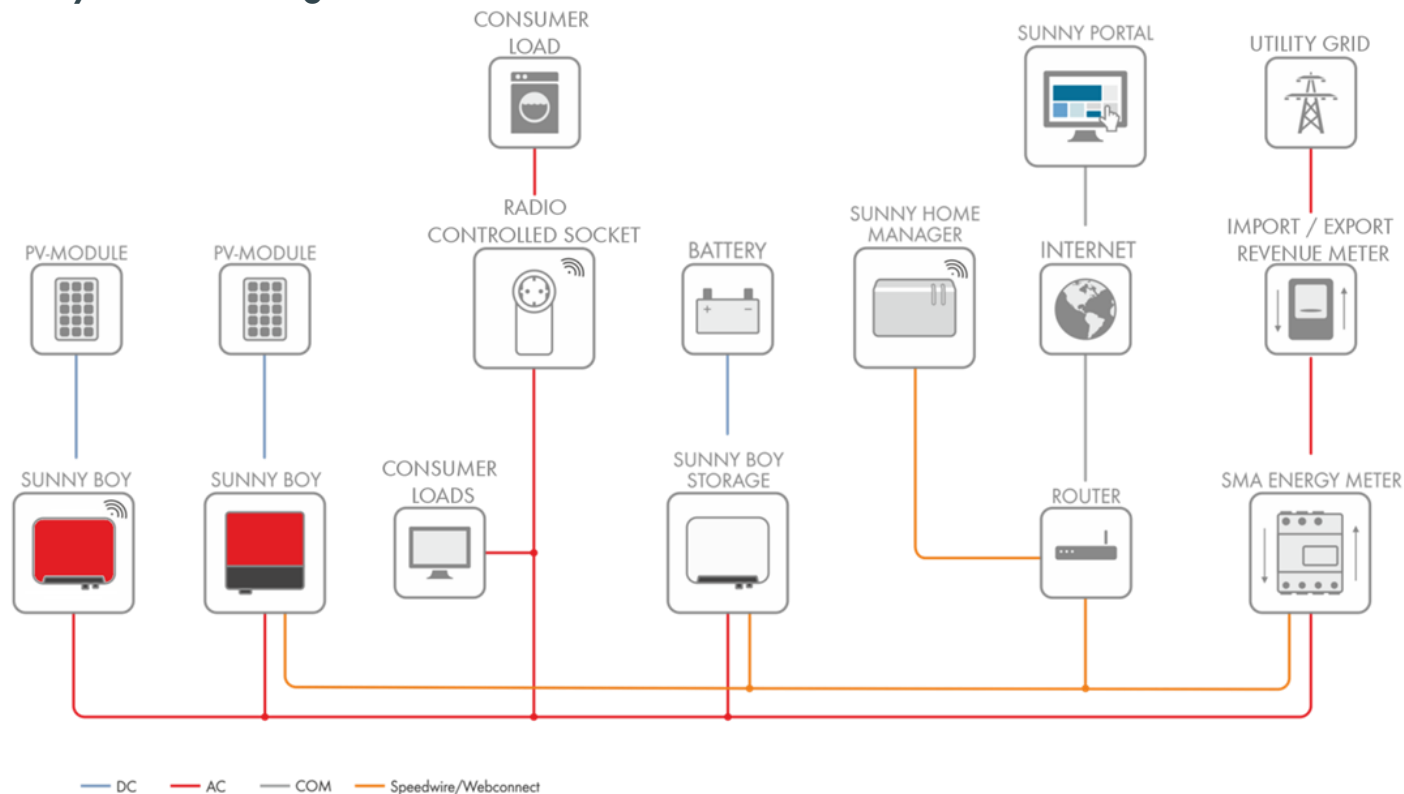


### System Components

- > SMA 1ph./3ph. PV-inverter **without Webconnect**
- > SMA Energy Meter
- > Sunny Boy Storage
- > **Sunny Home Manager**

### Additional Functions

- > Charge batteries from the grid at specific times
- > Weather forecast based charging
- > Automated Load Control



# REQUIRED COMPONENTS SUNNY BOY STORAGE



	Basic System	Advanced System	Advanced System, 3rd Party Generation
Sunny Home Manager		✓	✓
SMA Energy Meter	✓	✓	2 ✓
Sunny Boy Storage	✓	✓	✓
SMA Inverter with Webconnect	✓*	✓	✓
SMA Inverter without Webconnect		✓	✓
Micro-inverter			✓
3rd Party PV Inverter			✓
Other Production Units			✓
Compatible Batteries	Tesla Daily Powerwall (Rev C) Others to be announced (e.g. LG)		

\* Only required if visualisation in Sunny Portal is needed. Nothing required if using non-SMA inverter PV systems

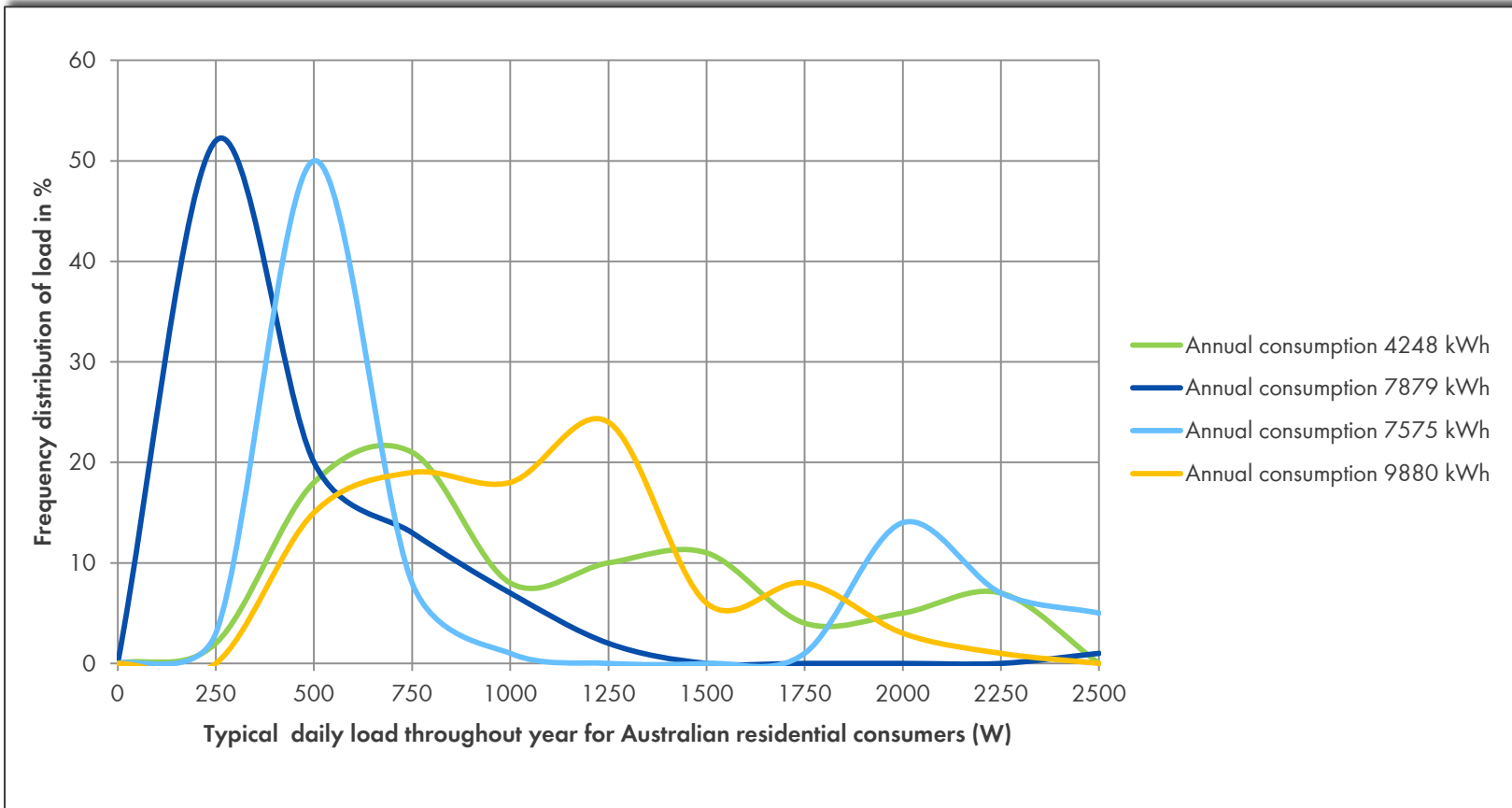
# FUNCTIONAL OVERVIEW SUNNY BOY STORAGE



	Basic System	Advanced System	Advanced System, 3rd Party Generation
Adjustable charge / discharge threshold	✓	✓	✓
Dynamic Active Power Limitation of the PV Inverter between 0-100%	✓	✓	X
Automatic unbalanced load limit	✓	✓	✓
3rd Party interface by Modbus	✓	✓	✓
Visualisation in Sunny Portal	✓	✓	(✓)*
Update Battery und Sunny Boy Storage	✓	✓	✓
Forecast based load suggestions	X	✓	X
Scheduled battery changing from grid	X	✓	✓
Load Control (heat pump, charging station, Wireless socket, etc)	X	✓	✓

\*Total generator power must be performed via the 2nd energy meter. No distinction of generation type is made. If production meter is installed, this taken as a value generating value and not the individual SMA inverters values via Bluetooth and Speedwire

# MAXIMUM BENEFITS AT LOWER COST WHY ONLY 2.5 KW?

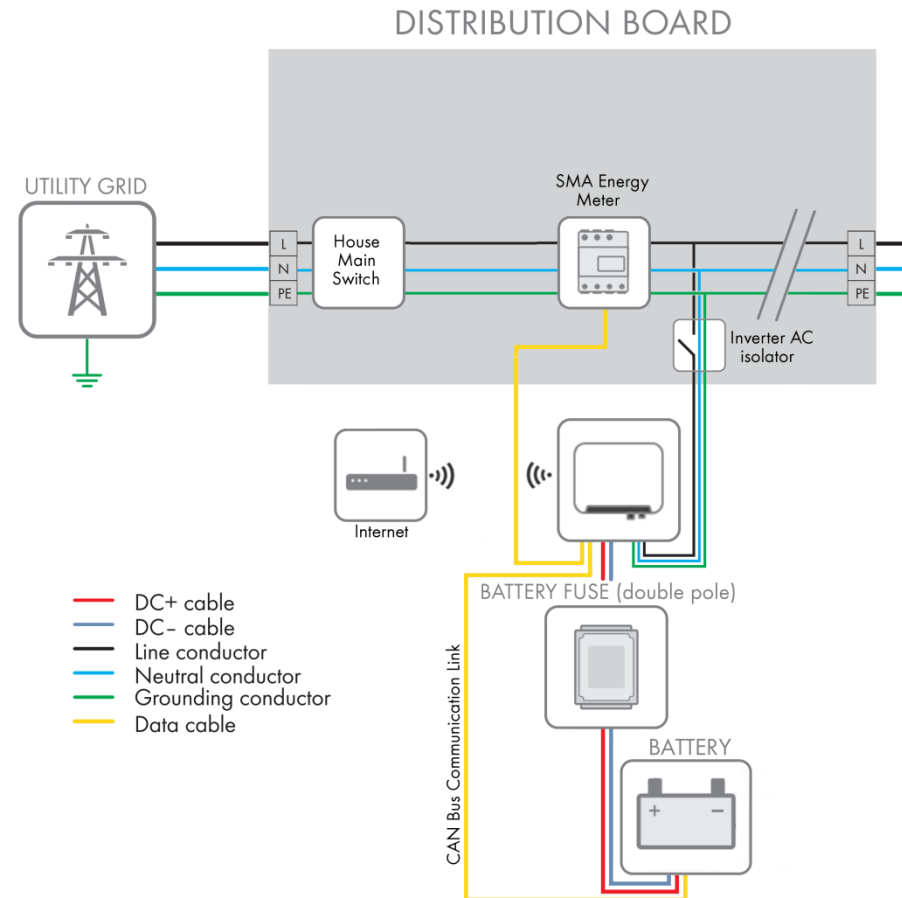


- > **90% of total load** occurs at powers **less than 2000W**
- > **High efficiency** especially in the **lower power range** is important
- > Ideal power range for a typical Australian household (7575kWh  $\approx$  21kWh/day)

# MAXIMUM FLEXIBILITY WHY AC - COUPLED?



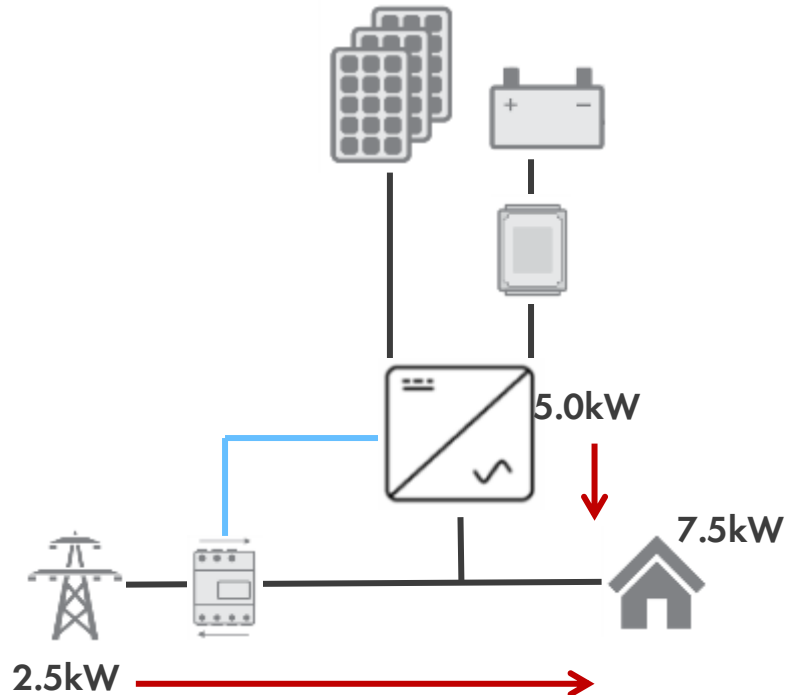
- > AC coupled storage allows maximum flexibility between the PV and Battery systems.
- > PV can be upgraded or changed independently of the battery system.
- > AC coupled battery storage means installer does not need to take any liability for an existing PV system.
- > Can provide greater ability to supply loads since the full power of both the PV and battery inverter can be utilised by the site
  - This is compared to a DC coupled solution (i.e. Hybrid inverter) where the AC output is fixed and supplied from a mix of the battery and PV
- > The battery system can be installed in a separate location which may be more suitable for battery storage than the location of the PV inverter
- > Zero export capability for faster approvals
- > **Zero Export capability of SBS means it is able to be installed with an existing 5kW PV system where the utility can be installed on a network where there are export constraints e.g. Ergon or Energex**



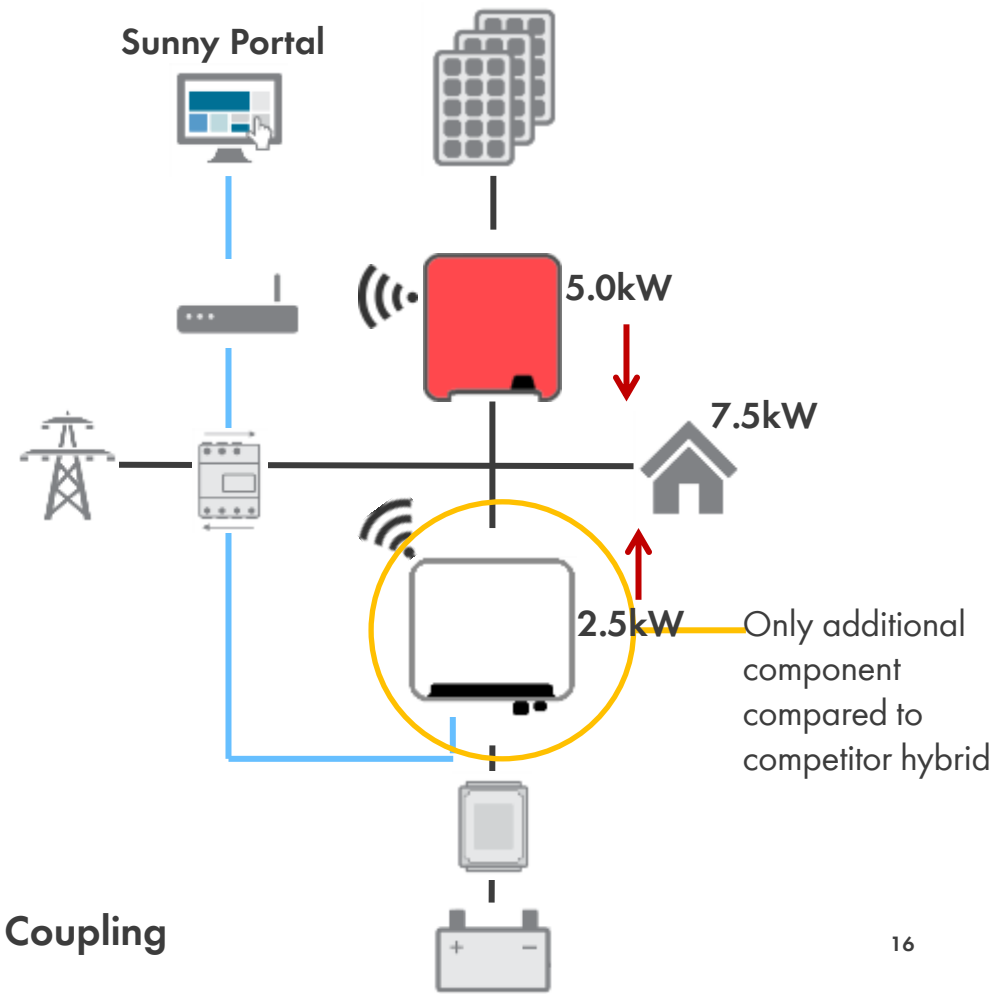
# AC - COUPLED DIFFERENCE IN ARCHICETURE



## Competitor Hybrid



## SMA SB + SBS



> Greater independence from the grid via AC Coupling

# AC COUPLED – ENERGY SUPPLIED FROM BATTERY DIFFERENCE IN EFFICIENCY



## DC Coupled Hybrid

PV into Battery (DC to DC) = 98.0%  
Battery out to DC Bus (DC to DC) = 98.0%  
Battery back to AC load = 97.2%  
**TOTAL EFFICIENCY = 93.3%**

- > Battery Capacity (usable) = 7kWh
- > PV energy into battery, to AC energy usable  
= 7kWh x 93.3%  
= 6.53kWh
- > Therefore lost energy = **0.47kWh**

## AC Coupled

PV to AC = 97.2%  
AC into Battery = 97.2%  
Battery back to AC load = 97.2%  
**TOTAL EFFICIENCY = 91.8%**

- > Battery Capacity (usable) = 7kWh
- > PV energy into battery, to AC energy usable  
= 7kWh x 91.8%  
= 6.42kWh
- > Therefore lost energy = **0.57kWh**

- > Assuming 1 full battery cycle per day, DC coupled will deliver ~0.1kWh more energy per day.
- > But what does that really mean?
- > Example:
  - Electric kettle rated @ 2.4kW
  - Boiling 2L of water from 20°C up to 100°C, taking about 3 minutes
  - Energy consumed ≈ 0.12kWh

> **The efficiency difference between AC and DC coupled is only 1 kettle of boiling water per day**



# SUNNY BOY STORAGE 2.5 AT A GLANCE



**The Sunny Boy Storage 2.5 offers great potential for new or existing PV systems:**

- Modern high-quality inverter at an attractive price
- AC-couple solution allows for flexibility with design of new or existing PV
- Local, easy and convenient online monitoring through WiFi
- Rapid installation with a lightweight inverter and direct connection of SMA Energy Meter
- Fast commissioning of inverter using built-in WiFi capability and any Smart phone
- Full flexibility to modify PV system without affecting storage system
- Maximise financial benefit using ability to charge battery from the grid during off-peak electricity tariff
- Capability to add backup functionality for grid blackouts



**Find out about the many benefits of the new Sunny Boy Storage 2.5 take advantage of its great potential for adding storage to new or existing PV systems.**

ENERGY  
THAT  
CHANGES

