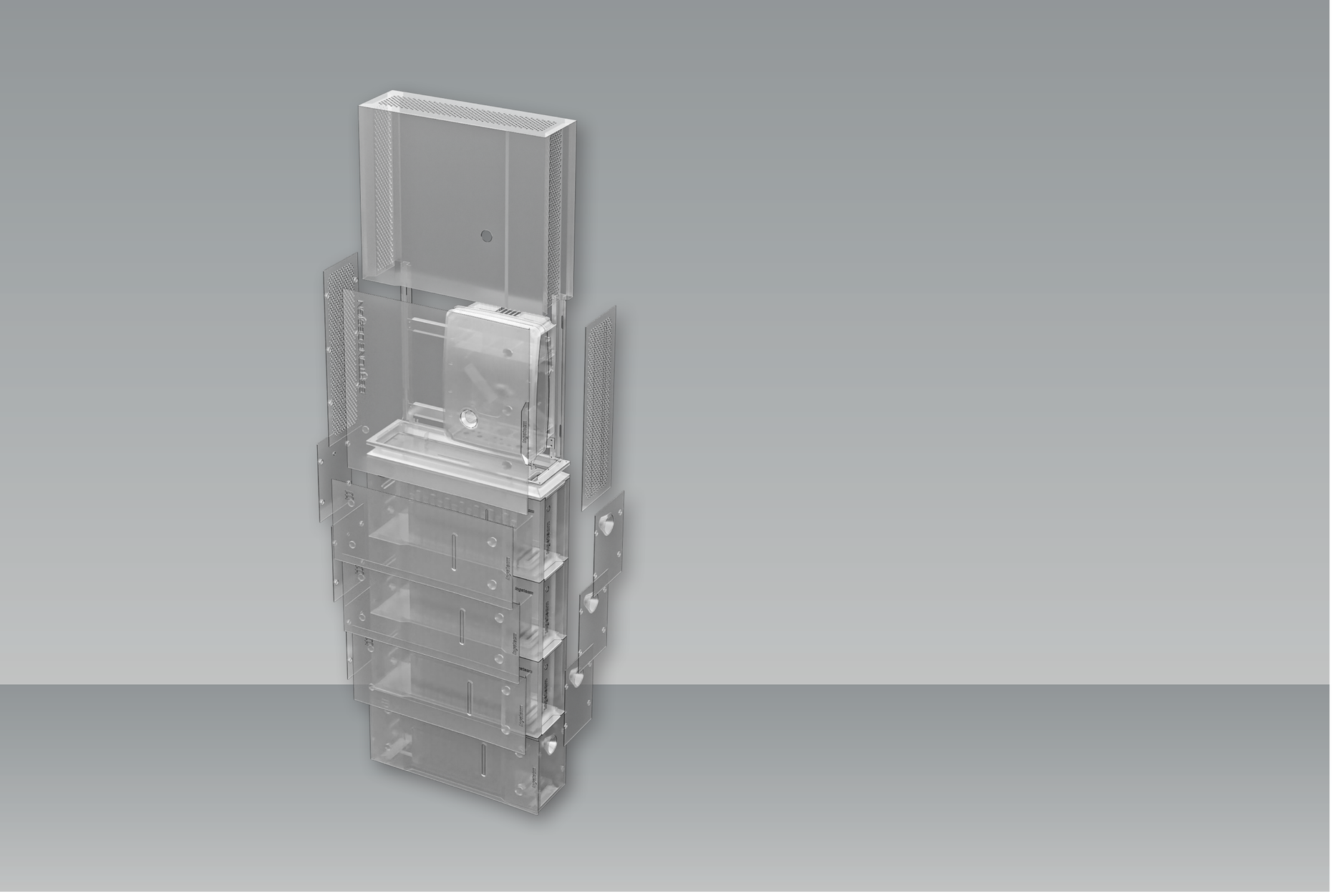
Ingeteam

New energy for your home.

Photovoltaic energy storage system



Ingeteam

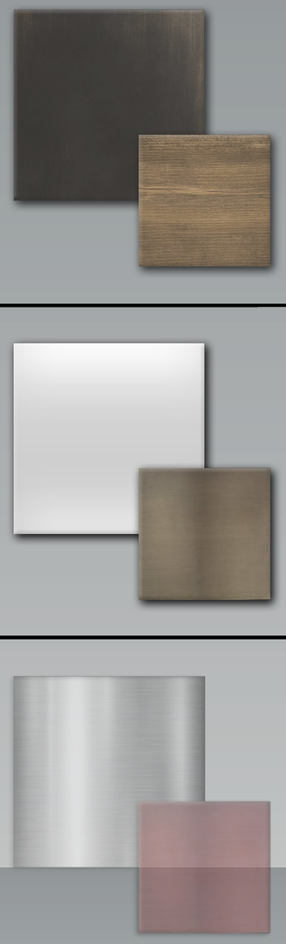
BERTONE DESIGN
MILANO

In this way, the basic configuration model expresses its personality and uniqueness of form, offering a unique design characterised by bold lines and refined, durable finishes. **Bertone Design** has decided to implement this system by giving the end user the possibility of personalising the aesthetics: by means of special kits, it will be possible to add “skins” with special, sought-after finishes that can be integrated into the domestic environment.

IIngeteam and **Bertone Design present the new photovoltaic energy storage system for residential installations**, a modular all-in-one system with exceptional performance characterised by a unique design developed in collaboration with Bertone Design.
The system allows self-produced solar energy to be stored in the batteries and used as needed, even when the photovoltaic system is not working, covering a large part of the electricity demand and significantly cutting bill costs.

The **all-in-one solution**, suitable for both indoor and outdoor applications, **consists of a hybrid inverter, batteries and preferential load management all in one object** and is installed without visible cables.
Characterised by an exclusive and customisable design studied down to the smallest detail, it is adaptable to the decor and aesthetics of the home.

A range of specially designed colours and finishes embellish the metal surfaces with refined colour combinations that uniquely characterise **the photovoltaic energy storage system for residential installations**. Every line and detail has been studied to guarantee the best functionality and to make the configuration and modular installation of the elements immediate and simple.



Anthracite metal

Betacryl white

Satin silver metal

Possibilities of customisation.

Starting with the basic version, the system can be customised by applying a skin with a special, sophisticated finish, which can be chosen directly by the customer. The ‘skin’, easily applied via a magnet system, can also be integrated subsequently.

Some types of customisations:

- White Betacryl: the surfaces are fluidly modelled in a silky-touch, durable and high-performance mono-material; the status LEDs shine through the opaline texture of Betacryl. The side panels provide a chromatic touch of satin brass.
- Anthracite metal: The surfaces are modelled in a decisive manner, emphasising three-dimensionality, choosing metal as the single material, favouring a special satin finish with anthracite tones, durable and performing. Status LEDs shine through chiselled slots in the panels. Around the control buttons are decorative hardwood inserts with a natural dark walnut finish combined with anthracite metal.
- Satin silver metal: the surfaces are resolutely modelled, emphasising the three-dimensionality by favouring a special satin finish with a durable and high-performance ‘satin silver aluminium’ tone, the status LEDs shine through slots chiselled into the panels. Around the control buttons are decorative inserts in hard synthetic material coloured in red tones as per the brand’s colour palette.

One product, several operating modes to suit every type of installation: for self-consumption, stand-alone and backup installations.

Self-consumption system: this is a mode of operation that aims to minimise electricity withdrawals from the grid by exploiting the energy production of your photovoltaic system. If the energy produced is greater than that required, the surplus is fed into the batteries or into the grid if the batteries are fully charged. In addition, it has a privileged electrical load management function that, in the event of a grid outage, is kept active by the inverter using energy from the batteries and photovoltaic panels.

Stand-alone system: this is a system that is not connected to the electricity grid, such as a mountain hut. The inverter uses the photovoltaic energy and the energy stored in the batteries to power the electrical loads. In this functionality, the inverter can activate an external generator to ensure the continuity of energy in the absence of photovoltaic production (e.g. in the evening) and discharged batteries.

Back-up: this mode of operation is suitable for grid-connected systems in which power failures from the grid are long and/or frequent. In this condition, the inverter makes up for the grid failure by supplying the energy needed to power your electrical loads.

No more power outages.

Ingeteam's photovoltaic storage system is a highly technological and reliable solution that allows an immediate transition from the electricity grid to battery operation, without interruptions for appliances, avoiding any risk of blackouts.

It allows consumption peaks to be absorbed by using even several household appliances simultaneously without ever running the risk of running out of power. The power will in fact be doubled thanks to the presence of the photovoltaic storage system (e.g. with a 3 kW connection power can reach 6 kW).

It will always be possible to use the energy stored in the batteries without the risk of running out and ensuring the continuity of operation of household appliances.

INGECON® SUN Monitor.

Monitor your home with a click. Monitoring with our App is simple, fast and intuitive.

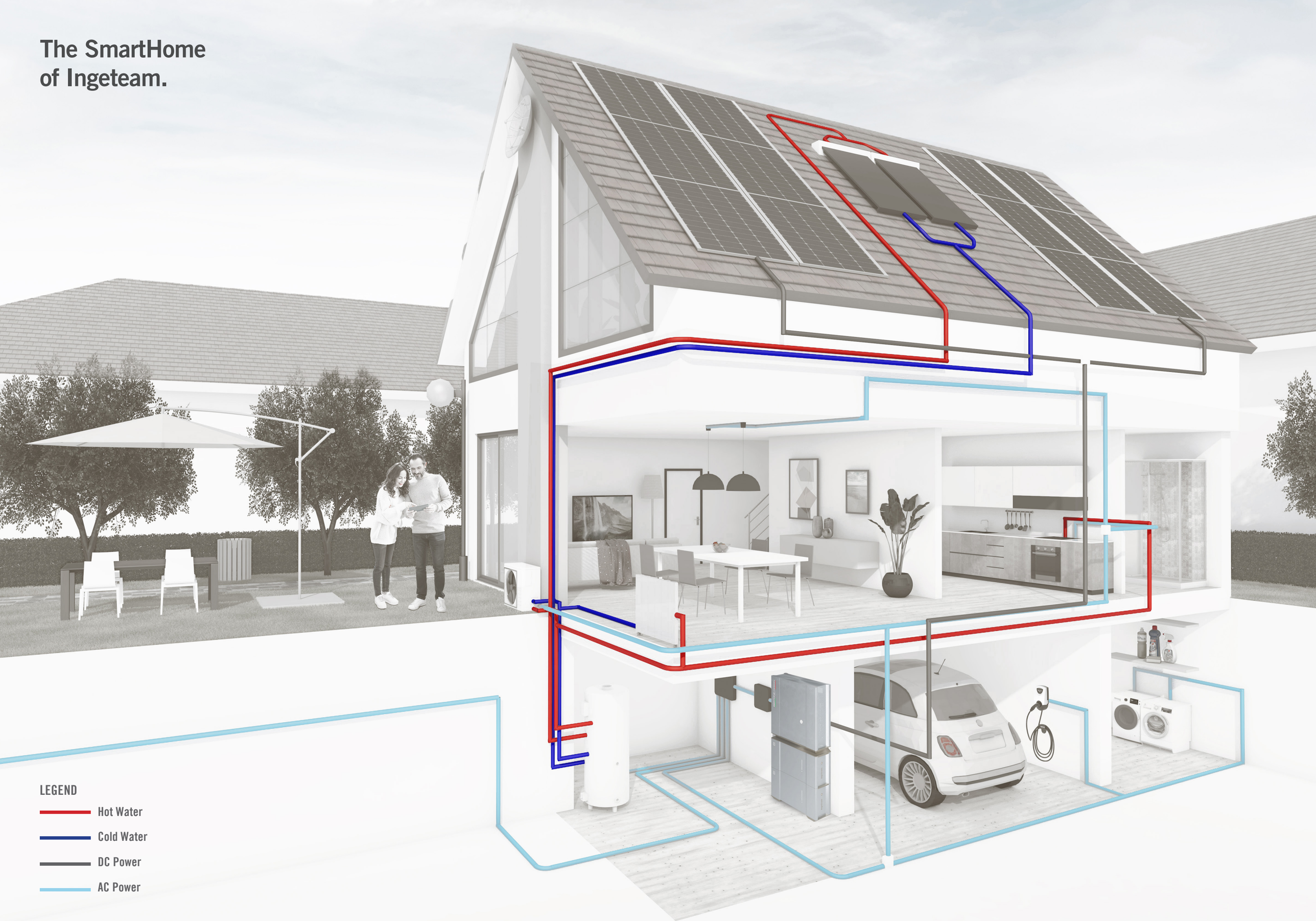
Thanks to the **INGECON® SUN Monitor** App developed by Ingeteam it is possible to keep consumption always under control. The simple and intuitive App allows access to the PV system data from any device connected to the internet.

DOWNLOAD HERE

Available on the App Store

GET IT ON Google Play

The SmartHome of Ingeteam.



INGECON SUN STORAGE
1Play TL M

SINGLE-PHASE HYBRID INVERTER WITH TWO SOLAR MPPTs

The **INGECON® SUN STORAGE 1Play TL M** hybrid inverter makes it possible to combine photovoltaic generation and energy storage with no need for any additional PV inverters. This inverter features a dual maximum power point tracking (MPPT) system, that allows it to draw the maximum power from the PV array, including roof-mounted installations with different orientations or with partial shading.

The inverter is equipped as standard with an energy management system (EMS). The EMS permits more advanced functionalities, such as self-consumption. Thanks to the built-in EMS, the installation can be monitored at all times via a PC or mobile phone with the free **INGECON® SUN Monitor** application, available at Play Store and App Store.

Fast and easy start-up and display of data and graphics through the integrated user interface. Furthermore, users can easily upgrade the inverter firmware from the application, through a PC, tablet or mobile.

5 year warranty, extendible up to 25 years.

Protections

- AC overvoltages.
- Insulation faults.
- Short-circuits and overloads at the output.
- DC breaker for the PV array.
- Anti-islanding with automatic disconnection.

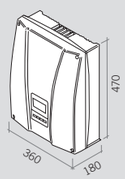
Features

- Dual MPPT system.
- RS-485 communication for the wattmeter.
- Wi-Fi and Ethernet communication.
- CAN Bus 2.0 communication for the BMS (Battery Management System).
- 2 configurable digital inputs.
- 2 configurable potential free outputs.
- Pre-charging system at the battery input.
- Relay for the neutral to earth connection for critical loads in type TT installations.
- Rapid start-up and view of the installation thanks to the **INGECON® SUN Monitor** user interface.
- Possibility of operating just from the PV array and of adding the storage system at a later date.
- Suitable for indoor and outdoor installations (IP65).
- Back-up functionality available for self-consumption installations.
- Peak shaving functionality.
- Configuration of the battery charge / discharge times.

	3TL M	4.5TL M	6TL M
Battery input (DC)			
Voltage range[1]	40 ~ 460 V		
Maximum charge / discharge current	66 A		
Type of battery	Lead-acid, ion-lithium (LG, BYD, Pylontech...)[2]		
Communication with ion-lithium batteries	CAN Bus 2.0		
PV input (DC)			
PV array maximum power	11.5 kWp		
MPP voltage range	80 ~ 480 V		
Operation voltage range	80 ~ 540 V		
Maximum input voltage[3]	550 V		
Maximum input current (input 1 / input 2)[4]	13.5 A / 13.5 A		
Shortcircuit current (input 1 / input 2)	18 A / 18 A		
Number of MPPTs	2		
Number of inputs (input 1 / input 2)	1 / 1		
Grid input (AC)			
Rated voltage	230 V		
Voltage range	172 ~ 264 V		
Nominal Frequency	50 / 60 Hz		
Frequency range	40 ~ 70 Hz		
Network type	TT / TN		
Rated power	3 kW	4.5 kW	6 kW
Max. temperature for rated power	40 °C		
Rated current	13 Arms	20 Arms	26 Arms
Power factor	0 ~ 1		
Critical load output (AC)			
Max. power (25 °C) 30 min, 2 min, 3 s[5]	6,400 / 6,900 / 7,900 W		
Rated current	13 Arms	20 Arms	26 Arms
Rated voltage[6]	220 ~ 240 V		
Rated frequency[6]	50 / 60 Hz		
Power factor	-0.8 ~ 1 ~ 0.8		
Back-up function response time	12 ms		
Features			
Maximum efficiency	95.5%	96%	96%
Euroefficiency	95.1%	95.2%	95.2%
Cooling system			
Cooling system	Forced ventilation		
Air flow	45 m³/h		
Consumption in stand-by mode	< 10 W		
Operating temperature	–20 ~ +65 °C		
Relative humidity (non-condensing)	4 ~ 100 %		
Protection class	IP65		
Maximum altitude	2,000 m		
Marking	CE		
EMC and safety regulations	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 61000-3-11, EN 61000-3-12, EN 62109-1, EN62109-2, AS62040.1, FCC Part 15		
Grid connection standards	DIN V VDE V 0126-1-1, EN 50438, CEI 0-21, VDE-AR-N4105:2011-08, G59/3, G83/2, AS4777.2:2015, IEC 62116, IEC 61727, UNE 206007-1:2013, UNE 206006:2011, UNE 217001 IN:2015,NRS097-2-1, ABNT NBR 16149, ABNT NBR 16150, South African Grid code, P.O.12.2, G99, EN 50549-1		

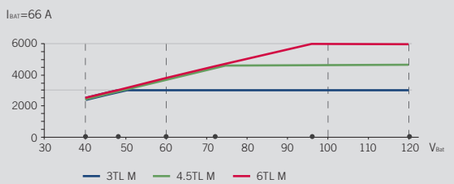
Notes: [1] The maximum power supplied by the battery shall be the battery voltage multiplied by the maximum discharge current [2] Consult the Ingeteam website for a list of compatible batteries [3] Never exceed. Consider the voltage increase of the panels 'Voc' at low temperatures [4] For parallel connected PV inputs, the total maximum current would be 27 A [5] In stand-alone mode, these powers are only available if the power of the batteries added to the PV power reaches these values [6] Configurable voltage and frequency.

Weight and dimensions (mm)



3TL M / 4.5TL M / 6TL M
26 kg.

AC power in relation to battery voltage (with no PV power)



INGECON SUN STORAGE
Battery 52 HV

LITHIUM BATTERY MODULES

Lithium battery modules with nominal voltage of 96V 50Ah designed to be used in the package. The battery module is modular type, each one is an independent module that can be connected to the inverter alone or with up to other 5 battery modules in parallel.
Up to 6 battery modules can be connected in parallel, stacked, placed close to a wall.
The protection degree of the battery module is IP54, the cooling system is Natural Air type.

Each module contains:

- Battery Management System (BMS)
- Protective means (a fuse)
- Connection means (pre-charging system, connection contactor)
- Double set of DC connections, internally connected in parallel, for an easy connection in parallel of the battery modules. The terminals are sized for 66A (inverter's maximum charging/discharging current)
- Load break switch, accessible from outside, closed with a cover
- A simple LED interface showing the status of the module

Connection among batteries modules

Installation doesn't need to realize any cable connection among batteries modules, neither for power connections nor for communication connections. Male and female interconnection connectors between the modules are placed on the top cover and on the bottom of each module.
Shape of the modules is such that is possible to easily plug a module on the previous one without the risk of damaging the connectors.

Complementary accessories:

- Connection cables
- Protection for the connectors of the bottom battery module
- Footers for the bottom battery module

User interface

Each battery module has its own user interface with a LED stripe coloured according to the SOC, it also has other signalling purposes by using different colours:

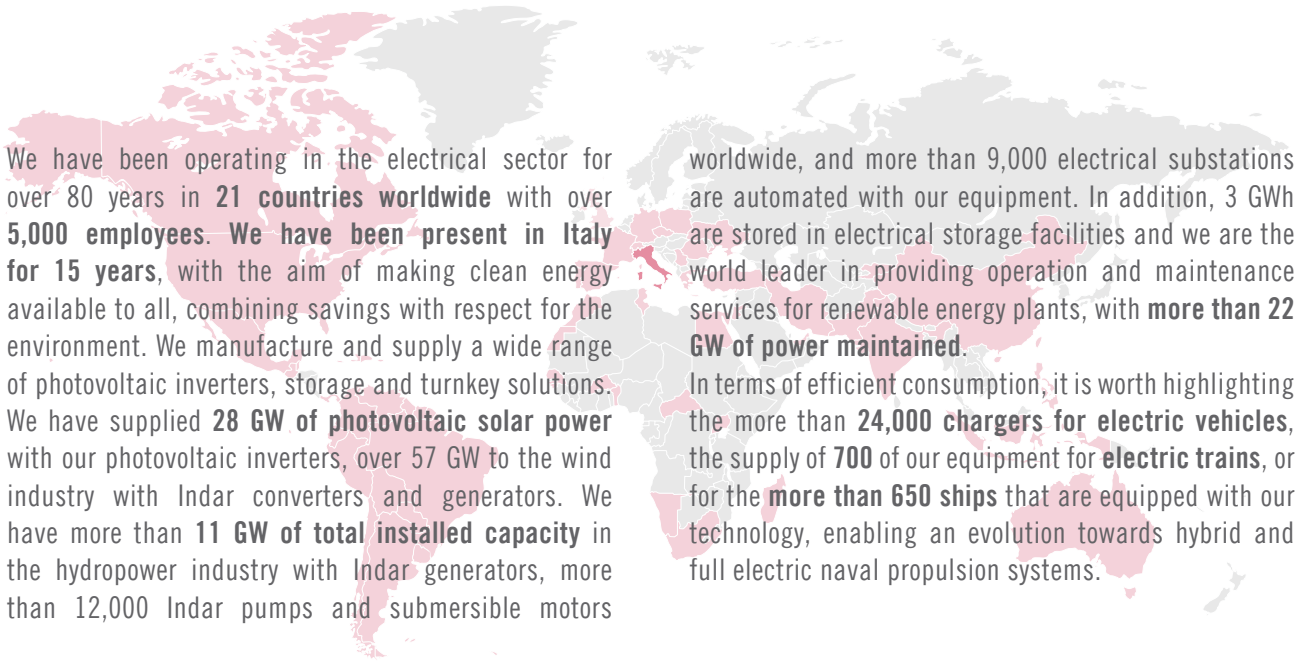
- White: battery charging
- Flashing white: low battery
- Flashing yellow: temperature warning
- Flashing red: alarm.

	INGECON® SUN STORAGE BATTERY 52HV
	Lithium Battery
Battery System Capacity	4,8 kWh
Single Module Nominal Voltage	96 V
Application	LV
Modules Expandibility	LV Mode: Up to 6 battery modules
Voltage Range	84 V - 108 V
Net Capacity	50 Ah
Dimension	690 x 216 x 315 mm
Weight	55 kg
Charge / Discharge Current	50 A
Peak	66 A
Depth of Discharge	97%
Communication Port	CAN (towards inverters)
Single string quantity	6 pcs
Discharge Temperature	- 20 ~ 55° C
Charge Temperature	0 ~ 55° C
Shelf Temperature	-15° ~ 50° C
Humidity	100% non condensing
Altitude	1000 m a.s.l.
Design Life	10 ↑ Years (25°C)
Expected Life Cycles @ STC	> 7.000↑ (25°C)
Standards	UN 38.3, IEC 62619, IEC 61000, CEI 0-21
Features	Master/Slave self configuration, protection and disconnection means included, parallel box not needed
Safety	Manual DC Braker, Connection Contactor, Fuse

Cell Specification		
Capacity	52Ah	0.5C @ 25 degree
Nominal Voltage	3.2V DC	
Nominal Energy	160Wh	
Max Charge Current	3C	
Standard Charge / Discharge	2C	
Optimal Charge / Discharge	1C	
Max Discharge Current	3C	
Cycle life EOL 75%	> 7000	1C/1C @ 25 degree
Size (H x W x D)	185 x 135 x 30 mm	
Weight	1.42 kg	

Inverter	Battery Package					
	1 module, 4800 Wh	2 modules, 9600 Wh	3 modules, 14400 Wh	4 modules, 19200 Wh	5 modules, 24000 Wh	6 modules, 28800 Wh
Storage 1Play 3TL M	X	X	X	X	X	X
Storage 1Play 4.5TL M	X	X	X	X	X	X
Storage 1Play 6TL M	X	X	X	X	X	X

Ingeteam



We have been operating in the electrical sector for over 80 years in **21 countries worldwide** with over **5,000 employees**. **We have been present in Italy for 15 years**, with the aim of making clean energy available to all, combining savings with respect for the environment. We manufacture and supply a wide range of photovoltaic inverters, storage and turnkey solutions. We have supplied **28 GW of photovoltaic solar power** with our photovoltaic inverters, over 57 GW to the wind industry with Indar converters and generators. We have more than **11 GW of total installed capacity** in the hydropower industry with Indar generators, more than 12,000 Indar pumps and submersible motors worldwide, and more than 9,000 electrical substations are automated with our equipment. In addition, 3 GWh are stored in electrical storage facilities and we are the world leader in providing operation and maintenance services for renewable energy plants, with **more than 22 GW of power maintained**.

In terms of efficient consumption, it is worth highlighting the more than **24,000 chargers for electric vehicles**, the supply of **700** of our equipment for **electric trains**, or for the **more than 650 ships** that are equipped with our technology, enabling an evolution towards hybrid and full electric naval propulsion systems.