

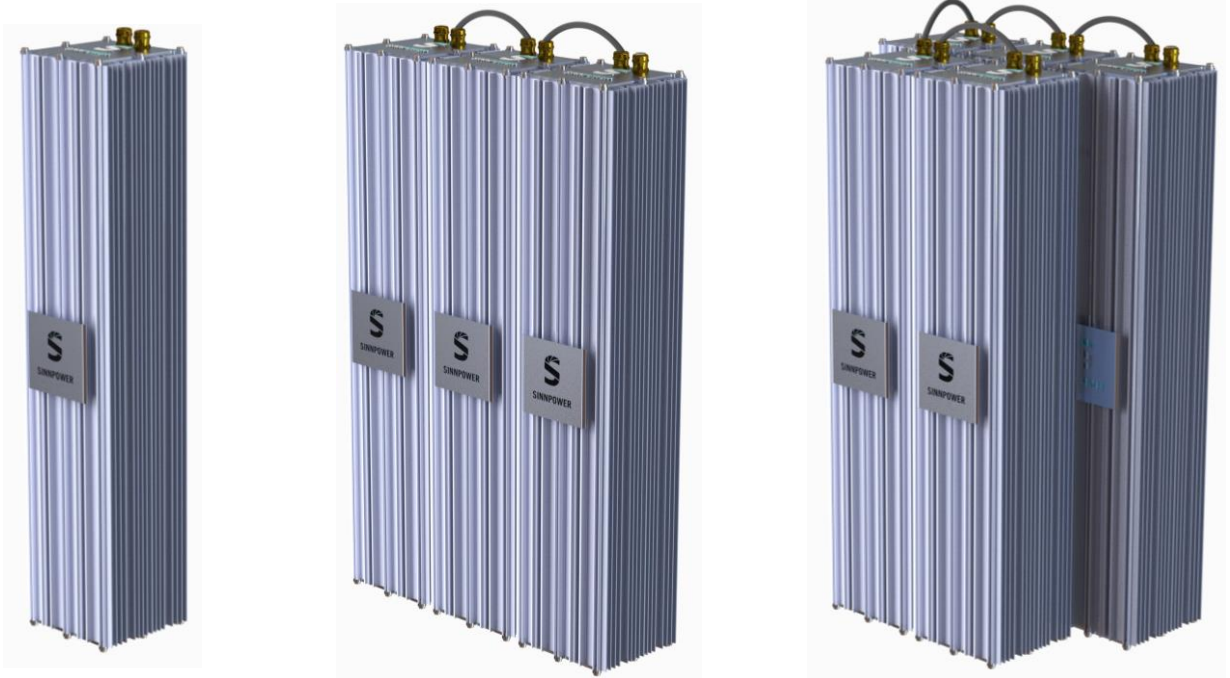
## **SINN Power** **Storage Solutions**

SINN Power's patented heavy duty storage solution.

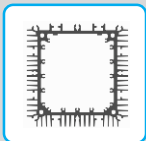
# SINN Power

## All-in-one Storage System (4 - 20 kWh)

The SINN Power all-in-one AC-coupled storage system comes with AC Inverter and BMS. It provides a total usable energy capacity of up to 20 kWh (4 kWh gradations) and offers great flexibility in starting small and adding incremental capacity thanks to the modular setup.



### CHARACTERISTICS OF SP ALL-IN-ONE STORAGE SYSTEMS



#### Made for rough environments

- IP 68 rating
- Robust aluminium housing for toughest environments
- Air cooling (cooling fins) and optional fluid cooling through canals



#### Integrated data communication

- Customizable communication protocols (e.g. Modbus, Ethernet, Wireless, CAN)



#### Simple installation

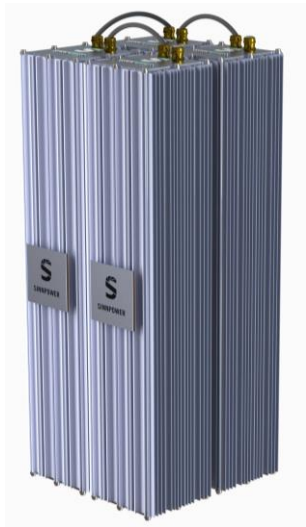
- Fully integrated AC battery system
- Quick and easy plug-and-play installation
- Various mounting system possibilities

# SINN Power

## All-in-one Storage System

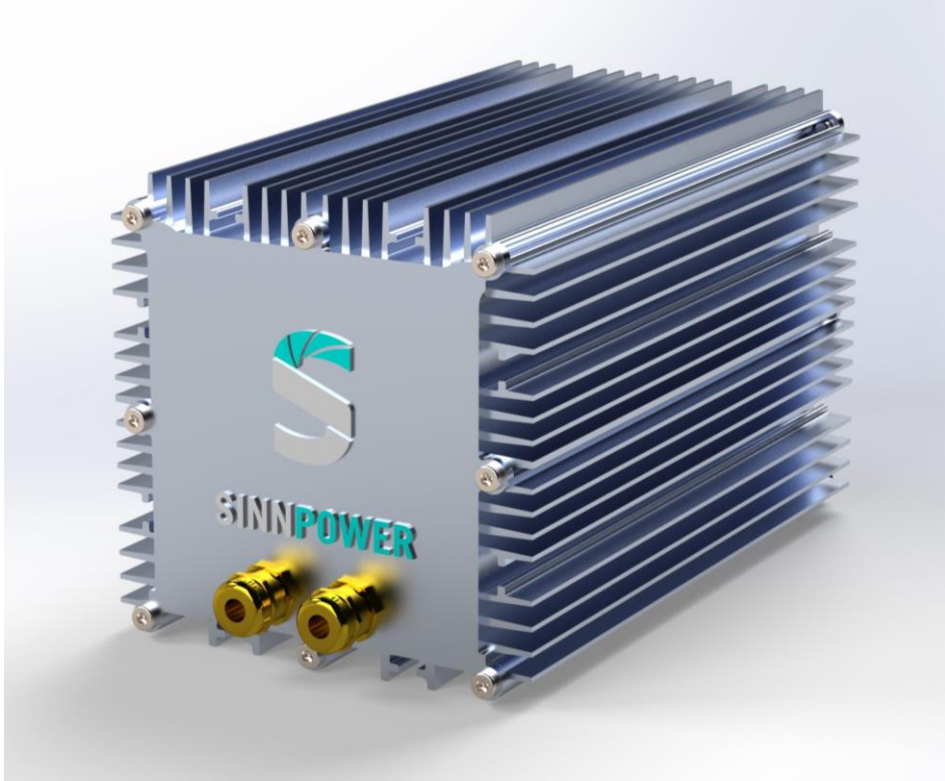
### (4 - 20 kWh)

SINN Power’s turnkey solution increases residential and industrial flexibility and reduces planning and maintenance efforts.



### Technical Specifications

OUTPUT (AC)	
Operating power	6 kW, 12 kW, 18 kW
Voltage	400 V AC (three phases), 110 - 230 V AC (single phase)
Electric frequency	50 Hz, 60 Hz (customizable upon request)
Rated output current	30 A, 60 A, 90 A
BATTERY	
Usable capacity	4 kWh, 8 kWh, 12 kWh, 16 kWh, 20 kWh
Voltage	80 V – 720 V DC
Ambient operating temperature range	-15°C to 55 °C
Optimum operating temperature range	0°C to 30 °C
Chemistry	Lithium iron phosphate (LFP)
MECHANICAL DATA	
Dimensions (WxHxD)	1160 mm x 236 mm x 232 mm (per unit)
Weight	67.5 kg (per unit)
Enclosure	Aluminium housing with cooling fins
IP rating	IP 68
Cooling	Convection and optional water cooling
Mounting	IM B3 (1001), threaded rod
FEATURES	
Communication protocols	Customizable (e.g. Wireless, CAN, Modbus, Ethernet)
Grid behaviour	Grid forming and grid following



## **SINN Power** **Inverters**

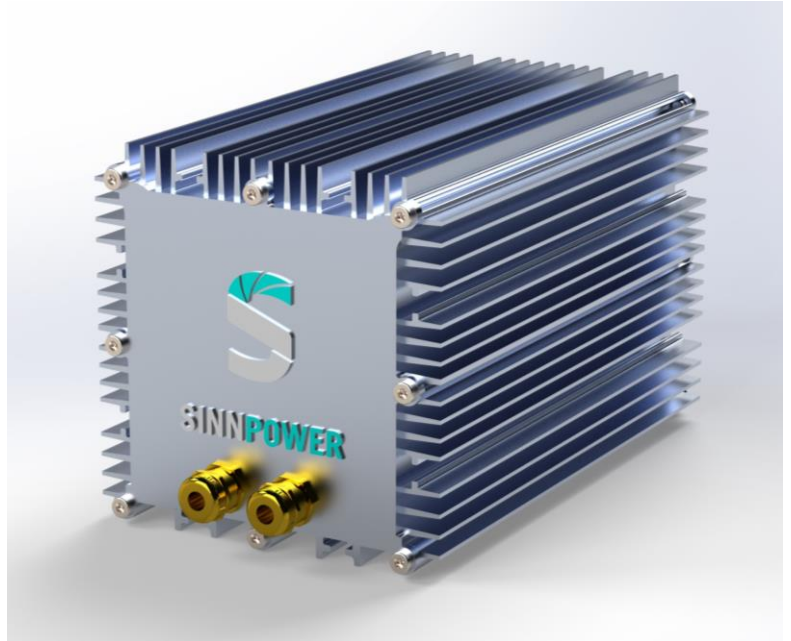
SINN Power's sophisticated inverter solutions for wind and photovoltaic.

# SINN Power

## Wind Inverter 6.0

The SINN Power Wind Inverter with a power rating of up to 6 kW is the optimal solution for small wind applications in harsh environments with continuous high performance.

Its sophisticated housing (IP 68) enables the implementation up in the nacelle or directly outside on the ground. The combination of generator control, inverter and communication module makes a connection booth obsolete.



### CHARACTERISTICS OF THE SP WIND INVERTER 6.0



#### Active rectifying technology increases efficiency

- Opposed to a simple bridge rectifier based on diodes our sophisticated active ACDC includes MOSFETs



#### Cost reduction by integration of multiple modules into one device

- All-in-one combination of generator control, inverter and communication module reduces system costs and makes a connection booth obsolete



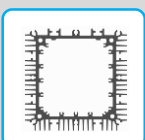
#### Custom power curve

- Individual torque / speed curve implementable and subsequently modifiable via remote access



#### Noise reduction (sinus modelling)

- High-frequent switch removes harmonic waves

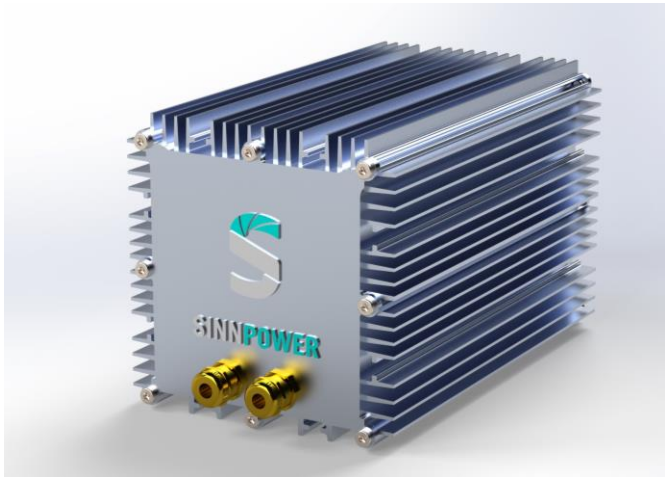


#### Made for rough environments

- IP 68 rating for toughest environments
- Connection per plug&play or cable

# SINN Power

## Wind Inverter 6.0



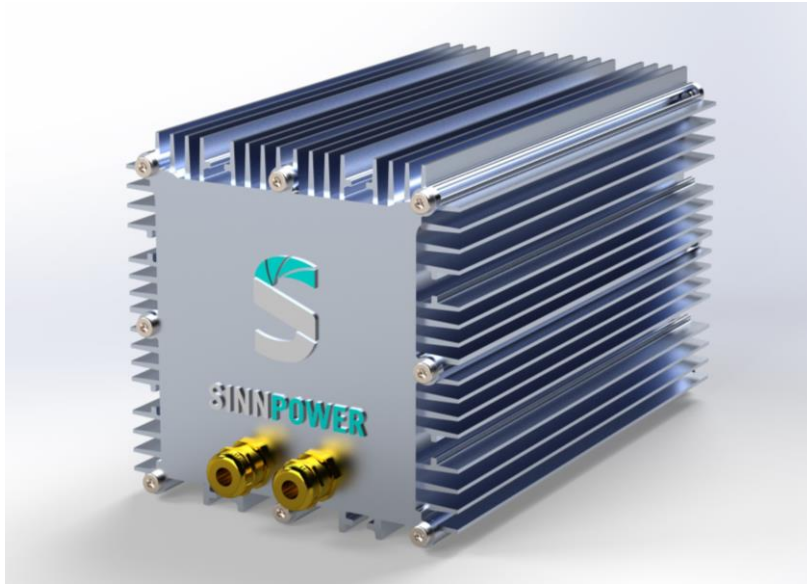
### Technical Specifications

INPUT (E-MACHINE, AC)	
Effective phase voltage	0 – 230 V AC
Current	30 A
Peak power	10 kW
Operating power	≤ 6 kW
OUTPUT (GRID, AC)	
Voltage	110 – 230 V AC (single phase), 400 V AC (three phases)
Peak current	30 A
Peak Power	10 kW
Operating power	≤ 6 kW
Electric frequency	50 Hz, 60 Hz (customizable upon request)
MECHANICAL DATA	
Dimensions (WxHxD)	460 mm x 236 mm x 232 mm
Weight	10 kg
Enclosure	Aluminium housing with cooling fins
IP rating	IP 68
Cooling	Convection and optional water cooling
Mounting	IM B3 (1001), threaded rod
FEATURES	
Communication protocols	Customizable (e.g. Wireless, CAN, Modbus, Ethernet)
Communication content	Speed, torque, power, voltage, current, temperature, diagnostics and alarming
Grid behaviour	Grid forming and grid following



# SINN Power

## Solar Inverter 6.0/ 12.0/ 18.0



The SINN Power Solar Inverter is the optimal solution for any kind of PV application. As an installer, you are sure to enjoy the benefits of simple installation and commissioning along with quick and straightforward servicing. The standardized product line ranging from 6 to 18 kW is the ideal choice for any system size, from family homes through to large-scale installations.

### CHARACTERISTICS OF SP SOLAR INVERTERS



#### Active rectifying technology prevent overheating

- Active rectification avoids reverse current flow that can cause overheating with partial shading while giving minimum power loss



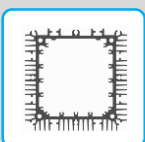
#### Remote monitoring and maintenance

- Remote access to each DC Converter allows detailed overview over single PV strings and helps to identify and remedied them at an early stage



#### State of the art power electronics

- Integrated IP 68 power electronics for tough environments
- Connection per plug&play or cable
- Various mounting system possibilities

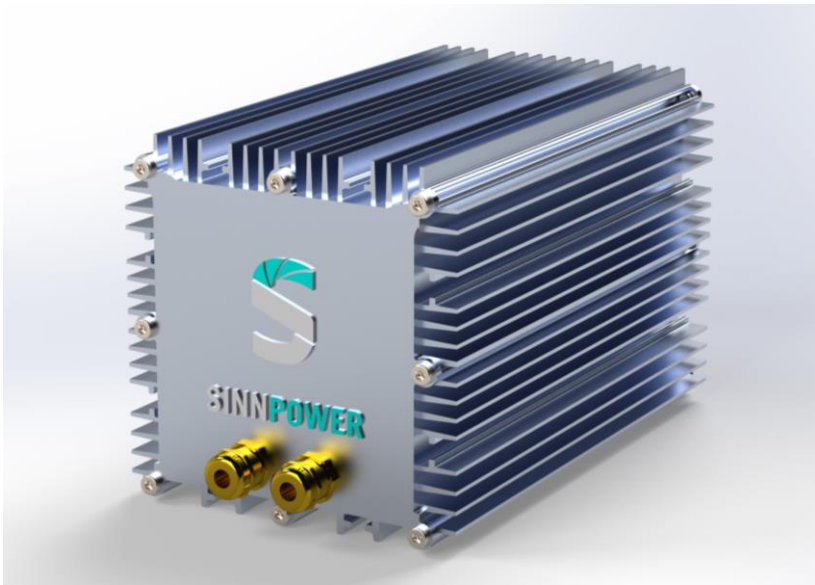


#### Made for rough environments

- IP 68 rating for toughest environments
- Connection per plug&play or cable

# SINN Power

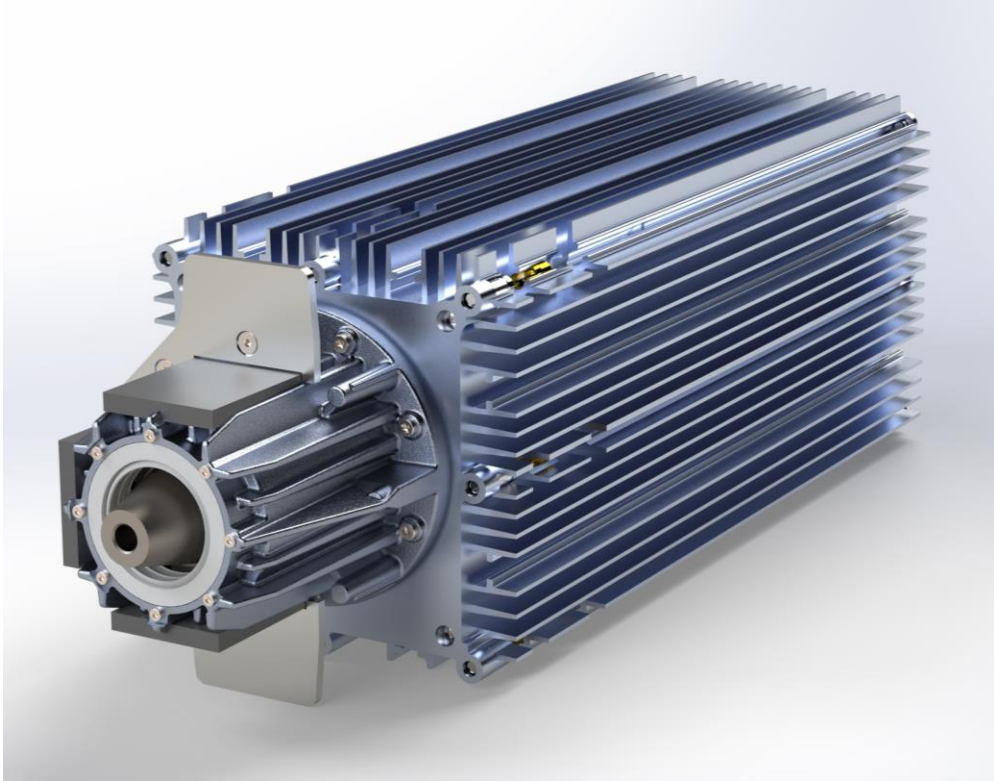
## Solar Inverter 6.0/ 12.0/ 18.0



### Technical Specifications

INPUT (PHOTOVOLTAIC, DC)	
Peak voltage	80 V – 720 V DC
Peak current	30 A (or 3 x 10 A)
Operating power	21.5 kW
OUTPUT (GRID, AC)	
Voltage	110 – 230 V AC (single phase), 400 V AC (three phases)
Peak current	30 A, 60 A, 90 A
Operating power	6 kW, 12 kW, 18 kW
Electric frequency	50 Hz, 60 Hz (customizable upon request)
MECHANICAL DATA	
Dimensions (WxHxD)	460 mm x 236 mm x 232 mm (per unit)
Weight	10 kg (per unit)
Enclosure	Aluminium housing with cooling fins
IP rating	IP 68
Cooling	Convection and optional water cooling
Mounting	IM B3 (1001), threaded rod
FEATURES	
Communication protocols	Customizable (e.g. Wireless, CAN, Modbus, Ethernet)
Grid behaviour	Grid forming and grid following





# **SINN Power** **Drive Solutions**

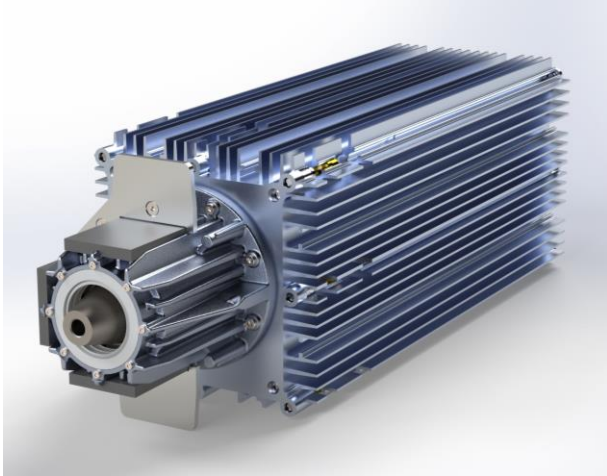
Full flexibility regarding individual solutions.

# SINN Power

## PowerTrain 5.0 – 20.0

FROM MOTION TO GRID AND VICE VERSA.

The SINN PowerTrain is a high-tech linear generator, with integrated power electronics, planetary gearbox, mechanical brake and IP 68 rating. It is the ideal machine for applications in harsh environments and enables series connection of multiple units.



### LOW SPEED (LS):

- 1000 rpm
- Length: 215 mm – 645 mm (w/o shaft)
- Extension stages: 5 kW, 10 kW, 15 kW

### HIGH SPEED (HS):

- 7000 rpm
- Length: 126 mm – 504 mm (w/o shaft)
- Extension stages: 5 kW, 10 kW, 15 kW, 20 kW

### AREAS OF APPLICATIONS

- Drive, Power-Take off & Brake
- Lift & Pull
- Conveyor belt

### COMPONENTS:

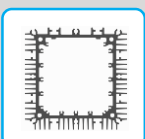
- AC Inverter
- MotorDrive
- Synchronous generator
- Bearings, brakes etc.

### CHARACTERISTICS OF SP POWERTRAINS



#### Modular setup with full flexibility regarding individual solutions

- The productline allows for free choice of power size and also free combination of components such as AC Inverter, bearings and brakes

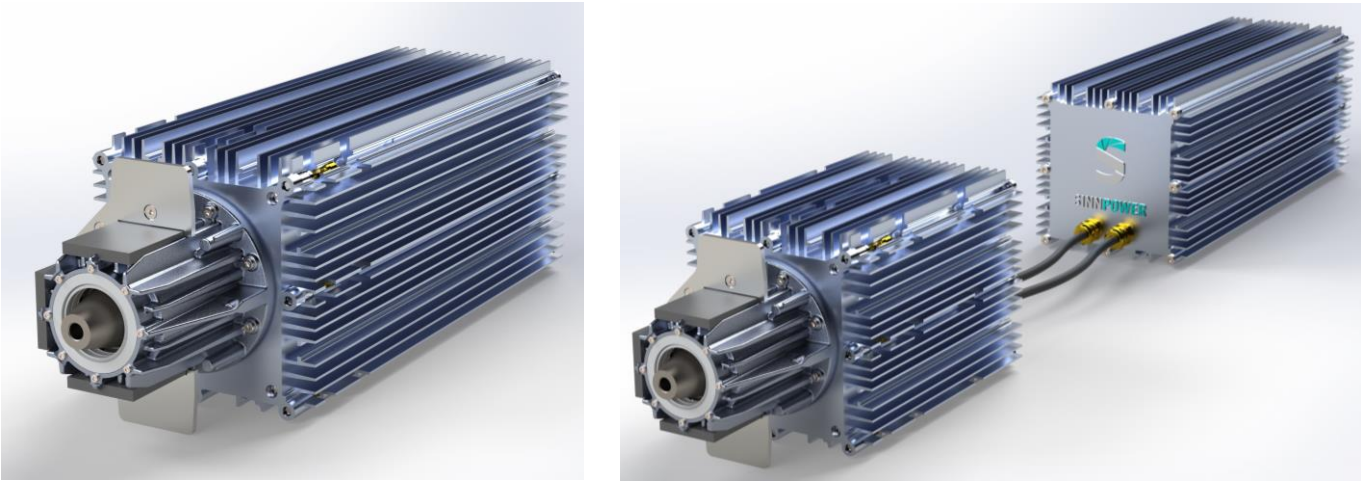


#### Made for rough environments

- IP 68 rating for toughest environments
- Connection per plug&play or cable

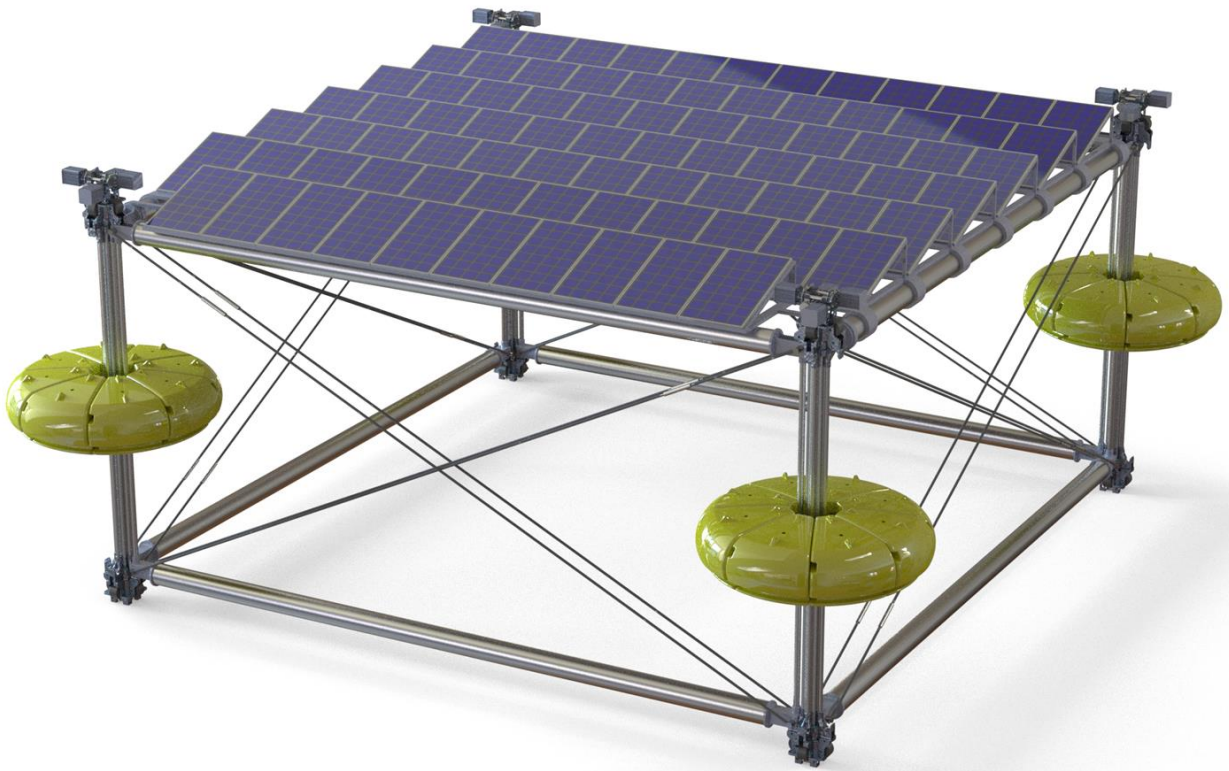
# SINN Power

## PowerTrain 5.0 – 20.0



### Technical Specifications

E-MACHINE (MECHANICAL)	LS	HS
Rated Power	5 kW, 10 kW, 15 kW	5 kW, 10 kW, 15 kW, 20 kW
Gearbox Ratio	1:1 – 1:64	1:1 – 1:64
Maximum Output Speed (at shaft)	1000 rpm	7000 rpm
Maximum Torque (at shaft)	50 Nm	6.25 Nm
GRID (AC)		
Voltage	110 – 230 V AC (single phase), 400 V AC (three phases)	
Peak current	30 A, 60 A, 90 A	
Operating power	5 kW – 20 kW	
Electric frequency	50 Hz, 60 Hz (customizable upon request)	
MECHANICAL DATA		
Dimensions (WxHxD)	460 mm x 236 mm x 232 mm	
Weight	10 kg	
Enclosure	Aluminium housing with cooling fins	
IP rating	IP 68	
Cooling	Convection and optional water cooling	
Mounting	IM B3 (1001), threaded rod	
FEATURES		
Communication protocols	Customizable (e.g. Wireless, CAN, Modbus, Ethernet)	
Communication content	Speed, torque, power, voltage, current, temperature, diagnostics and alarming	
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**SINN Power**

## **Ocean Power Solutions**

Offshore power-solutions from the global wave energy leader.

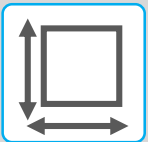


# SINN Power

## Ocean Floating PV



### CHARACTERISTICS OF SP OCEAN FLOATING PV



#### Modular and scalable in size

- The minimum layout provides 100 m<sup>2</sup> ( ~32 kWp)
- The maximum layout provides 10.000 m<sup>2</sup> (~3 MWp)
- Shippable in ISO containers and quick installation



#### State-of-art power electronics

- IP 68 power electronics for tough environments
- Connection per plug&play or cable
- Various mounting system possibilities



#### Direct Grid Integration

- 800V DC compatibility for transformer stations
- 400V AC for direct grid connection
- Bi-directional power electronics for utility access

### Info Box

Floating PV is a fast growing market, since the opportunity cost of land based PV is a crucial factor in investment calculations. SINN Power is the first company worldwide to provide a solution for ocean floating PV, that withstands wave heights of up to 4 m.

# SINN Power

## Wave Energy Converters

**BENEFIT FROM ONE OF THE MOST CONSISTENT ENERGY SOURCES: WAVES.**

The SINN Power Wave Energy Converter is an innovative system for generating electricity from ocean waves. The unique approach aims not to fascinate with complexity, but convinces with simplicity and effectiveness. Mass-producible standardized components guarantee cost-efficiency. Intelligent control software maximizes the electricity generation in every wave climate.



**SP WEC 24**

Nominal power:	24 kW
Nominal voltage:	800 V DC
Swept area:	10 m <sup>2</sup>
Rod length:	10 m
Wave climate:	Moderate



**SP WEC 36**

Nominal power:	36 kW
Nominal voltage:	800 V DC
Swept area:	10 m <sup>2</sup>
Rod length:	10 m
Wave climate:	Strong