

INGECON

SUN STORAGE

3Power U C Series
1,500 V_{dc}

**THREE-PHASE
TRANSFORMERLESS
BATTERY INVERTER
WITH AN EXTRA
THERMAL STABILITY
AND A GREATER
POWER DENSITY**

Up to 3.66 MVA at 1500 V

The INGECON® SUN STORAGE 3Power U C Series is a three-phase bidirectional battery inverter that can be used in grid-connected and stand-alone systems. This one-of-a-kind battery inverter achieves a market-leading power density of 470 kW/m³, as it provides up to 3,660 kVA in just one power stack.

Latest generation electronics

The INGECON® SUN STORAGE 3Power U C Series battery inverter features an innovative control unit that performs a more efficient and sophisticated inverter control, as it uses a last-generation digital signal processor.

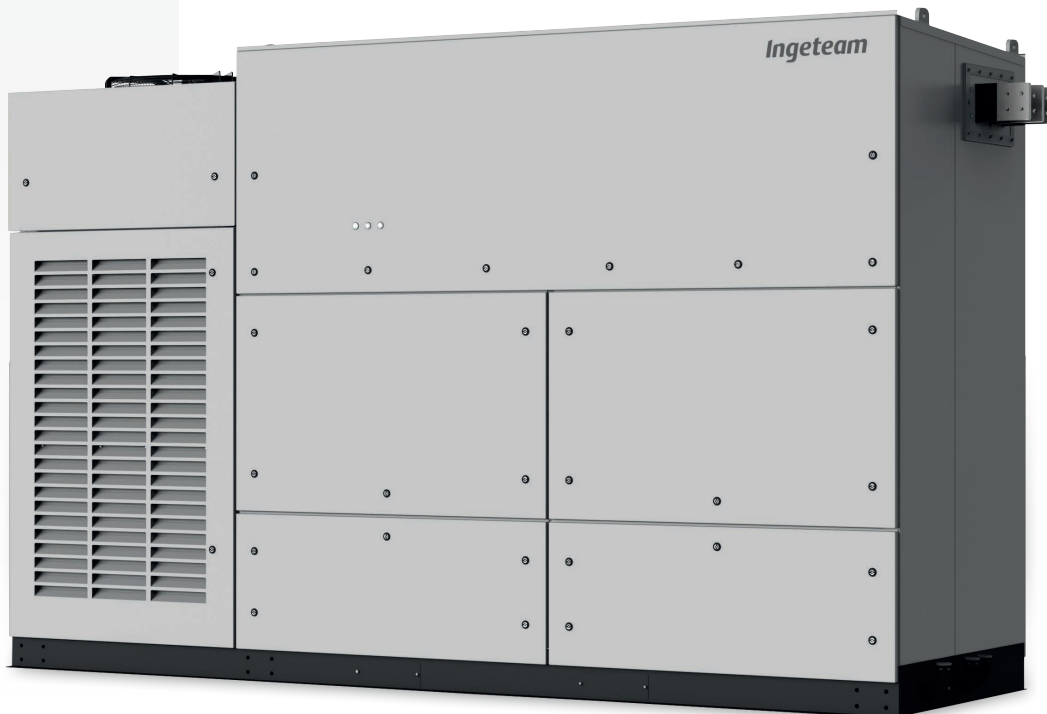
Liquid Cooling System (LCS)

Ingeteam has already supplied +52 GW of liquid-cooled wind power converters worldwide. It offers a greater thermal stability and a more optimized component usage. The LCS has been designed to refrigerate the IGBTs, the power phases and the IP65 / NEMA 4 compartment. It features less moving components, so it consumes a lower amount of power and it requires less maintenance works.

The LCS is a closed circuit supplied totally filled and purged, equipped with fast connectors with an anti-dripping system, so it offers zero risk of particle entrance. It has been designed to avoid siphons in order to easily purge it if necessary. The coolant used is a biodegradable glycol water mixture. There is no need of emptying the LCS in order to replace the phases, nor the sensors.

IP65 / NEMA 4 protection

A secondary liquid cooling system is used to refrigerate the air inside the NEMA 4-protected compartment. A water-air heat exchanger is used for that. This compartment contains the power and control electronics, the DC fuses, the DC and AC protections, the busbars and the power phases.



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Ingeteam

Power converter stands both, grid-following and grid forming operating modes:

Real power related functionalities

- Renewable resources integration:
 - Ramp limits.
 - Power smoothing / firming / curtailment.
 - Time shifting.
 - Micro grids.
- Grid support / Ancillary services:
 - Frequency regulation.
 - Synthetic inertia.
 - Black start.
 - Frequency control / protection.
 - Virtual “Synchronous Machine”.

- Investment deferral:
 - Peak shaving.
 - Load shifting / Load following.
 - Real power response improvement of conventional power plants.
- Power efficiency:
 - Time shifting.
 - Price arbitrage.
 - Real power response improvement of conventional power plants.
 - Peak shaving.

- Safety and quality:
 - “Un-interruptible” Power.
 - Grid code compliance.
 - Transmission congestion relief / Power quality - reliability.

Reactive power related functionalities

- Voltage control (Q/V).
- Voltage control / protection.
- Fixed power factor (QPF).
- Fixed reactive power output (Qref).
- Limitation of response of Reactive Power.

Standard 5 year warranty, extendable for up to 25 years.

PROTECTIONS

- DC Reverse polarity.
- Short-circuits and overloads at the output.
- Anti-islanding with automatic disconnection.
- Insulation failure DC.
- Up to 24 pairs of fuse-holders.
- Lightning induced DC and AC surge arresters, type II.
- Motorized DC switch.
- Motorized AC circuit breaker.
- Hardware protection via firmware.
- Additional protection for the power stack, liquid cooled, IP65 rated and air cooled by a closed loop.

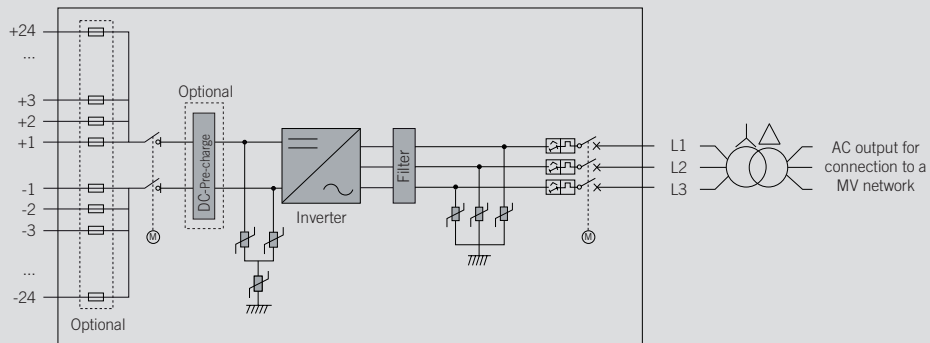
OPTIONAL ACCESSORIES

- Heating kit, for operating at an ambient temperature of down to -22 °F.
- DC surge arresters type I+II.
- AC surge arresters type I+II.
- DC fuses.
- Monitoring of the DC currents.
- Grounding kit.
- Integrated DC combiner box

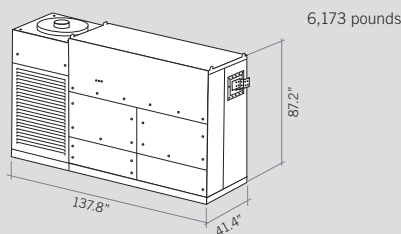
LIQUID COOLING SYSTEM

- LCS to refrigerate the IGBTs.
- More optimized component usage: greater thermal stability.
- Less moving components: lower power consumption and less maintenance works.
- No risk of particle entrance.
- Anti-corrosion protection with stainless steel components
- LCS is used in many industries. Thus, it is very reliable, as its components are subject to many validation tests.
- Fast connectors with anti-dripping system
- Biodegradable glycol water mixture.
- No need of emptying the LCS in order to replace the phases, nor the sensors.

INGECON® SUN STORAGE 3660TL U



Size and weight (inches and pounds)



INGECON® SUN STORAGE 3660TL U							
	C366	C450	C578	C600	C630	C645	C660
Input (DC)							
Battery voltage range for off-grid mode	535 - 1,300 V	650 - 1,300 V	826 - 1,300 V	857 - 1,300 V	898 - 1,300 V	919 - 1,300 V	940 - 1,300 V
Battery voltage for grid-tied mode ⁽¹⁾	579 - 1,300 V	707 - 1,300 V	902 - 1,300 V	936 - 1,300 V	982 - 1,300 V	1,005 - 1,300 V	1,028 - 1,300 V
Maximum voltage	1,500 V						
Maximum current	3,850 A						
N° inputs with fuse-holders	Up to 24						
Fuse dimensions	Up to 63 A / 1,500 V / aR / 100 kA (L/R 5mS) (optional)						
Type of connection	Connection to copper bars						
Power blocks	1						
Input protections							
Overvoltage protections	Type II surge arresters (type I+II optional)						
DC switch	Motorized DC load break disconnect						
Other protections	Up to 24 pairs of DC fuses (optional) / Reverse polarity / Insulation failure monitoring / Anti-islanding protection / Emergency pushbutton						
Output (AC)							
Power @30 °C / @50 °C	2,028.6 kVA / 1,743.3 kVA	2,494.2 kVA / 2,143.4 kVA	3,203.7 kVA / 2,753.1 kVA	3,325.6 kVA / 2,857.9 kVA	3,491.9 kVA / 3,000.8 kVA	3,575 kVA / 3,072.2 kVA	3,658.1 kVA / 3,143.7 kVA
Current @30 °C / @50 °C	3,200 A / 2,750 A						
Rated voltage ⁽²⁾	366 V IT System	450 V IT System	578 V IT System	600 V IT System	630 V IT System	645 V IT System	660 V IT System
Frequency	50 / 60 Hz						
Power Factor ⁽³⁾	1						
Power Factor adjustable	Yes, 0 - 1 (leading / lagging)						
THD (Total Harmonic Distortion) ⁽⁴⁾	<3%						
Output protections							
Overvoltage protections	Type II surge arresters (type I+II optional)						
AC breaker	Motorized AC circuit breaker						
Anti-islanding protection	Yes, with automatic disconnection						
Other protections	AC short-circuits and overloads						
Features							
Operating efficiency	98.9%						
CEC	98.5%						
Max. consumption aux. services	9,000 W						
Stand-by or night consumption ⁽⁵⁾	< 180 W						
Average power consumption per day	2,500 W						
General Information							
Ambient temperature	-4°F to +135°F (expandable from -40°F to +135°F)						
Relative humidity (non-condensing)	0-100% (Outdoor)						
Protection class	NEMA 3 ⁽⁶⁾						
Corrosion protection	External corrosion protection						
Maximum altitude	14,770 ft (for installations beyond 3,300 ft, please contact Ingeteam's BESS sales department)						
Cooling system	Liquid cooling system and forced air cooling system with temperature control (400V 3 phase + neutral power supply, 50/60 Hz)						
Air flow range	0 - 18,000 m ³ /h						
Average air flow	12,000 m ³ /h						
Acoustic emission (100% / 50% load)	<57 dB(A) at 10m / <49.7 dB(A) at 10m						
Marking	CE						
EMC and security standards	UL1741, FCC Part 15, IEEE C37.90.1, IEEE C37.90.2, CSA22.2 No107						
Grid connection standards	IEC 62116, UL1741, IEEE1547, IEEE1547.1, NEC CODE, Electric Rule 21: 2015, CSA22.2 No107						

Notes: ⁽¹⁾ Minimum voltage DC (VDC, min) for V_{grid,max} = 1.1 p.u. and Power Factor=1. If V_{grid,max} is higher than this value, the minimum voltage should be corrected as VDC, min * V_{grid,max} / 1.1. For other DC voltage ranges, please contact Ingeteam's BESS sales department ⁽²⁾ Other AC voltages and powers available upon request ⁽³⁾ For P_{out}>25% of the rated power ⁽⁴⁾ For P_{out}>25% of the rated power and voltage in accordance with IEC 61000-3-4 ⁽⁵⁾ Consumption from Battery ⁽⁶⁾ Except for the LC filter and the air-water heat exchanger, that are NEMA 3R.

Ref: TFP-17-IPF_BESS-01_B DATA SUBJECT TO CHANGE

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