

INGECON SUN PowerStation



40-foot MV turnkey solution,
customised up to 5400 kVA

Ingeteam



From 830 to 5400 kVA

The complete turnkey solution, customized up to 5.4 MW, 40 ft. container with innovative forced air or air conditioned cooling systems for adverse environmental conditions

Thanks to its CSC approval for overseas shipment, The INGECON® SUN PowerStation CON 40 can be marketed and installed everywhere in the world. It is a fully equipped container with three separate compartments and different cooling systems (up to 3,600 kVA) or two separate compartments with different cooling systems and outdoor mounted LV / MV transformer (up to 5,400 kVA).

Robust and long-lasting design

The INGECON® SUN PowerStation CON40 is a standard solution specifically designed for dusty areas with innovative cooling systems to ensure the nominal output power up to 60 °C. Moreover, this solution avoids any problem regarding the corrosion generated from sandstorms. To ensure the maximum protection against weather conditions, external sides are coated with a galvanized layer and painted with polyurethane lacquer. The load-bearing structure is single-block made of welded steel, to ensure top resistance and durability over time. Roof-top and walls are coated with insulated sandwich panels. The sandwich panels are made of galvanized painted steel, filled with a 50 mm layer of rigid fire-proof polyurethane foam, ensuring perfect waterproofness over time and efficient thermal insulation.

Equipped with everything necessary

High efficiency inverters, auxiliary services switchgear, Medium Voltage cubicle and LV / MV transformer. Available with High-speed Ethernet / Fiber Optic communication infrastructure for Plug & Play connection to PV Plant Controller, monitoring and SCADA systems.

Complete accessibility

Thanks to its innovative design, all devices are readily accessible, thereby making it easier to inspect, maintain and repair the INGECON® SUN PowerStation CON 40. The transformer compartment door is equipped with AREL safety lock with a blocking code on the cabling box.

Ideal for adverse environments

The INGECON® SUN PowerStation CON40 is a standard solution able to withstand adverse environmental conditions without any loss of performance. Thanks to its recirculation air conditioning system, the "RC" version can provide its rated power up to 60 °C (ambient temperature) without derating and IP65 protection degree.

Innovative cooling systems

FA type: the internal temperature of inverters compartment is controlled by high efficiency hot air extraction plenums and centrifugal fan systems.

A number of internal and external probes guarantee a constant ambient temperature. The incoming air is filtered through special sand trap grids mounted on the bottom of the walls.

AC type: the container is equipped with an internal cooling system featuring a Free Cooling function for inverters compartment. The air conditioning units, sized for each of the inverters, feature the following operating modes:

- Pure Free Cooling: Compressor in OFF mode. The outdoor air temperature is low and the conditioner operates like a ventilation system, with an air inflow and outflow.
- Assisted Free Cooling: Compressor operates in ON-OFF mode. The outdoor air temperature is relatively low to allow operation in Free Cooling mode. However, it is not low enough to maintain the desired interior temperature.
- Cooling Compressor in ON mode: The system operates like a normal air conditioner.

RC type: the container is equipped with an internal Recirculation Air Conditioning system for inverters compartment, to maintain the correct internal temperature over the entire operating temperature range.



CON 40 FA / NA / FA



CON 40 FA / FA / FA



CON 40 AC-RC / NA / FA



CON 40 AC-RC / FA / FA

MAIN FEATURES

- Output power up to 5,400 kVA.
- Available up to 36 kV output voltage.
- Available with embedded cast resin or oil immersed hermetically sealed LV / MV transformer (up to 3,600 kVA).
- Available with outdoor mounted hermetically sealed LV / MV transformer (up to 5,400 kVA).
- Up to IP65 protection degree for inverter compartment. ⁽¹⁾
- Rated power up to 60 °C ambient temperature. ⁽¹⁾
- Protected against solar and sand corrosion.
- CSC certification for container shipping.
- Plug & Play solution.
- Maximum reliability, higher safety and reduced maintenance thanks to solid aluminium and flexible copper busbars for Low Voltage power distribution.
- Different cooling systems for inverter compartment⁽¹⁾:
 - Type FA: Forced Air ventilation, operating temperature range from -20 °C to +55 °C.
 - Type AC: Free Cooling Air Conditioning system, operating temperature range from -20 °C to +55 °C without derating.
 - Type RC: Recirculation Air Conditioning system, operating temperature range from -20 °C to +60 °C without derating.
- Relative Humidity (non-condensing): 0-100%.
- Installation Altitude: 3000 m above sea level. ⁽¹⁾

⁽¹⁾ Refer to Technical Characteristics tables for further details.

ELECTRICAL PROTECTIONS

- Reverse polarity.
- Output short-circuits and overloads.
- DC fuses.
- DC switch with door control.
- AC circuit breaker with door control.
- DC and AC overvoltage suppressors.
- Anti-islanding monitoring system with automatic disconnection.
- Insulation monitoring system.
- Automatic disconnection system in case of LV / MV transformer overheat.
- Emergency disconnection button, accessible from outside.
- DGPT2 relay included in the transformer.
- MV protection with fuses or circuit breaker.

STANDARD EQUIPMENT

- Fully equipped auxiliary services panel.
- Internal and emergency lighting systems.
- LV / MV transformer with reduced power losses.
- Fire detection system with automatic disconnection (both DC and AC sides).
- Safety interlocks for MV transformer compartment door on the cabling box.
- Fire safety kit.
- Medium Voltage safety kit.
- First aid kit and safety signals.

OPTIONAL EQUIPMENT

In addition to the standard equipment, the INGECON® SUN PowerStation can be supplied with the following options:

- LV / LV transformer for the power supply to the auxiliary services panel.
- LV / MV transformer with reduced power losses according to EU 548/2014.
- UPS for auxiliary services.
- INGECON® SUN StringControl 16 / 24 / 32 channels intelligent or passive string combiner boxes.
- Meteo station.
- High-speed Ethernet / Fiber Optic communication infrastructure for Plug & Play connection to PV Plant Controller and SCADA systems.
- INGECON® SUN SCADA supervision, control and data acquisition system.
- INGECON® SUN EMS Plant Controller compliant with the most widely international Grid Codes.
- Gateway for monitoring and control of the PV Plant by the Grid Operator using standard protocols (like IEC 61850, IEC 60870-5-101/104, DNP 3.0, etc.).
- HV surge arresters.
- Anti-rodent system.
- Human intrusion detection system.
- External lighting system.
- Oil retention tank (separately supplied).
- Energy meter for auxiliary services and/or energy production.
- Reactive power regulation with no PV array power.

Solution up to 3600 kVA (2 PV inverters)



Anti-corrosion treatment for maximum durability

Air intake sand-trap grids

MV transformer compartment with protective metal grids

Easily adaptable to different ground surfaces

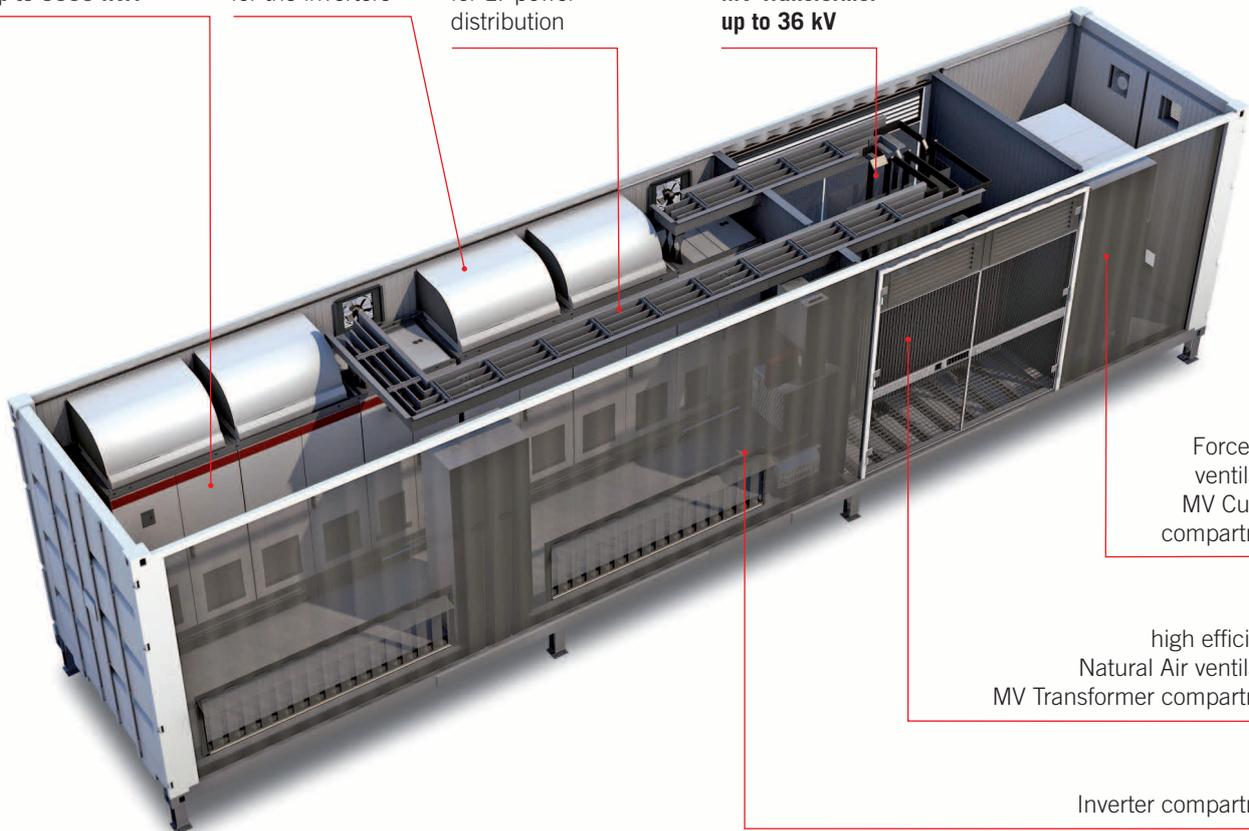
Ease of maintenance

INGECON® SUN
PowerMax inverters
up to 3600 kVA

High efficiency air
extraction plenums
for the inverters

Solid aluminium and
flexible copper busbars
for LV power
distribution

Oil immersed
hermetically sealed
MV Transformer
up to 36 kV



IP55
Forced Air
ventilation
MV Cubicle
compartment

IP21
high efficiency
Natural Air ventilation
MV Transformer compartment

IP54
Inverter compartment

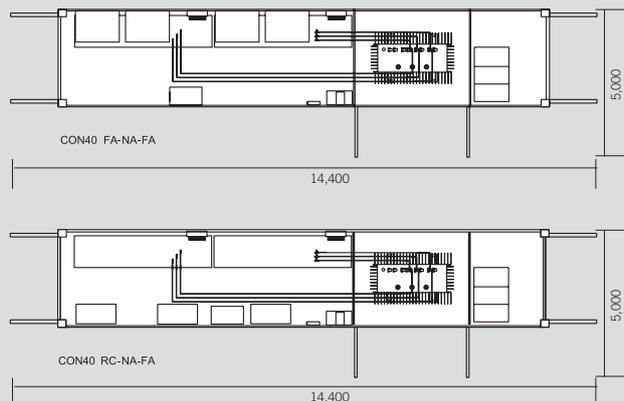
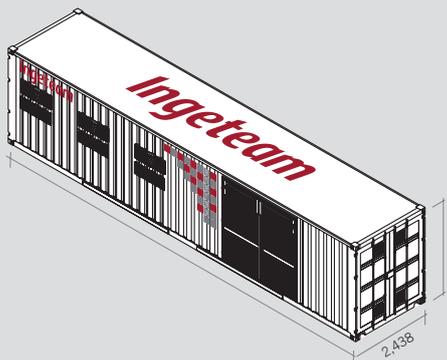
* Illustrative image. It might not correspond with the basic configuration.

	CON 40 FA / xx / FA	CON 40 AC / xx / FA	CON 40 RC / xx / FA
General Information			
Inverter Compartment ⁽¹⁾	Cooling system	Forced air ventilation	Air conditioning with Free Cooling function / Recirculation air conditioning
	Air extraction / Air intake	Overpressure Dampers with anti-rain covers / Filtered sand trap grids	Overpressure Dampers / Filtered grids with anti-rain covers
	Max. power consumption	420 W	5,400 / 18,000 W ⁽²⁾ / 18,000 W
	Protection degree	IP54	IP54 / IP65
	Max. power @ 1,000 Vdc		2,550 kVA @ 35 °C / 2,346 kVA @ 50 °C
	Max. power @ 1,500 Vdc		3,586 kVA @ 30 °C / 3,226 kVA @ 50 °C
LV / MV Transformer compartment CON 40 FA or AC or RC/FA/FA	Cooling system	Forced air with temperature control	
	Air extraction / Air intake	Overpressure dampers with anti-rain covers / Filtered sand trap grids	
	Max. power consumption	2,720 W	
	Protection degree	IP54	
LV / MV Transformer compartment ⁽³⁾ CON 40 FA or AC or RC/NA/FA	Cooling system	Natural air ventilation	
	Air extraction / Air intake	Protective metal grids	
	Max. power consumption	0 W	
	Protection degree	IP21	
MV Cubicle compartment	Cooling system	Forced air with temperature control	
	Air extraction / Air intake	Filtered anti-rain grids	
	Max. power consumption	65 W	
	Protection degree	IP55	
Operating temperature range ⁽⁵⁾	from -20 °C to +55 °C ⁽⁴⁾	from -20 °C to +55 °C	from -20 °C to +60 °C
Relative humidity (non-condensing)	0-100%		
Installation altitude ⁽⁶⁾	3,000 m above sea level		
Equipment			
Inverter version	B series		
BT-AUX switchgear	Standard version (Full version and high-speed communication infrastructure optional)		
LV / MV Transformer	Dry type cast resin or Oil immersed hermetically sealed		
MV Switchgear	0L1P, 1L1P or 2L1P cells with either fuses or circuit breaker protection		
Mechanical Information			
Structure Material	Steel		
Insulation	Sandwich panels containing a 50 mm rigid fire-proof polyurethane foam filling		

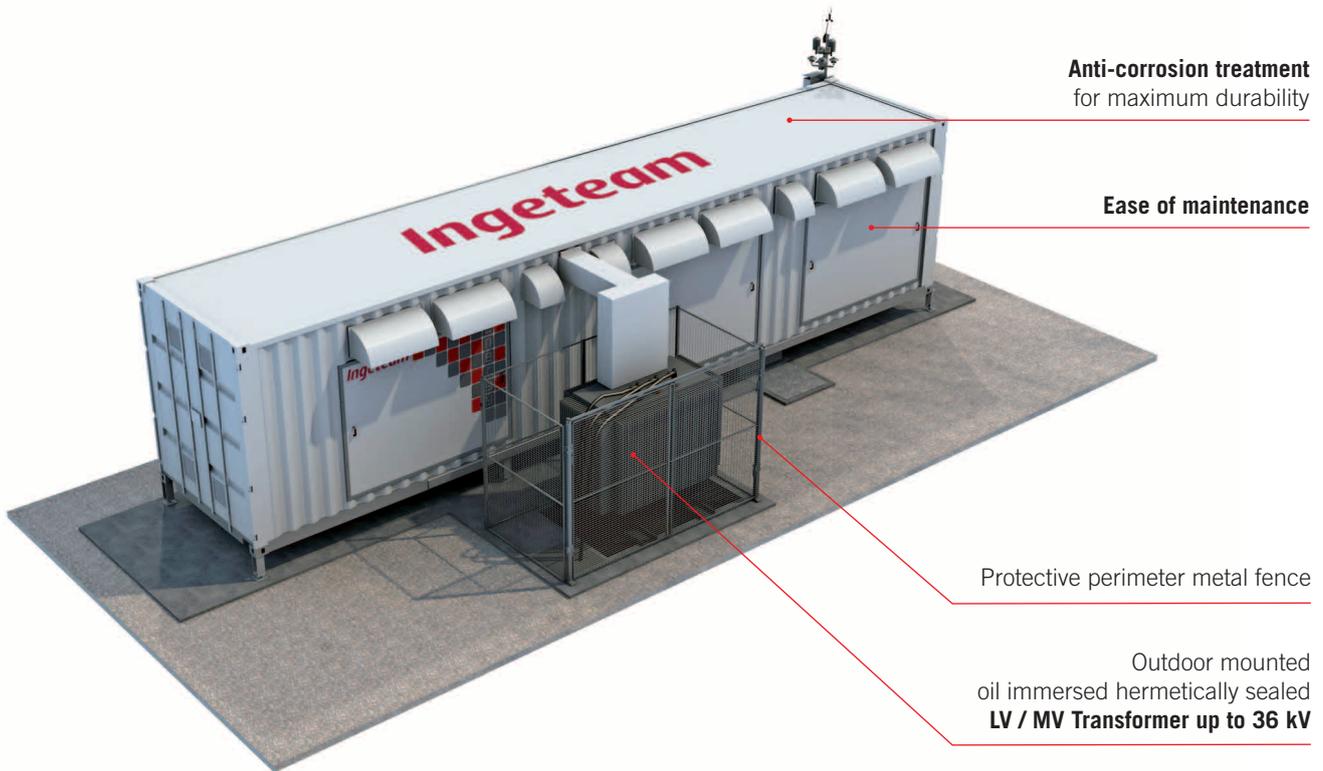
Notes: ⁽¹⁾ Including inverters, instrumentation, auxiliary services switchgear, monitoring systems ⁽²⁾ Pure Free Cooling function / Cooling function ⁽³⁾ Equipped with oil immersed hermetically sealed LV / MV transformers ⁽⁴⁾ For INGECON® SUN PowerMax, "M" and "X" series: rated output power indicated in the Technical Characteristics tables is guaranteed up to 45 °C operating temperature. Derating above 45 °C of 1.8% for each °C of increase until 60 °C operating temperature ⁽⁵⁾ For INGECON® SUN PowerMax, "B" series: rated output power indicated in the Technical Characteristics tables is guaranteed up to 50 °C operating temperature. Derating above 50 °C of 1.8% for each °C of increase until 60 °C operating temperature ⁽⁶⁾ -30 °C with optional kit ⁽⁶⁾ Please contact Ingeteam for altitudes higher than 1,000 m.

Size (mm)	Length	Width	Height
Body dimensions	12,192	2,438	2,896
Overall dimensions with all doors open	14,400	3,700	2,896
Foundation dimensions	14,142	5,000	300

CON 40



Solution up to 5400 kVA (3 PV inverters)



INGECON® SUN
PowerMax inverters
up to 5400 kVA

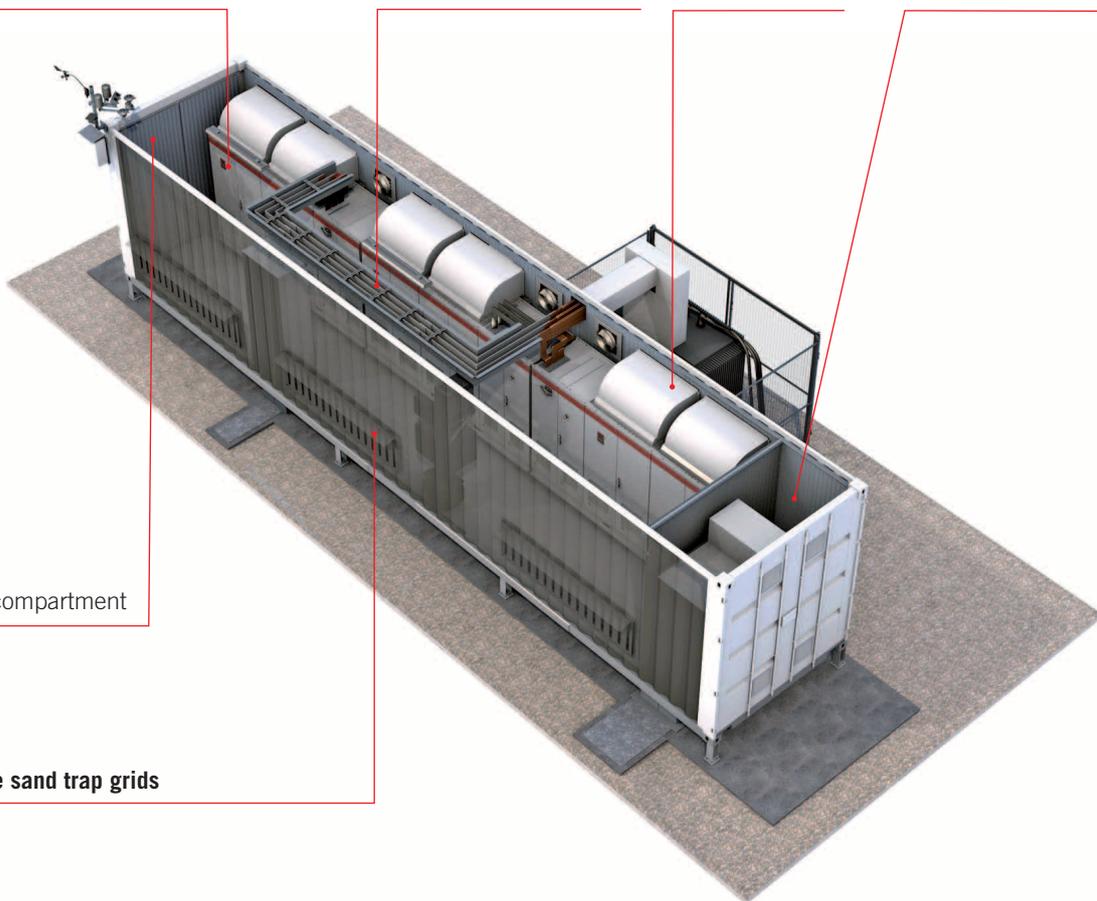
Solid aluminium and
flexible copper busbars for
LV power distribution

**High efficiency air
extraction plenums**
for the inverters

IP55
Forced Air ventilation
MV Cubicle compartment

IP54
Inverter compartment

Air intake sand trap grids



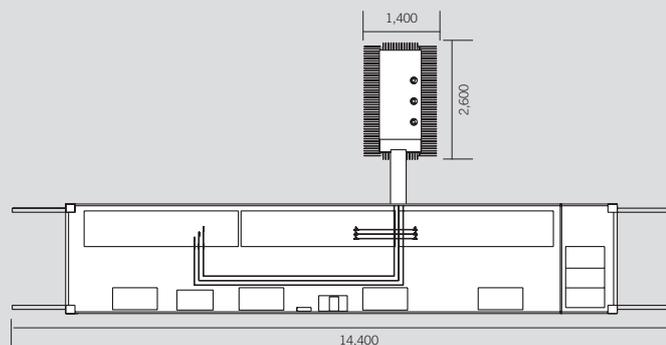
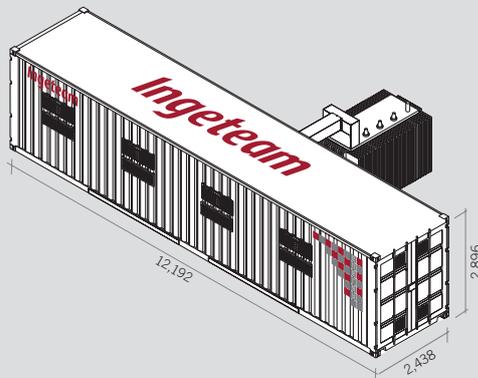
* Illustrative image. It might not correspond with the basic configuration.

		CON 40 FA / OD / FA	CON 40 AC / OD / FA	CON 40 RC / OD / FA
General Information				
Inverter Compartment ⁽¹⁾	Cooling system	Forced air ventilation	Air conditioning with Free Cooling function	Recirculation air conditioning
	Air extraction / Air intake	Overpressure dampers with anti-rain covers / Filtered sand trap grids	Overpressure Dampers / Filtered grids with anti-rain covers	Overpressure Dampers / Standard grids with anti-rain covers
	Max. power consumption	630 W	7,200 / 24,000 W ⁽²⁾	24,000 W
	Protection degree	IP54	IP54	IP65
	Max. power @ 1,000 Vdc	3,825 kVA @ 35 °C 3,519 kVA @ 50 °C		
	Max. power @ 1,500 Vdc	5,379 kVA @ 30 °C 4,839 kVA @ 50 °C		
MV Cubicle compartment	Cooling system	Forced air with temperature control		
	Air extraction / Air intake	Filtered anti-rain grids		
	Max. power consumption	65 W		
	Protection degree	IP55		
LV / MV Transformer	Mounting type	Outdoor mounting with protective perimeter metal fence		
	Cooling system	Natural air ventilation		
Operating temperature range ⁽³⁾		from -20 °C to +55 °C ⁽³⁾	from -20 °C to +55 °C	from -20 °C to +60 °C
Relative humidity (non-condensing)		0-100%		
Installation altitude ⁽⁴⁾		3,000 m above sea level		
Equipment				
Inverter version		B series		
BT-AUX switchgear		Standard version (Full version and high-speed communication infrastructure optional)		
LV / MV Transformer		Oil immersed hermetically sealed		
MV Switchgear		0L1A, 1L1A or 2L1A cells with circuit breaker protection		
Mechanical Information				
Structure Material		Steel		
Insulation		Sandwich panels containing a 50 mm rigid fire-proof polyurethane foam filling		

Notes: ⁽¹⁾ Including inverters, instrumentation, auxiliary services switchgear, monitoring systems ⁽²⁾ Pure Free Cooling function / Cooling function ⁽³⁾ -30 °C with optional kit ⁽⁴⁾ Please contact Ingeteam for altitudes higher than 1,000 m.

Size (mm)	Length	Width	Height
CON 40 dimensions	12,192	2,438	2,896
CON 40 overall dimensions with doors open	14,400	3,700	2,896
LV / MV transformer indicative dimensions	2,600	1,400	2,700
Foundation dimensions	14,142	7,500	300

CON 40





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