

BESS**Komerční bateriové řešení
od GBC Solino**

Battery Energy Storage Systems



High-capacity custom battery storage built on time-tested, fully compatible technology

What we do, who we do it for, what we want to achieve

GBC Solino, as a professional wholesaler of photovoltaic products, is also a Czech manufacturer of complete modular battery storage systems, from small storage systems in units of kWh to large, container storage systems up to 0.5 MWh.

The above limitation is only for the year 2023; for the following years, storage systems with larger capacities and higher outputs are planned.

Assistive technologies are primarily built on **SolaX** technology.

We are currently preparing the technical documentation for a prototype container storage system that will be located on the GBC Solino premises, with a size of 20ft, a capacity of 232 kWh and a power output of 75 kW (5x15 hybrid) + 30 kW (2x15 grid). This storage system will primarily serve as a testing/experiment centre for GBC Solino technicians and as a show-room for our customers.

Dozens of these complete high-capacity battery storage systems are planned for 2024 for customers in the Czech Republic.

WHY: to increase energy self-sufficiency and energy independence - to help reduce the general dependence on coal/gas energy

HOW: by development and production of modular energy products

WHAT: complete battery solutions ranging from small 46.4kWh modules to high-capacity BESS (Battery Energy Storage System) container storage systems up to 0.9 MWh

Our plans:

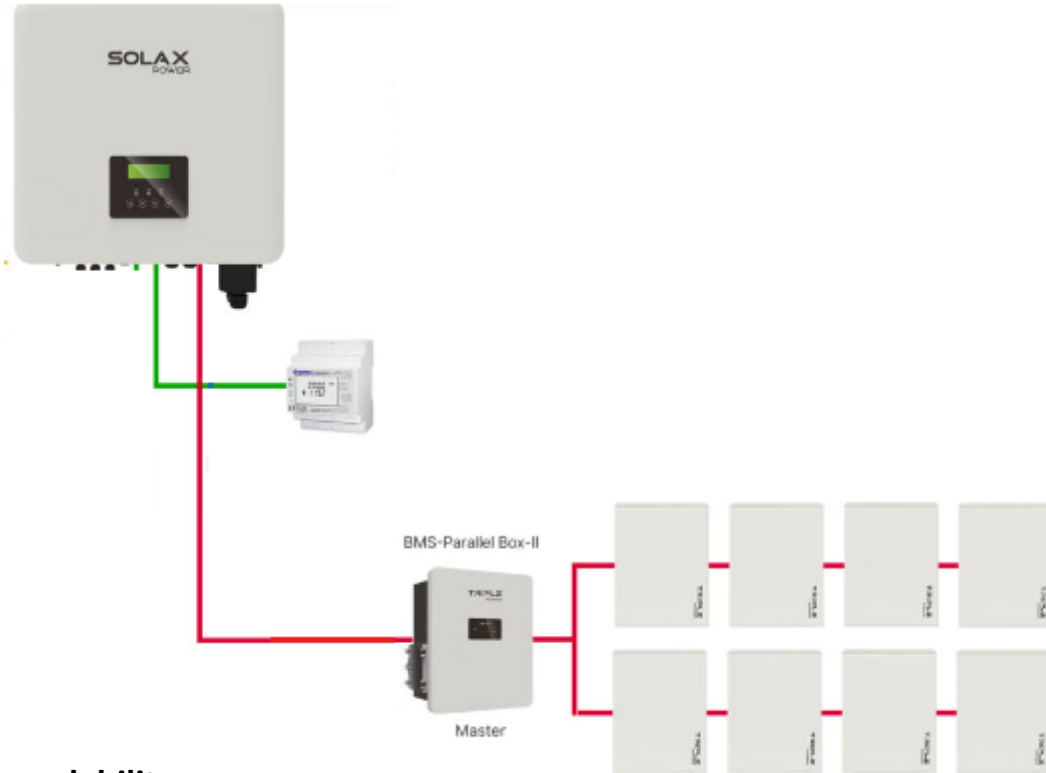
By the end of 2024, more than 10 realizations + preparation of others

Aimed at:

- small and medium-sized businesses, apartment buildings, municipal communities or as an assistive technology for power plants

Modular battery storage system – 46 kWh module / 15 kW AC / 18 kW D

- indoor use
- outdoor use (a container)



Easy scalability
of capacity and performance,
high variability



Variability



4 x 11,5 kWh module / 4 x 8 kW
(46 kWh / 28 kW)



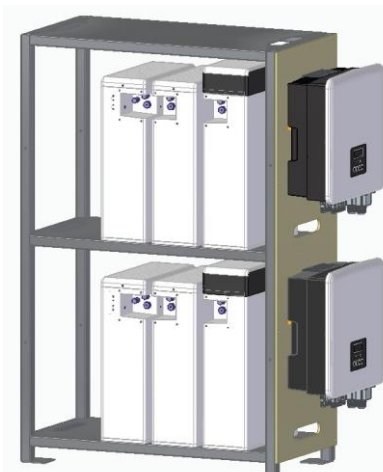
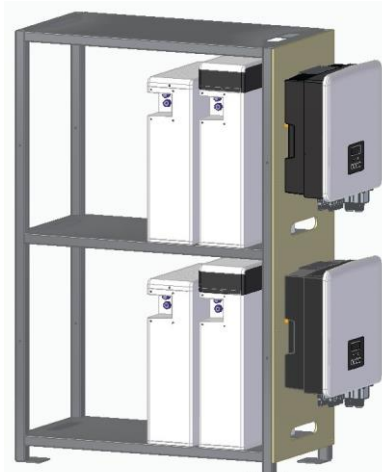
1 x 46 kWh module / 1 x 15 kW
(46 kWh / 14 kW)



2 x 23 kWh module / 2 x 15 kW
(46 kWh / 28 kW)

Easy scalability
of capacity and performance,
high variability

Planned expandability

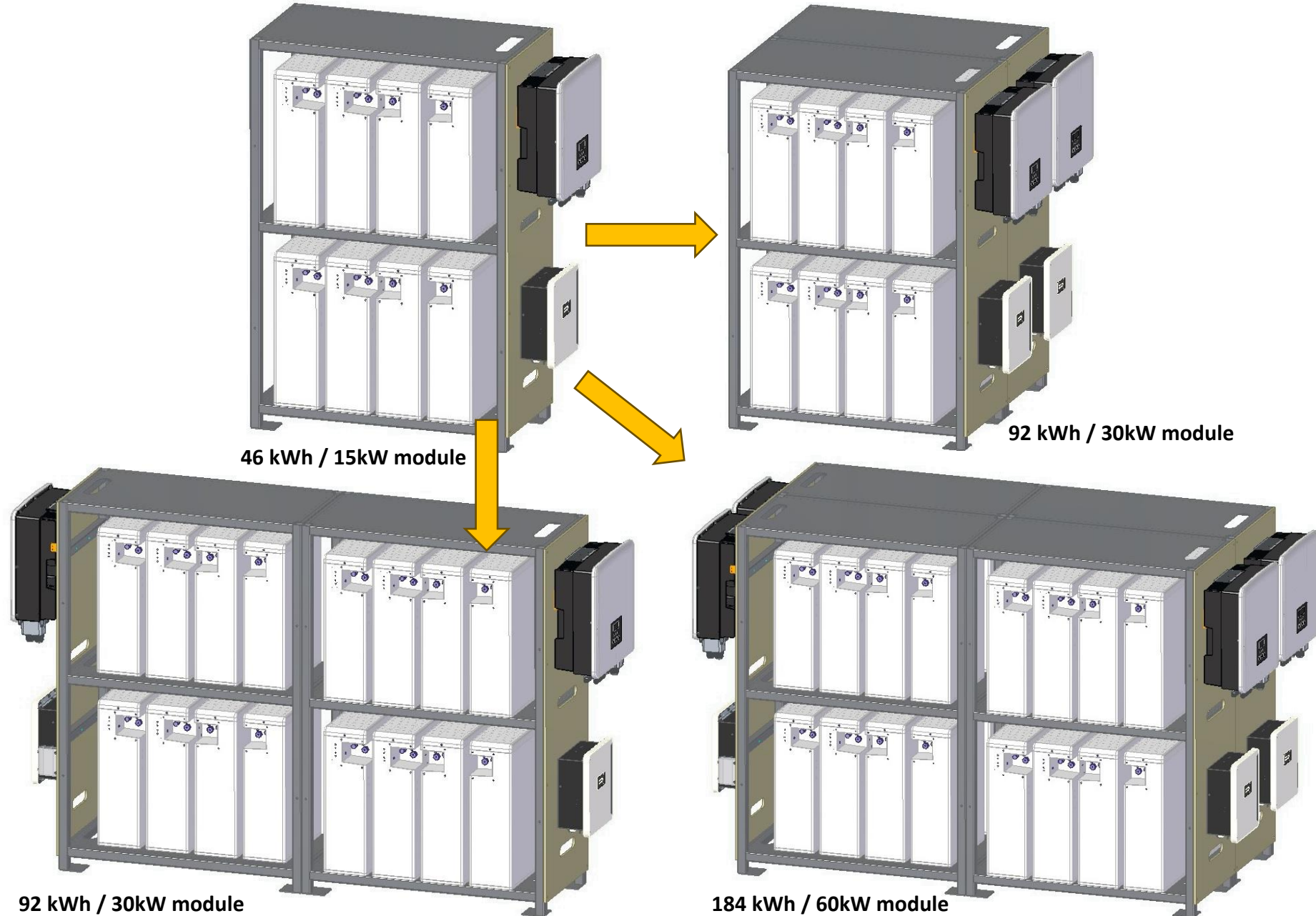


Modularity

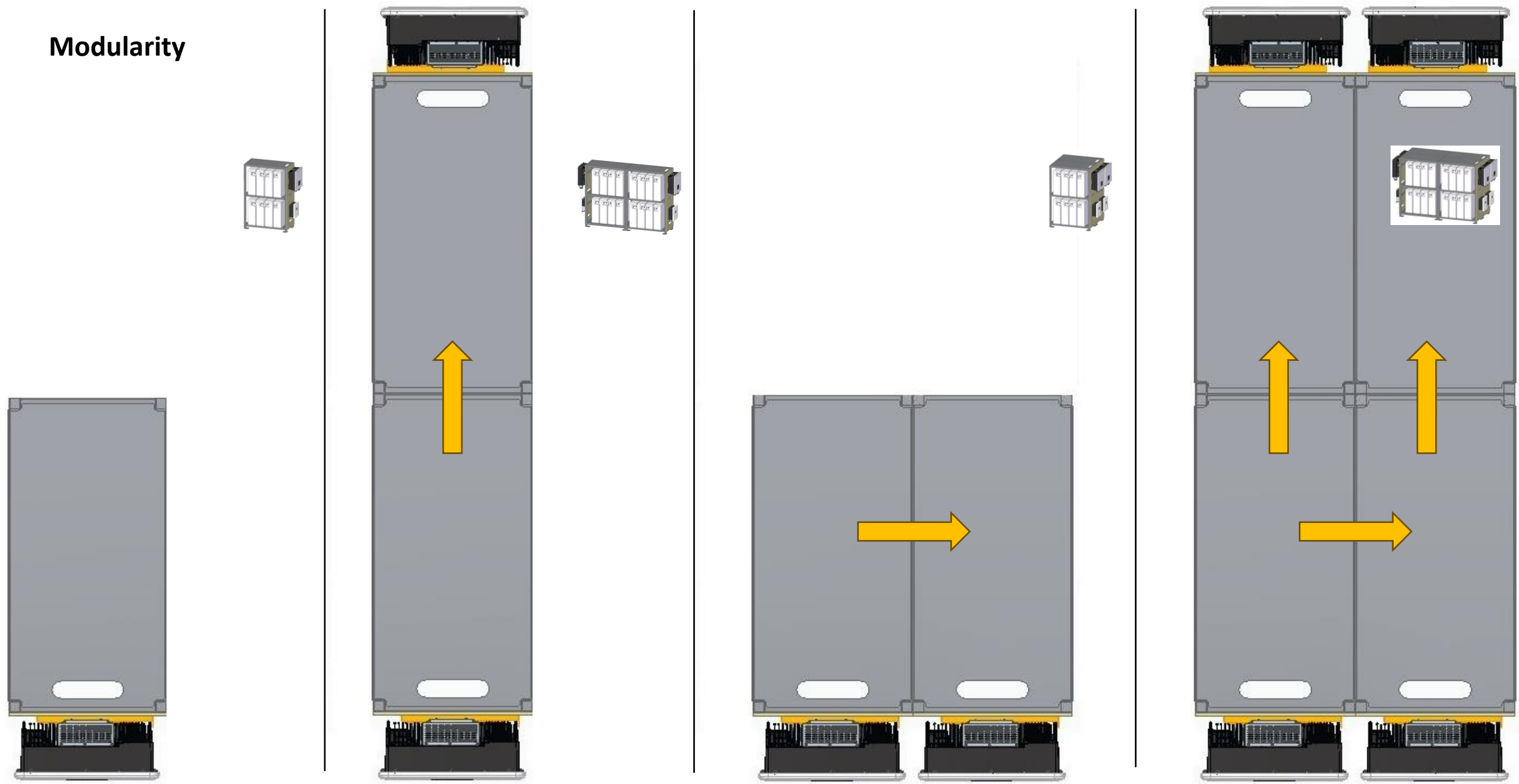


4 X 11,5 kWh module / 4 X 12kW
(46 kWh / 48 kW)

Easy scalability
of capacity and performance,
high variability



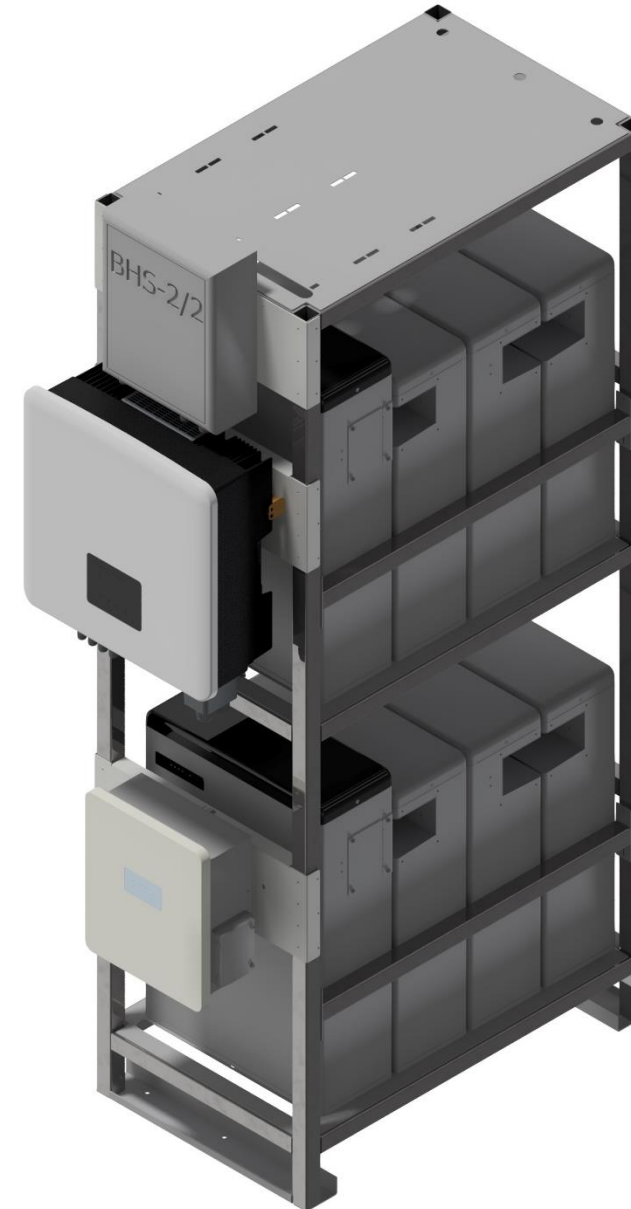
Modularity



G-690-90ca - Rack for 8pcs T58



G-690-91ca - Rack for 8pcs T58 industry– container solution



scalable battery module SOLAX (X3)

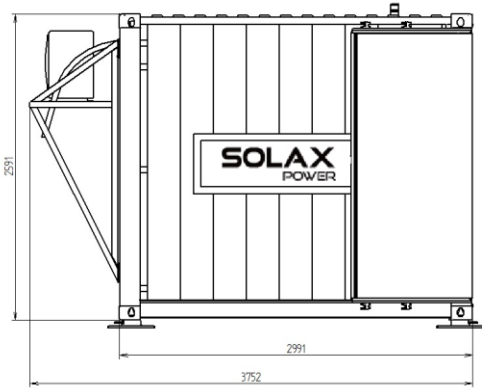
Triple SOLAX 58 (0,5C)			parallel box	invertor [ks]	capacity [kWh]	power max. [kW]	X number of modules [kWh]										module dimension w/h/l [cm]	
in total [pcs]	master [ks]	slaves [ks]					2	3	4	5	6	7	8	9	10			
					5,8	3,5												
2	1	1		1	11,5	7,0	23,0	34,6	46,1	58	69,1	80,6	92,2	103,7	115			111 x 165 x 55
3	1	2		1	17,3	10,5	34,6	51,8	69,1	86	103,7	121,0	138,2	155,5	173			
4	1	3		1	23,0	14,0	46,1	69,1	92,2	115	138,2	161,3	184,3	207,4	230			
4		4	1	1	23,0	14,0	46,1	69,1	92,2	115	138,2	161,3	184,3	207,4	230			
6	2	4		2	34,6	21,0	69,1	103,7	138,2	173	207,4	241,9	276,5	311,0	346			
6		6	1	1	34,6	10,5	69,1	103,7	138,2	173	207,4	241,9	276,5	311,0	346			
8	2	6		2	46,1	28,0	92,2	138,2	184,3	230	276,5	322,6	368,6	414,7	461			
8		8	1	1	46,1	14,0	92,2	138,2	184,3	230	276,5	322,6	368,6	414,7	461			

scalable hybrid inverter SOLAX (X3)

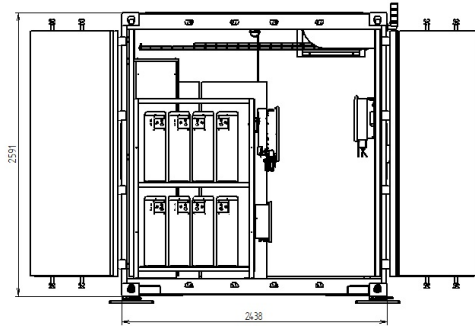
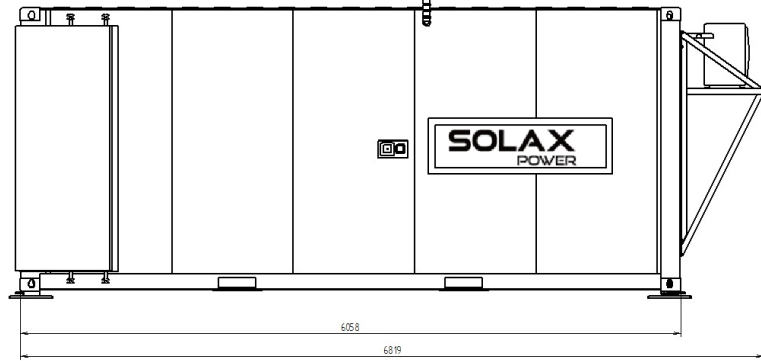
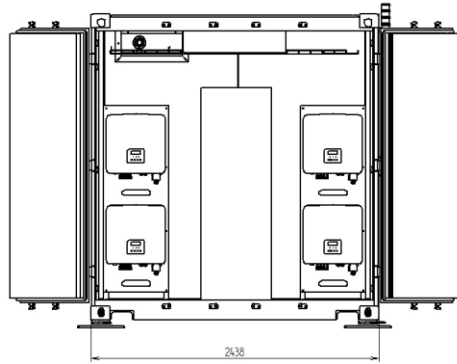
X3 - Hybrid G4	weight [kg]	power AC [kW]	power DC [kW]	X number of inverters [kW] power v AC										invertor dimension w/h/l [cm]
				2	3	4	5	6	7	8	9	10		
				30	10	15	20	30	40	50	60	70	80	90
	12	18	24	36	48	60	72	84	96	108	120			
	15	18	30	45	60	75	90	105	120	135	150			

Container storage systems

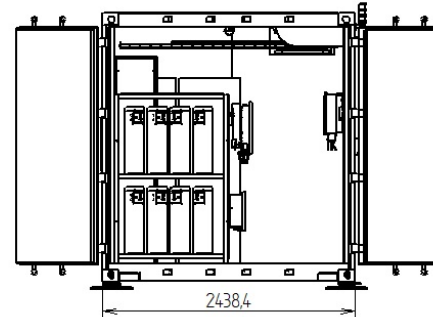
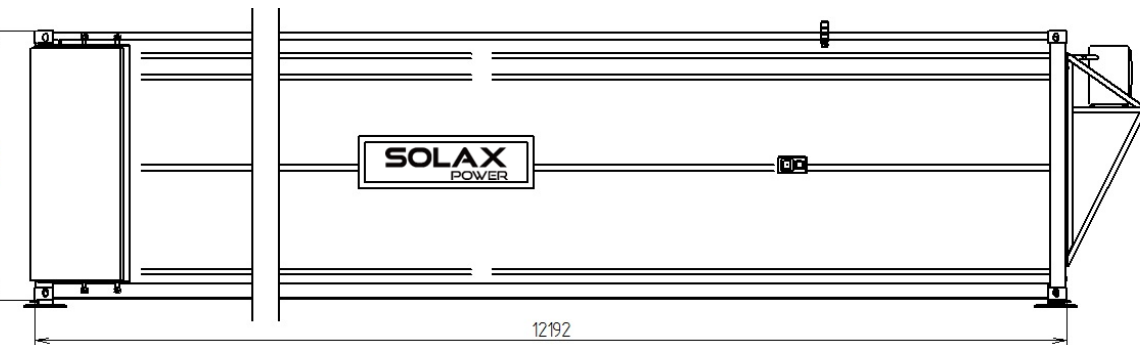
Product lines of different power and capacities in STND ISO container sizes - 10, 20 and 40 feet



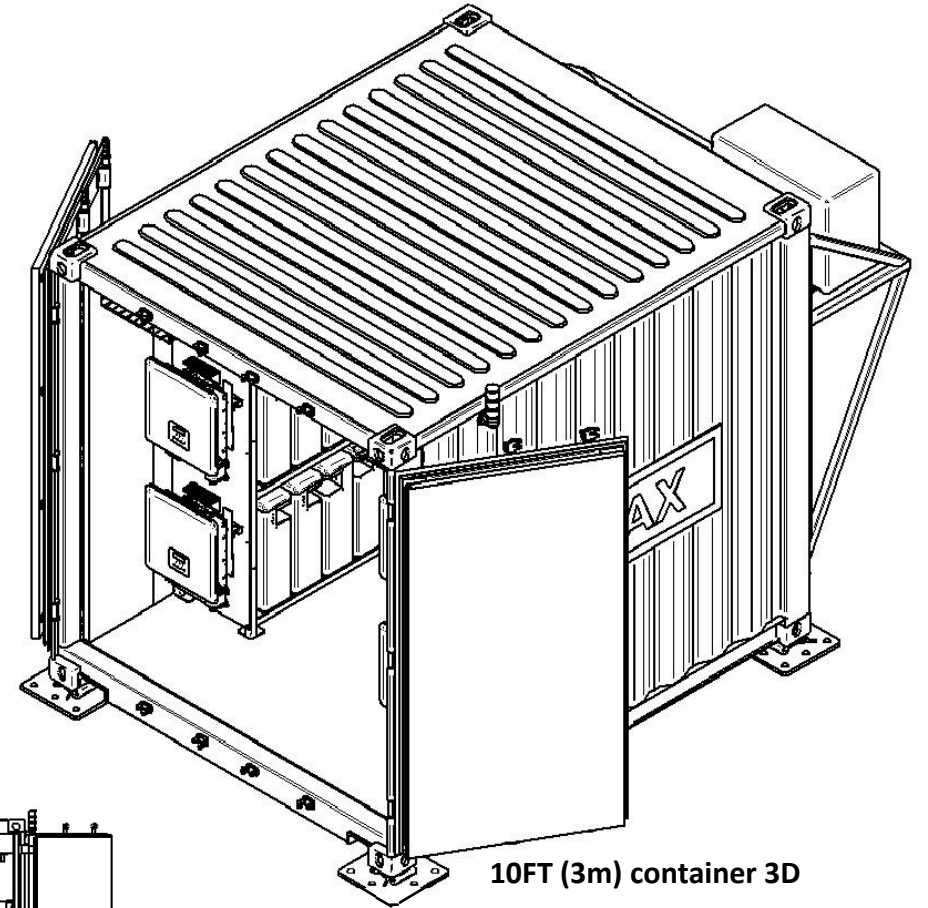
10FT (3m) container



20FT (6m) container

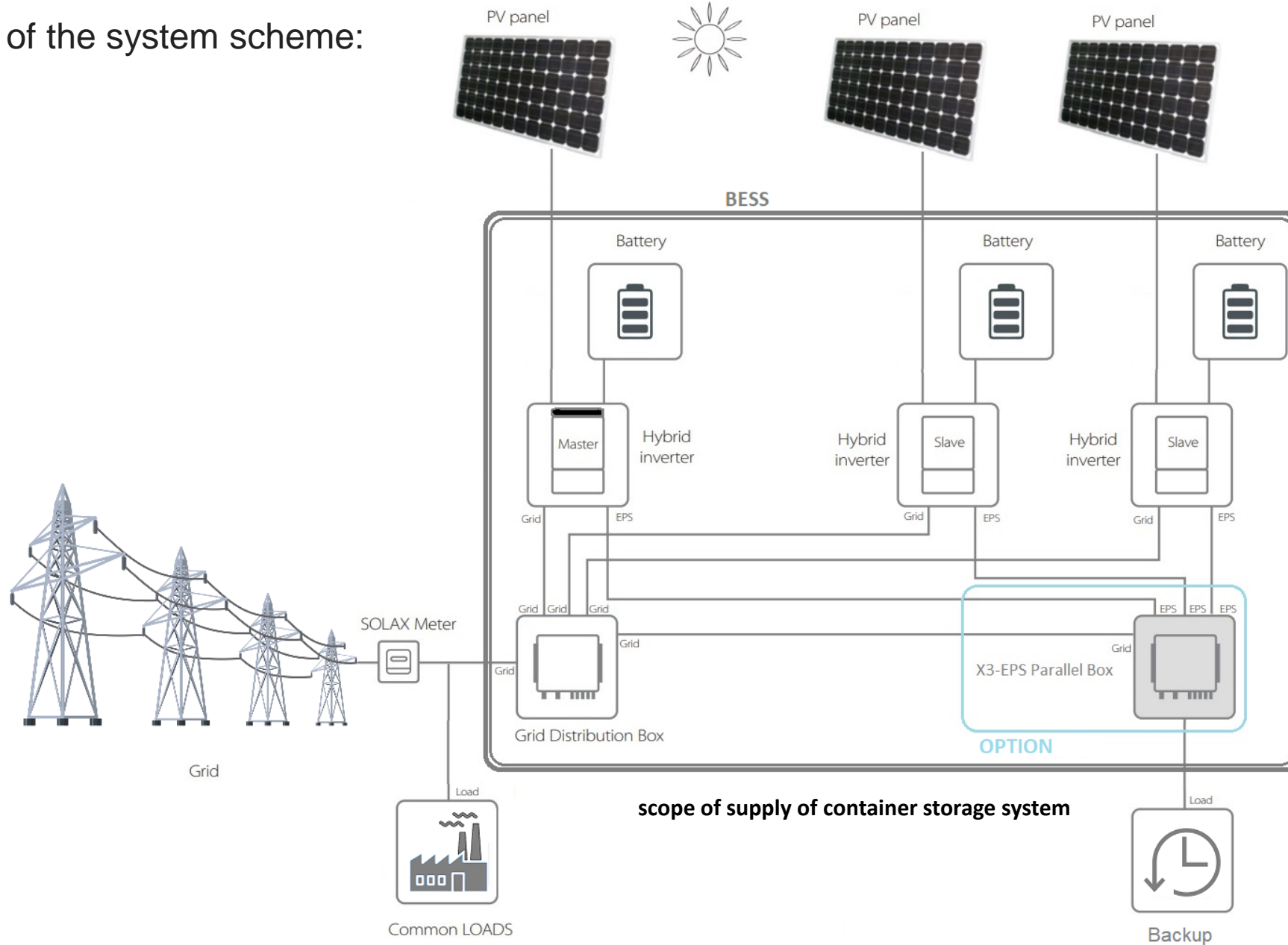


40FT (12m) container



10FT (3m) container 3D

Diagram of the system scheme:



Product lines of different power and capacities in STND ISO container sizes - 10, 20 and 40 feet

Technology container

- is a standard ISO container in sizes 10, 20 or 40 feet.
- custom production, different dimensions according to customer's request.
- resistant to common climatic conditions and designed for outdoor applications up to 2000 m above sea level.
- modules can be used without container cover in indoor applications, technical rooms, etc.
- Each 46 kWh module consists of 8 Solax Triple Power batteries and is connected to a functional system with voltage from 230V to 460V DC. The modules are connected to Solax inverters. The connection and transmission interface is 3x 400V AC.
- The walls, ceiling, floor and entrance door of the container are thermally insulated with reaction to fire class B-s2, d0.
- The main connection point for electricity and other utilities is standardly fed from the rear upper section.
 - The standard part of the technology container is an air-conditioning unit to stabilise the internal temperature between +15 °C and +35 °C.
 - On customer's request, additional monitoring and security can be added (e.g. motion, humidity and smoke sensor, IP camera for remote monitoring, etc.).
 - The outer outline of the standard ISO container is preserved, but the ground clearance is increased by the (removable) outdoor air-conditioning unit once it is in place.
- The technology container is placed on a raised ground or on concrete footings - above the level of the surrounding terrain. Fixing is possible with twistlocks fastened to the concrete base (not included).



CTN 20ft, 185,6 kWh / 75 kW – GBC Solino


Certifikát

o absolvování školení
montáže systémů suché výstavby **fermacell**

podle vyhlášky MV č. 246/2001 Sb. o montáži protipožárních zařízení
ve znění pozdějších předpisů

Firma:  s.r.o.


IČO: 

Jméno: 



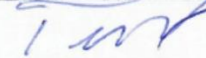


Datum vystavení: 25. 5. 2023 Platnost do: 25. 5. 2026

Číslo certifikátu: B18/23



Střední škola stavebních řemesel Brno-Bosonohy,
příspěvková organizace
Pro Školu 38b
642 00 Brno-Bosonohy
ÚTVAR CELOŽIVOTNÍHO UČENÍ



James Hardie Europe GmbH ^②
organizační složka
Žitavského 496
CZ-156 00 Praha 5 – Zbraslav

 za školící středisko
 za CECH suché výstavby
 za James Hardie Europe GmbH

Product lines of different power and capacities in STND ISO container sizes - 10, 20 and 40 feet

		BESS sizes				
container	battery modules TRIPLE					
dimension size [ft]	capacity/pcs [kWh]	number of cells [ks]	total nominal capacity [kWh]	total weight [kg]	usable capacity (90%) [kWh]	container external dimensions w/h/l [m]
10	5,8	8	46,1	2240	41	2,44/2,59/3,05
		16	92,2	2955	83	
20		24	138,2	4450	124	2,44/2,59/6,06
		32	184,3	5165	166	
		40	230,4	5880	207	
40		48	276,5	8315	249	2,44/2,59/12,19
		56	322,6	9030	290	
		64	368,6	9745	332	
		72	414,7	10460	373	
		80	460,8	11175	415	

WIDE PORTFOLIO = PERFECT COMPATIBILITY

Inverters:

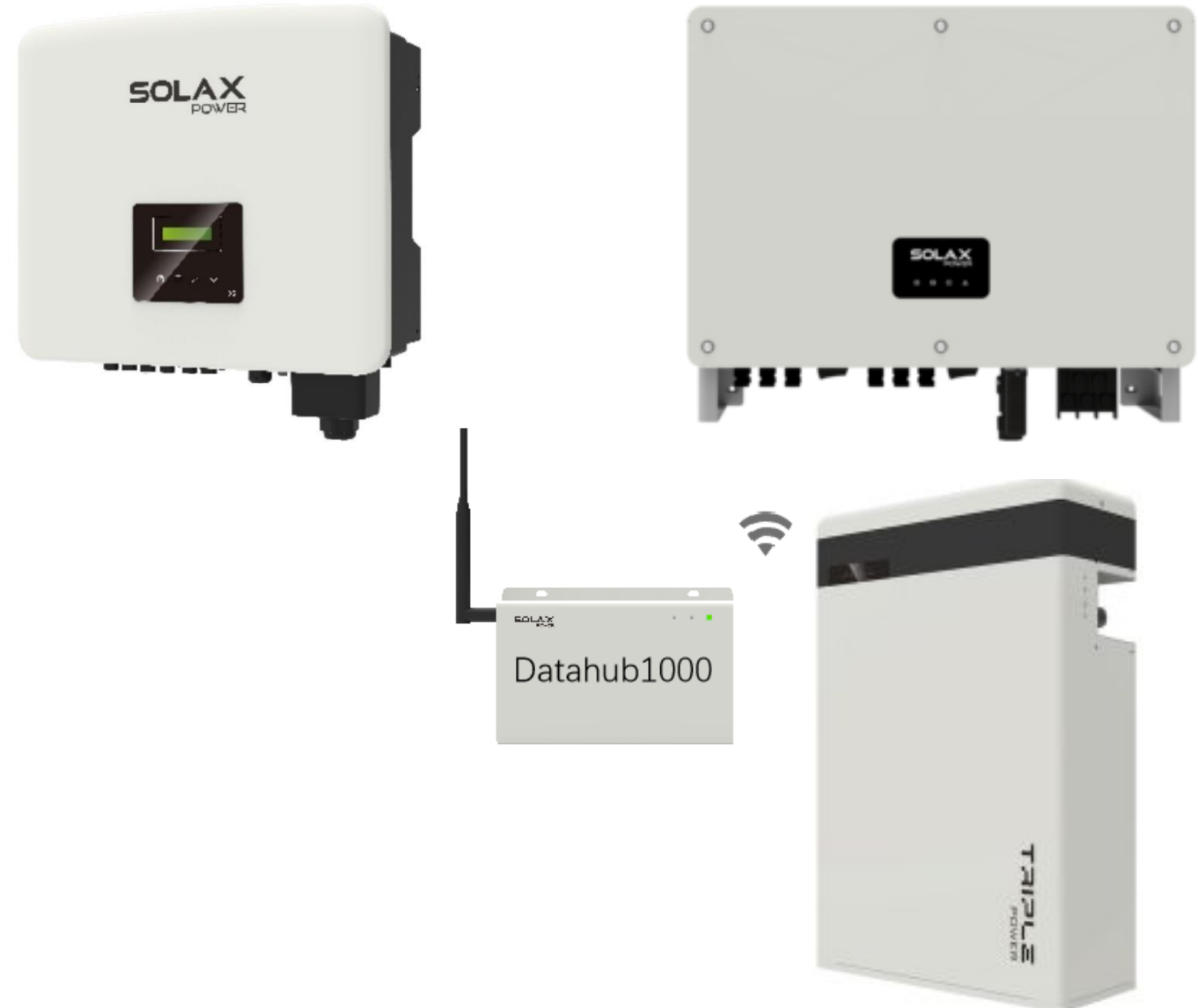
- high quality
- 200% PV oversized and up to 110% AC overload output
- Higher efficiency on charging and discharging, up to 97.5%
- Built-in shadow tracking function
- 150% EPS output, 10s
- Switchover time <10ms (max. 3pcs, 1 master + 2 slaves)
- Quick configuration with U-disk
- Lithium-ion & Lead-acid battery compatible
- CT compatible, loads respond within 0.3s
- Intelligent loads management (e.g., Heat pump)
- On & O-grid parallel function, up to 150kW
- 5 work modes, 2 charging periods available
- VPP ready, ancillary service in power market
- Three-phase unbalanced output Maximum 5kW output power on single phase at most

Battery:

- safe chemistry LiFePO4
- long manufacturer's warranty 10 let
- long life min. 6000 cycles
- low own consumption = low costs

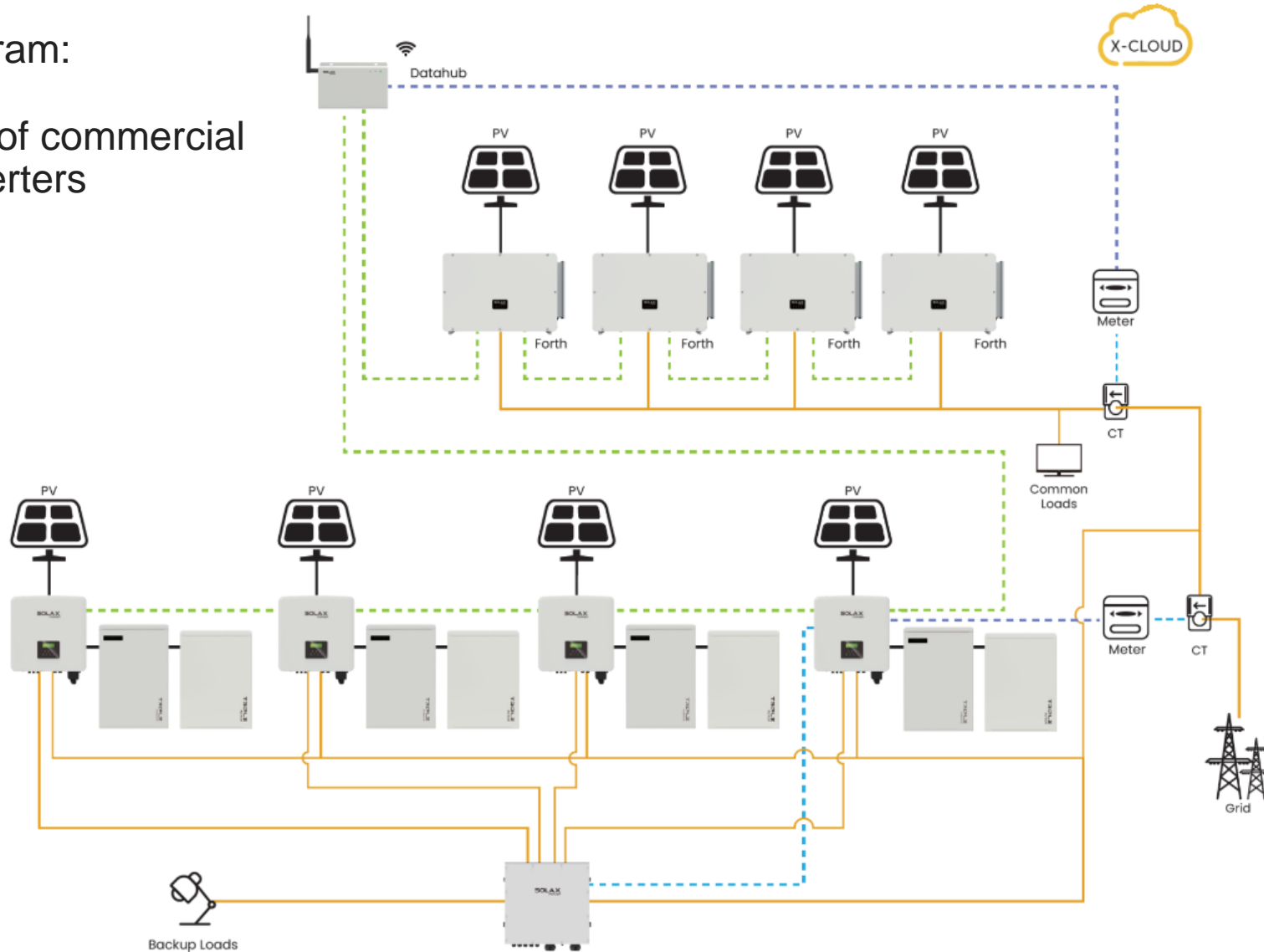
Data HUB

- the central brain of the system, intelligent monitoring

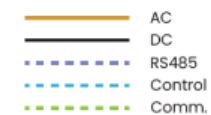


DataHUB diagram:

a combination of commercial and hybrid inverters



- Available for third-party devices (e.g. meteorological station, smart plug)
- Available for a large number of inverters parallel
- Control string inverters and hybrid inverters simultaneously



High quality inverters, suppliers of world brand components:

KEY COMPONENTS

SOLAX POWER

Diode				Electrolytic capacitors
IGBT				
Optocoupler				FAN
Operational Amplifier				Current sensor
CPU				Relay
				RCD
				Thin-film capacitor

Basic functionality:

PEAK SHAVING

Shaving peaks in production and consumption.

Whenever additional machines are turned on during production that require high power for a short period of time, it will also be reflected in the electricity bill. Battery storage provides additional energy thus covering short-term peaks in consumption. You can then reduce the power capacity that you have reserved with your energy provider and save money:

- Reduction of reserved power capacity
- More self-sufficiency
- Reduction of penalties for exceeding consumption limits

Suitable for industrial companies, especially manufacturing and energy-consuming companies. Direct function of the solax inverter.

TRADING

- Purchase and sale of electricity on wholesale markets. Remote control and internal time setting.

LOAD MANAGEMENT

- Optimal charging power according to the current electricity consumption (between several stations or in the entire building), the possibility of prioritizing the charger (distribution of energy, which charger charges more/less places, the possibility of rotation, e.g. one charges for a while, then the other, etc.)

SELF-USE mode

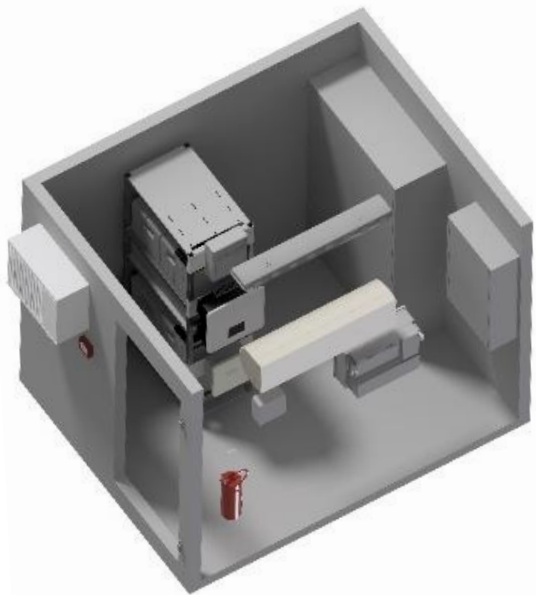
- Priority: load>battery>grid. The best option for a region with low feed-in-tariff but high energy prices. PV energy can be used to supply local load and then charge the battery. If no PV power is available, the energy from the battery can be used for local demand uses and the grid will supply it only when necessary.

BACKUP mode

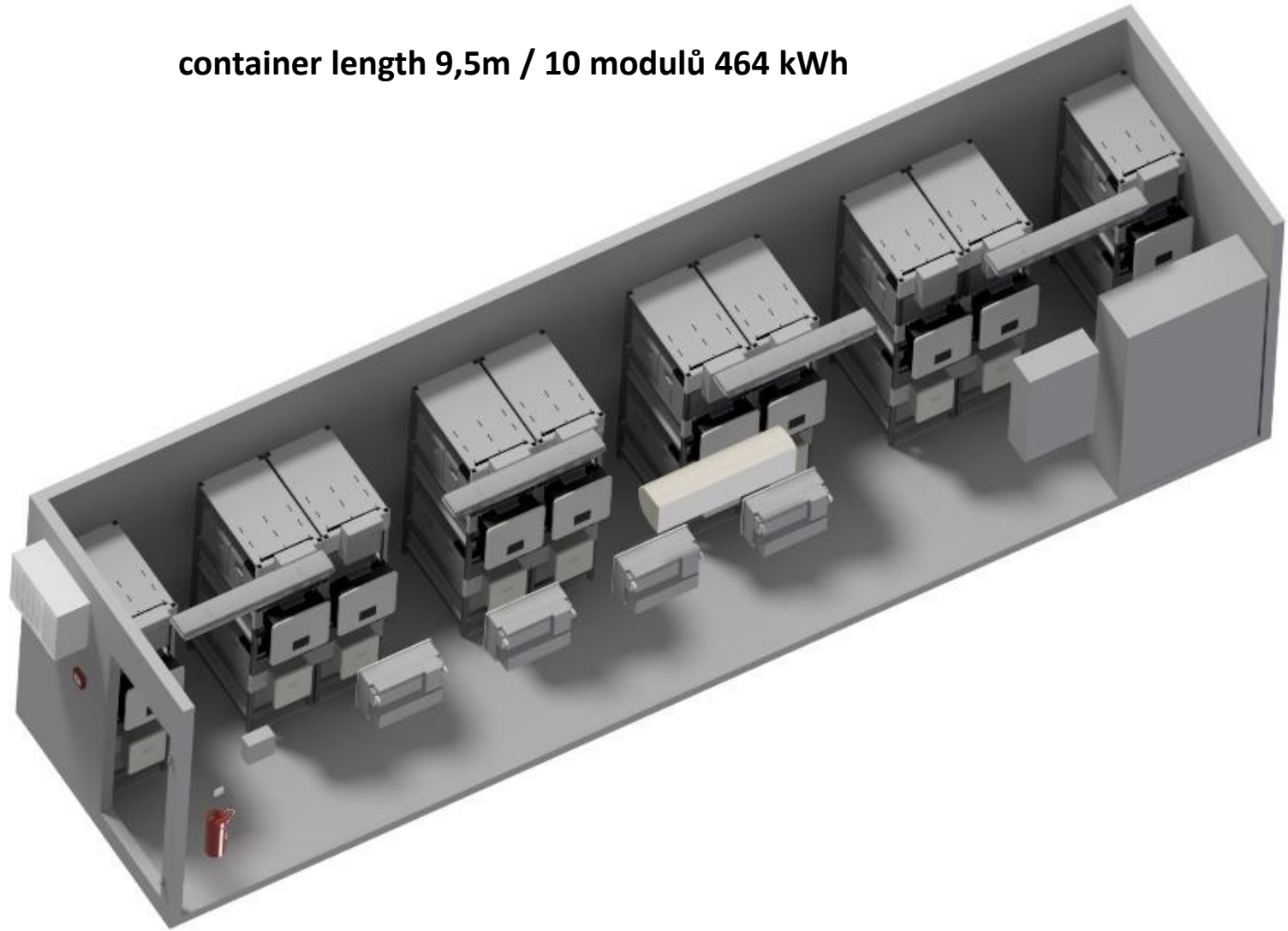
- This mode is used for a region with an unstable electrical power system. The battery will always reserve a certain percentage of its capacity and only discharge it when the grid is off. The battery could be charged by the grid if needed. When the grid is off, the power will be supplied to part of the local grid, which is connected to an Emergency Power Source (EPS) output on the inverter only.

Other functionality options at customer's request

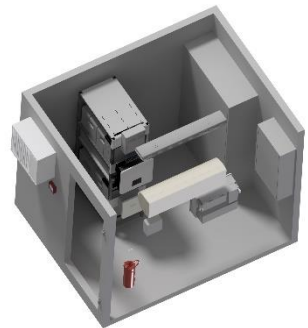
container length 3m / 1 modul 46,4 kWh



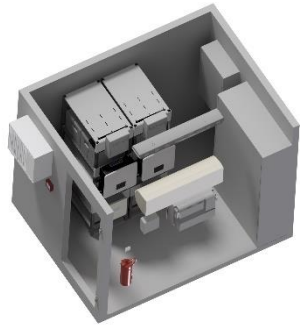
container length 9,5m / 10 modulů 464 kWh



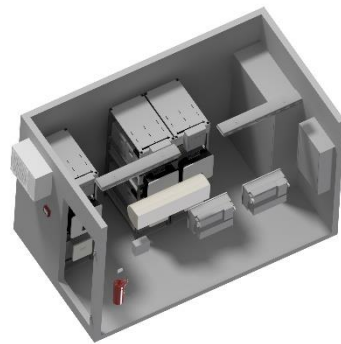
container storage - size variants



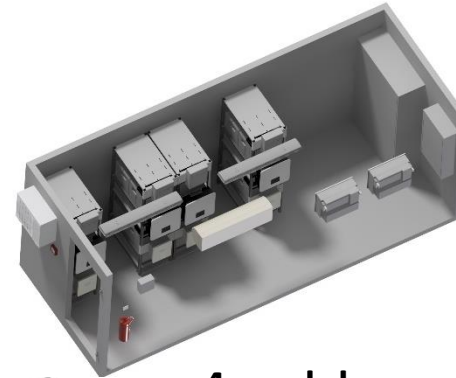
1 modul / 46,4 kWh



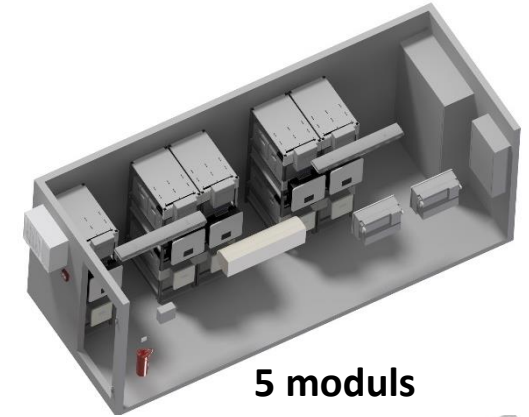
2 moduls



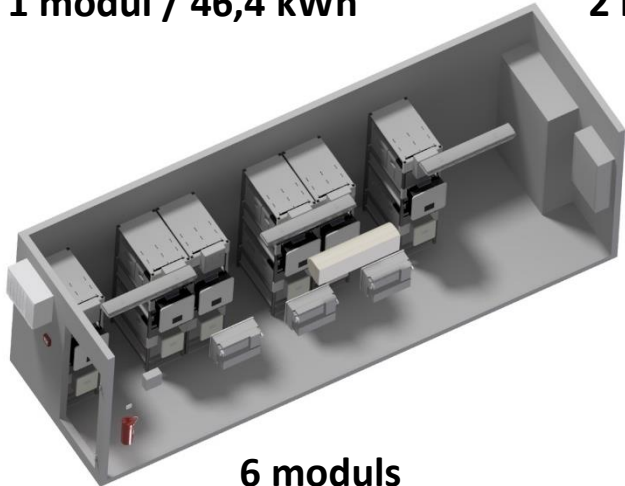
3 moduls



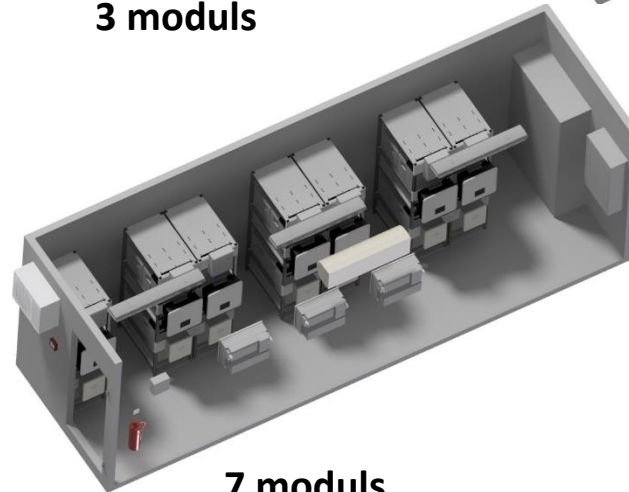
4 moduls



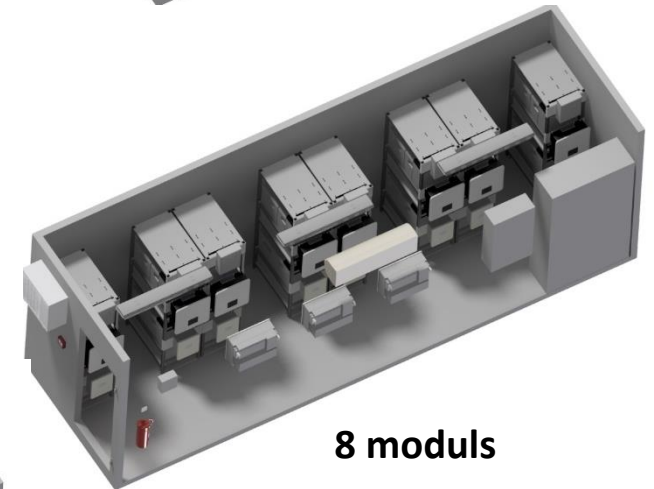
5 moduls



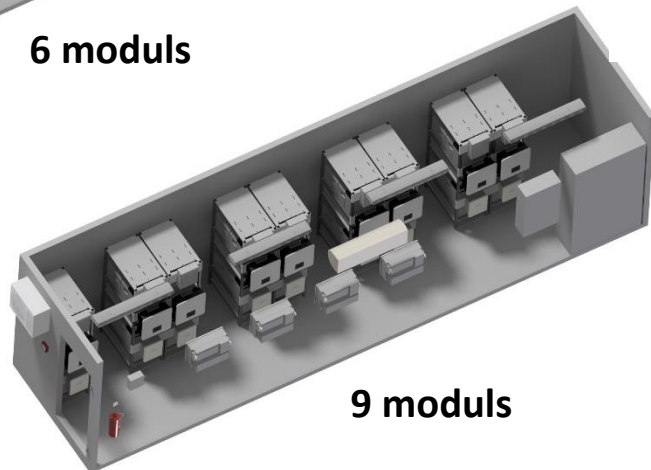
6 moduls



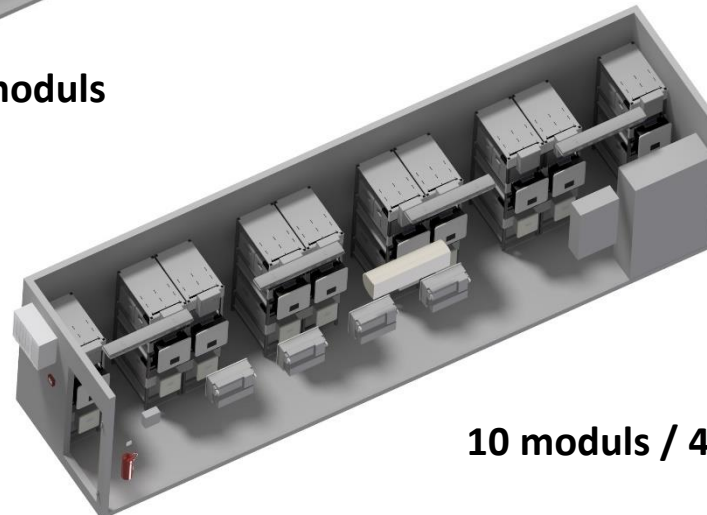
7 moduls



8 moduls



9 moduls



10 moduls / 464 kWh

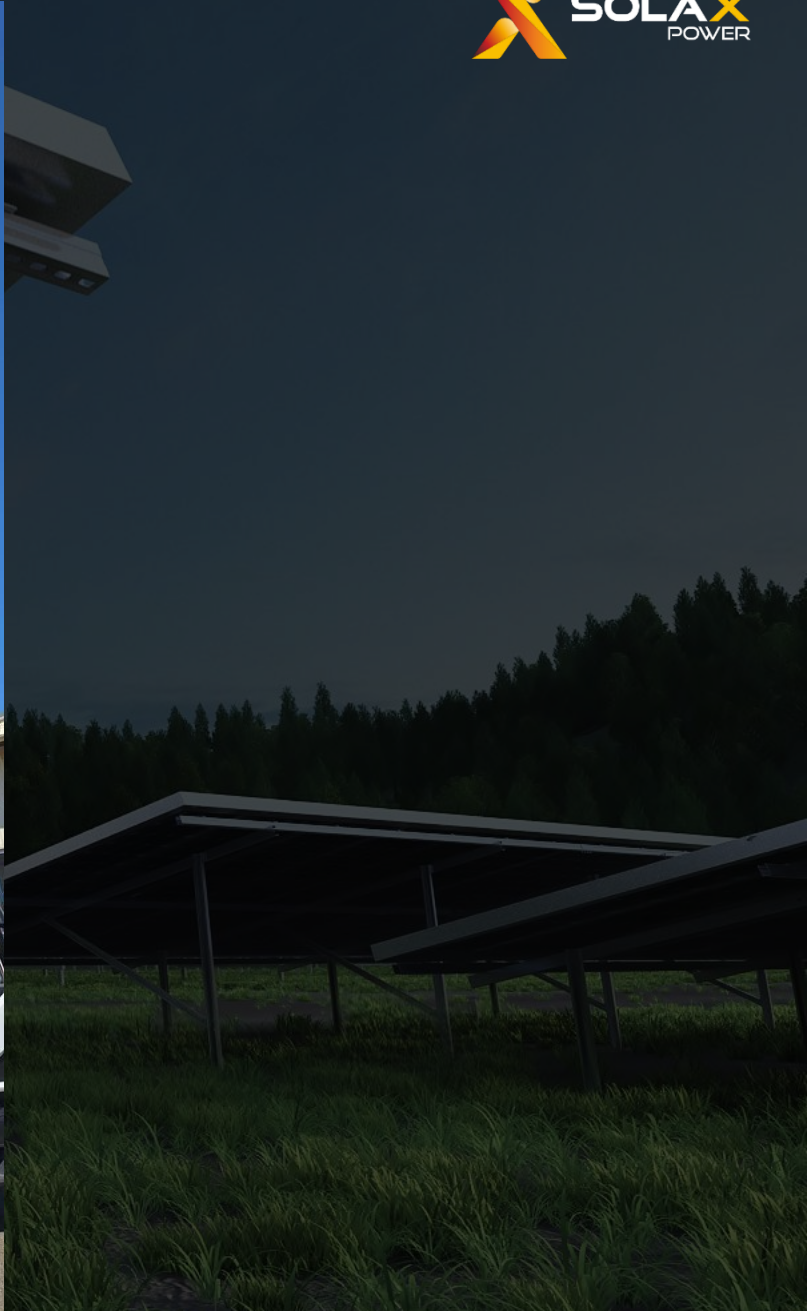
BESS

Komerční bateriové řešení
od GBC Solino

documentation

- technical description - product sheet
- project documentation
- building foundation plan (recommended)
- manufacturer's statement
- FERMACELL system installation authorization certificate

we will deliver to the location



we will deliver to the location





Thank you for your attention



Solino[®]

SPECIALIZED DISTRIBUTION OF PV PRODUCTS

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