

# FREQCON

## Battery Energy Storage System – flexible and powerful

Modular System · Outstanding Flexibility · Most Reliable Quality





## FREQCON Battery Energy Storage System

Economical short and long term Energy Storage Solutions

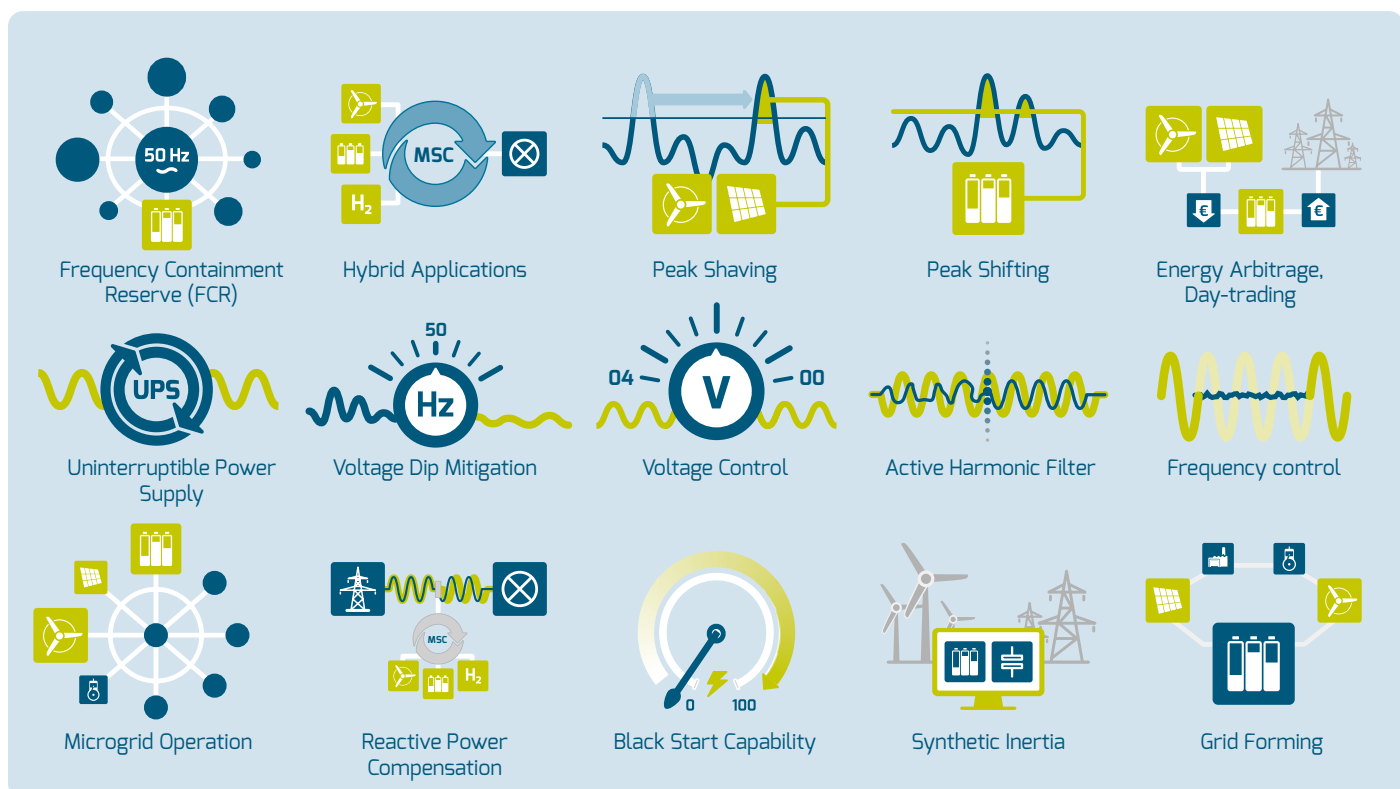
In many respects, battery storage is an important instrument for efficient cost management and a reliable energy supply in commercial and industrial companies. With applications such as Frequency Containment Reserve (FCR), peak shaving and shifting, or arbitrage, energy costs can be saved, while generating additional revenues. In this way, the storage systems offer flexibility and stability for all processes and at the same time, they increase the economic efficiency in companies.

With our FREQCON BESS PRO, we offer a durable and economical turnkey battery storage system based on proven technologies.

In addition to our complete turnkey system, we also offer the integration of the customer's battery storage system into an overall system. Freqcon also offers a project-specific solution for an individual application in the power range from 350 kW to 2 MW, scalable up to 100 MW.

## Our Solutions for your Applications

Our Grid & Storage Solutions allow an efficient and reliable use for various applications:



# FRECON BESS PRO

A compact turnkey container solution

We have developed the FRECON BESS PRO as a compact turnkey container solution. It combines proven power converter technology, designed for a lifespan of 20 years, with reliable battery storage, a robust Battery Management System (BMS) which guarantees long battery lifespan and project-specific Energy Management System (EMS).

You can choose one of our perfectly tuned 2.0 MWh battery energy storage systems BESS PRO 1.0 MW or 1.5 MW. If you need more capacity, combine it with one of our BESS FQ battery containers with 1.5 or 3.0 MWh (see back for more details).

Multi-Source Converter

Battery Cabinets

Additional battery storage:

- **BESS FQ 1.5 MWh installed/ 1350 kWh usable capacity in a 20ft. HC container**
- **BESS FQ 3.0 MWh installed/ 2700 kWh usable capacity in a 40ft. HC Container**

# FREQCON BESS PRO

## Technical Data

		BESS PRO 1.0 MW / 2.0 MWh	BESS PRO 1.5 MW / 2.0 MWh
INVERTER	Inverter type	MSC 1000	MSC 1500
	Nominal AC voltage	620 V	
	Nominal power	1000 kW	1500 kW
	Nominal current	931 A	1397 A
	Maximum AC current	1050 A	1575 A
	AC power frequency	50 / 60 Hz	
	IGBT switching frequency	2 ... 4 kHz	
	Power factor at rated power / adjustable	1 / 0.00 overexcited to 0.03 under excited	
	DC link voltage	1200 VDC	
	Number of DC outputs	4	
	DC current per output	500 A	
	DC voltage range	700 VDC to 1022 VDC	
	Efficiency AC to DC (max.)	98.3 %	
	Efficiency DC to DC (max.)	99.4 %	
Max. THD	< 3 %		
BATTERY STORAGE	Cell	1 C LFP 280 Ah	
	Cell chemistry	LiFePO4	
	Manufacturer	EVE, Hithium or similar	
	Battery cells per module	10	
	Battery modules per cabinet	28	
	Battery capacity per cabinet	250.88 kWh	
	Number of battery cabinets	8	
	BESS capacity (installed)	2007 kWh	
	BESS capacity (usable)	1800 kWh	
	Lifetime-cycles (expected) at 90% DoD   80% EoL   25 °C +/- 5 °C   0.5 C / 0.5 C	≥ 4500	
Charge/discharge rate	0.6 C / 0.6 C	0.8 C / 0.8 C	
Battery Management System	FREQCON BMS		
CONTROL	Main controller	Siemens Simotion P320-4	
	Control software	FREQCON Framework	
	Internal communication	Profinet IRT	
	External communication interfaces	MODBUS TCP (optional: RS485, RS232, Profibus, Profinet, Ethernet)	
	Reaction time	< 150 ms	
GENERAL	Housing	40ft. HC container	
	Protection class	IP54, C3 (C4 and C5 painting upon request)	
	Ambient temperature range	-20 °C to +40 °C	
	Relative humidity	0% to 95%	
	Cooling principle	Inverter: liquid + air cooled / Battery Storage: air cooled	
	Expected Lifetime (rated conditions)	Inverter: 20 years / Battery Storage: 15 years	
	Standards and Certifications	Low Voltage Directive 2014/30/EU EN 62109-1:2010, EN 62109-2:2011, EN IEC 63000:2018; EMV-Directive 2414/30/EU, IEC 61000-6-2:2005, IEC 61000-6-4:2006 + A1:2010; VDE 4110, 4120; DIN EN / IEC 62619:2017	
PROTECTION DEVICES	Fire detection	Inverter: temperature sensors, smoke + arc detectors Battery Storage: temperature sensors, smoke + CO detectors	
	Fire suppression Battery Storage	Condensed aerosol (Stat-X) according to NFPA 2010 and UL 2775	
	DC overvoltage protection	surge arrester, type I	
	AC overvoltage protection	surge arrester, type I	



*More capacity needed?*

We offer additional battery storage for your system:

- **BESS FQ 1.5 MWh installed/ 1350 kWh usable capacity in a 20ft. HC container**
- **BESS FQ 3.0 MWh installed/ 2700 kWh usable capacity in a 40ft. HC Container**



*Any questions?*

**FREQCON GmbH**

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