

FREQCON BESS

Battery Energy Storage Systems



Sustainable and economical
Turnkey Battery Storage Systems

FREQCON BESS

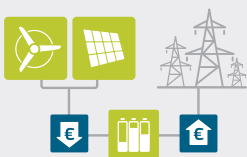
Economical short and long term Energy Storage Solutions Flexible systems for a wide range of applications

In many respects, a battery storage is an important instrument for an efficient cost management and a reliable energy supply in commercial and industrial companies. With applications such as reactive power compensation, peak shaving and shifting, or arbitrage, additional grid charges and energy costs can be saved and even revenues can be generated. 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.

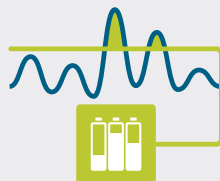
With our FREQCON BESS solutions, we offer durable and economical turnkey battery storage systems based on proven technologies. On the one hand, we supply a complete turnkey system. On the other hand, we also integrate the customers battery storage system into an overall system. In either case, FREQCON supplies a project-specific solution for an individual application in the power range from 175 kW to 2 MW, which is scalable up to 100 MW.

Our solution for your application

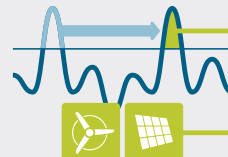
With our innovative Battery Energy Storage Systems based on our proven MSC Hybrid Converter, we ensure wide-ranging applications in all possible industrial sectors.



Arbitrage



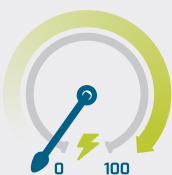
Peak Shaving



Peak Shifting



Uninterruptible
Power Supply



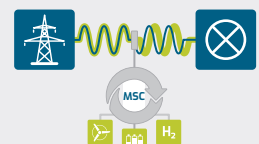
Black Start
Capability



Island Grid
Operation



Static Voltage
Maintenance

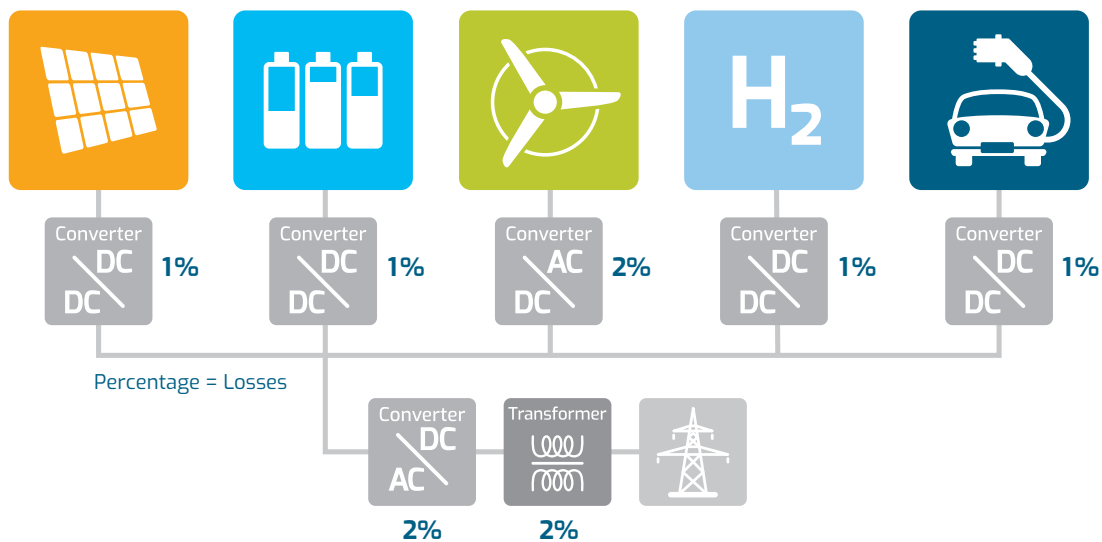


Reactive Power
Compensation

Our multi-talent the MSC Hybrid Converter

With our FREQCON Multi-Source Converter (MSC) due to the hybrid converter concept, it is possible to connect several energy sources such as wind turbines, photovoltaic systems, fuel cells, generators as well as storage systems to a common DC link of the MSC. Our innovative Battery Energy Storage Systems are based on this proven MSC Converter technology, our multi-talent for a wide range of applications.

Hybrid system with DC coupling



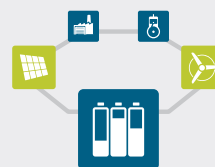
Due to the coupling via the DC link, the installation and investment costs are reduced, while at the same time the overall efficiency of the system is increased and better system integration is realized.



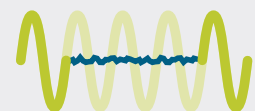
Frequency Control



Primary Control Reserve



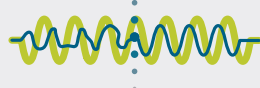
Grid Forming



Voltage Dip Mitigation



Synthetic Inertia



Active Harmonic Filter



Hybrid Applications

FREQCON BESS

Our Battery Energy Storage Systems at a glance



We offer our turnkey Battery Energy Storage solutions in three product lines: **BESS EV**, **BESS FQ** and **BESS Custom**. All of our systems are consisting of proven MSC Hybrid Converters and configurable Battery Systems.



BESS EV – Reuse of automotive batteries

BESS EV is our extremely reliable Energy Storage Solution for energy producers and industrial applications with an eye towards sustainable reuse of automotive batteries from Mercedes-Benz Energy (MBE) and an MBE Battery Management System (BMS) and sophisticated protection elements. The MBE Battery Storage is available in 1.4 MWh or 2.1 MWh in a 40 ft. container and it is combined with our FREQCON Hybrid Converter (0.5 - 3 MW).

Your benefits at a glance

- Highest possible availability due to a redundant system
- Fire safety with closed housing and integrated exhaust air duct
- The Battery Management System monitors and protects all battery modules, shutting down individual modules in the event of a fault
- Performance level D (EN ISO 13849-1)



FREQCON BESS EV
delivered in a 30ft. Container

Overview BESS EV

We combine our MSC Hybrid Converter with the MBE Battery Storage

CONVERTER	CONTAINER CONVERTER	BATTERY STORAGE	CONTAINER BATTERY STORAGE
Converter 0.5 MW	Converter is integrated in Container Battery Storage	1 MWh	40 ft
Converter 0.7 MW			
Converter 1 MW			
Converter 0.5 MW	20 ft	1.4 MWh	40 ft
Converter 0.7 MW			
Converter 1 MW			
Converter 1.5 MW			
Converter 2 MW	40 ft	1.4 MWh	40 ft
Converter 3 MW			



BESS FQ – Use of various cell chemistries

BESS FQ is our standard, which forms the basis for a complete, compact, modular FREQCON solution consisting of converter, battery storage, robust FREQCON Battery Management System (BMS) and Energy Management System (EMS). All from a single source. We offer systems with various cell chemistries for charging rates from 0.25 to 20 C with high-quality LiFePO4 or LTO batteries.

Your benefits at a glance

- Charging and discharging rates of 0.25 C to 20 C
- Capacity guaranteed 10 years
- Reliable and robust FREQCON BMS guarantees long battery lifespans
- State-of-the-art fire safety system (Stat-X)
- Compact, modular solution in an ISO container (optionally as in-house solution)



LiFePO4 Battery Storage

Overview BESS FQ (on example 1C)

POWER AND CAPACITIES (LOW VOLTAGE)			
Power	Capacity (usable)	Converter Container	Battery Container
0.5 MW	0.68 MWh	1 x 20 ft. Combi-Container	
1.0 MW	1.13 MWh	1 x 30 ft. Combi-Container	
1.5 MW	1.58 MWh	1 x 30 ft. Combi-Container	
2.0 MW	2.03 MWh	1 x 40 ft. Combi-Container	
3.0 MW	3.39 MWh	1 x 20 ft.	1 x 30 ft.
4.5 MW	4,74 MWh	1 x 20 ft.	1 x 40 ft.



BESS Custom – Integration of customer batteries

With BESS Custom we develop individual system solutions based on proven and long-lasting MSC Hybrid Converter technology. We are also happy to integrate batteries provided by our customers. Different types of batteries can also be integrated at the same time. The system will be specially designed for customers applications according to project and country specific requirements.

Your benefits at a glance

- Flexible energy storage solution with our high-quality LiFePO4 or LTO batteries or your batteries
- Compliance with all required Grid Codes
- Compact, modular solution in an ISO container (optionally available as in-house solution)
- By using different battery types, you can use the benefits of each individual battery type



FREQCON BESS Custom
5.0 MW MSC Converter,
system integration of
customer batteries

FREQCON One of the leading companies in renewable energy integration

FREQCON is one of the leading German manufacturers of power converters and control systems for renewable energy systems and energy storage applications.

The family-owned company was founded in 1988 and trades as FREQCON GmbH since 2005.

FREQCON is one of the pioneering companies of the modern wind turbine industry, introducing full-scale power converters to the market almost 30 years ago.

Efficient and reliable grid integration

FREQCON's power converter and control systems allow efficient and reliable grid integration of wind turbines and energy storage systems. We provide solutions for grid-connected systems as well as island grid systems. Our products cover the whole range from kW-size to Multi-MW-systems. Beside our standard product portfolio we also offer customer-specific solutions according to your project requirements.

All our power converters and Energy Storage Systems are designed and manufactured in-house and the control software is developed by our own software engineers. This deep knowledge about our own products ensures a high quality standard and professional customer support. FREQCON has a strong focus on research and development and co-operates with a number of universities and research institutes from all over the world. Our products are deployed world-wide in applications with more than 45 GW installed capacity.



Grid & Storage



Wind Energy



Solar Energy



Microgrid

Smart integration of renewable energy

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