BatteryCraft

Simulate, Automate, Qualify

DC-Source / Sink

Your benefits:

- High measuring & control accuracy
- High current dynamics
- Performance level “D” by default
- Compact mechanical design
- Service worldwide
- Isolation monitoring switchable

Fig. 1: FEV BatteryCraft 250 kW

The source/sink system – “BatteryCraft” - is a highly dynamic, regenerative DC voltage source for various test bench applications.

The power unit consists of a power inverter and DC/DC converters designed in state-of-the-art IGBT technology.

The device is characterized by a wide operating range and high control and measurement accuracies for both the voltage and current values.

Combined with the fast current rise times, the device is ideal for use in test benches.
The isolation monitoring can be switch on /off as well during operation.

The BatteryCraft device includes its own safety PLC which takes care that the system will be switched off according to performance level “D”.

In order to integrate our device into the external safety-concept the relevant signals are available on terminal-strips in the cabinet.

The voltage drop on the supply line will be compensated over a separate sense-line (by measurement of the voltage on the connection point)

BatteryCraft includes the following control modes:

- Current
- Voltage
- Power

The BatteryCraft System can be operated remotely via the fast EtherCAT connection (included).

Our performance
Your benefits:

- Current, voltage or power control incl. limitations
- Cable resistance compensation
- Balanced output filter
- Isolation monitoring switchable
- Synchronization to battery test voltage at DC output enables load-free switching
- Remote EtherCAT Interface at 1 kHz
- Sense Line compensates the voltage drop between the DC output of the BatteryCraft and the connection point

ENORISE
https://www.enorise.com/ | contact@enorise.com

Technical Data

Power kW	Voltage V	Current A	Losses air kW	Losses water kW	Size (L x H x D) mm	Weight kg	Air consumption approx. m³/h	Power consumption kVA
250	1,000	1,000	16	11	2,600 x 2.,200 x 600	2,700	2,700	265
2500	1,200	1,200	16	9	2.,600 x 2,200 x 600	2.700	2,700	265
500	1,000	1,000	25	11	3,600 x 2,200 x 600	3,450	3,500	550
500	1,200	1,200	25	11	3,600 x 2,200 x 600	3,450	3,500	550

Optional Cooling Unit Cabinet | Heat exchanger: 600 x 2,200 x 600 mm

General Data

Cooling	Water-cooled
AC grid voltage	400V (380V, 440V, 460V, 480V as an option)
Efficiency	95%
Noise level	≤ 75 dB(A) measure in 1 m distance
Ambient temperature	+5°C to +40 °C
Air humidity	max. 85 % relative / 25 g/m³ absolute humidity, non-condensing
Altitude of site	< 1,000m over sea level
Site of erection	Indoor
Painting	RAL 7035
Protection class	IP 23
Standard	IEC 61800-4 & 5
Cable entrance	Supply from above, DC output from below
Air temperature input	max. 40°C
Interface	EtherCAT 1 kHz
Isolation monitoring	switchable
Performance level	D
Safety functions	E-Stop / STO
Control and measurement accuracy current and voltage	0.05 % FS
Current rise time	≤ 1 ms (10 % - 90 %)

Cooling data - Internal Waterquality required	
Cooling Unit Delta T Input / Output	8 K
Water temperature	+17°C up to +25°C
Min. Flow rate	approx. 14 l/min
Max. Water pressure	4.0 bar
Pressure drop	0.75 bar
Min. water pressure	2.0 bar
Required Water quality intern	Water demineralized max. particle size: 250 µm pH value: 4-8 Atmospherically closed system 25 % ...40 % Antifrogen N (Fa. Clariant) to avoid fungal and bacteria formation, as coolant and corrosion protection. The inner cooling circuit must not contain components made of nonferrous metals / copper, only aluminum, stainless steel (so called "Galvanic series"). Cooling water temperature needs to be adjusted based on ambient temperature and humidity. Condensation is not allowed.

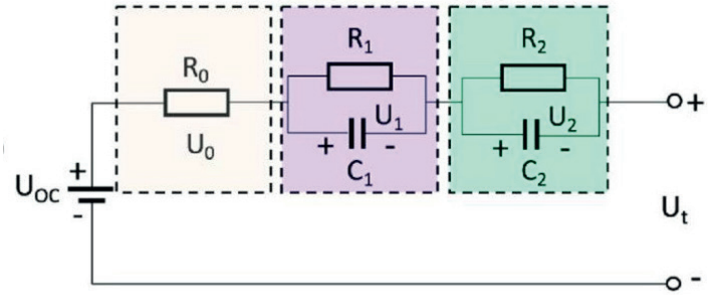
OPTION I: Cooling Unit / Heat exchanger

If no cooling water supply with the required water quality is available on site, the BatteryCraft system can optionally be extended with a heat exchanger cabinet. With the use of the heat exchanger cabinet, the BatteryCraft system can be connected to an industrial cooling water supply (raw water).

Cooling data	
Cooling Unit Delta T Input / Output	8 K
Extern water temp.	+5°C up to +17°C
Min. Flow rate	approx. 67 l/min
Water pressure range	2.5 / 4.0 bar
Pressure-drop of cooling unit	1 bar
Water quality externally	Raw water quality
Cabinet	600 x 2,200 x 600 mm (extension of the main cabinet)

OPTION II: Battery Simulation

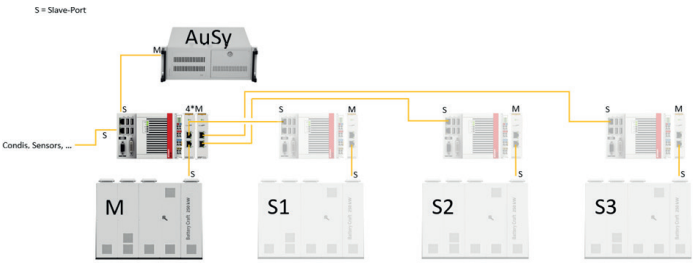
Simulation of internal resistance of battery:
Definition of load characteristic with eleven (11) interpolation points.
Integrated battery simulation model as replacement for equivalent e.g. 2RC circuit battery model.
Parameter RC changeable via EtherCAT during operation.



2RC circuit battery model.

OPTION III: Master Slave Function

Up to 4 devices in parallel usage.
Power and current increase by up to 4 devices.
CC and CV control modes available.
As standalone function available or as function in MORPHEE® for Battery Pack testing.



Order Information

Description	Reference number
BatterCraft 250 kW | 1,000 V | 1,000 A	SC-BAC-250-1000-1000
BatterCraft 250 kW | 1,200 V | 1,200 A	SC-BAC-250-1200-1200
BatterCraft 500 kW | 1,000 V | 1,000 A	SC-BAC-500-1000-1000
BatterCraft 500 kW | 1,200 V | 1,200 A	SC-BAC-500-1200-1200
OPTIONS	
Cooling Unit	SC-BAC-CU
Battery simulation	SC-BAC-BS1
Master Slave Function	SC-BAC-MSF
Other versions (Power / Current / Voltage)	on request