

Safety document

Greener mobile batteries

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Greener Power solutions

Greener power solutions rents out, monitors and controls mobile battery systems and energy assets. Greener is the owner of The battery mobile battery systems as described in this document.

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Battery container

- ✔ Dimensions: 3,1 x 2,4 m. Hight: 2,4m. Weight: 8200kg.
- ✔ Connections: 3p 230/400 VAC via 400 A Powersyntax (powerlock) connector (1x input and 2x output section) and 63 A CEE.
- ✔ Climate: air-conditioning cooled container or direct cooling of batteries plus ventilation of the container
- ✔ Standard applications: Mobile energy, Peak shaving, back-up (UPS), Frequency Response (PCR/FCR/aFFR)
- ✔ Manufacturer: Alfen N.V. (Almere, Nederland).

Battery technology

- ✔ Capacity: 330 kWh; technology BMW i3 33 kWh High Voltage NMC lithium batteries, 8-10 pieces per container
- ✔ Power: 318 KVA; technology Danfoss converter technology.
- ✔ Voltage: 800 VDC (battery side), 400 VAC (connectors).

Transport

- ✔ ADR class 9, UN 3536, UN 3481.

Placing

- ✔ A level and flat surface. If no hardening, apply steel road plates (2 pieces).
- ✔ Keep a distance of at least 10 meters to fixed design objects (buildings).
- ✔ Keep a minimum of 1 meter around the battery to ensure accessibility.
- ✔ Do not enclose; the battery must remain accessible by truck/for security and safety services.
- ✔ Do not place along escape routes.
- ✔ Place the battery out of reach of unauthorized persons and/or the public.

Fire safety

- ✔ The system is built in an air-conditioned 10 ft. reefer container, or direct cooling on the batteries.
- ✔ All the connections and controls are on the exterior of the system. When the container doors are opened, the system switches off immediately. Keep notice: The container is only completely de-energized if the input is also switched off (external).

- ✔ At the HMI there is an emergency stop that switches off the system. Keep notice: The container is only completely de-energized if the input is also switched off (external).
- ✔ The battery system is equipped with system monitoring to prevent overheating. In the event of overheating, the system switches off to a safe state, and a warning will be sent to the person responsible for the system at that time.
- ✔ The battery system is equipped with system monitoring. If the system is found to function differently than expected, the system switches safely off, and a warning will be sent to the person responsible for the system at that time.
- ✔ The battery system is equipped with a fire alarm system. If smoke and/or a high temperature is registered in the container, the system will switch itself off and send a warning to the person responsible for the system at that time and the alarm centre of Alfen N.V. in Almere. The emergency services can also be notified from here.

Monitoring and control*

- ✔ There is an HMI on the battery for local monitoring and controlling of the battery system.
- ✔ Battery systems are remotely (partially automated) monitored and controlled by Greener.
- ✔ Via the Greener portal, it is possible to read out battery statuses for the user.

* For all remote monitoring and remote control, there is a functional internet connection needed. All Greener mobile batteries are equipped with premium wireless internet services (4G). The functioning of these services depends solely on the quality of the wireless network on site. If the 4G network's reliability is unreliable, The battery can use a local wired LAN connection (DHCP).

Standard and classifications

NEN3140, NEN3840, ISO9001, ISO14001, Low Voltage Directive 2014/35/EU, EMC directive 2014/30/EU, Batteries directive 2006/66/EU, HD IEC 60364: 2005, NEN 1010: 2015, IEC 61439-2: 2011, EN 61000-6-2:2005, EN 61000-6-4:2007+A1:2011, IEC 62619: 2017, IEC 60947, IEC 61439, IEC 62271-100, IEC 62271-102, IEC 62271-103, IEC 62271-200. Road and sea transport ADR class 9, UN 3536, UN 3481 (Lithium Ion Batteries in equipment).

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Images exterior/ interior


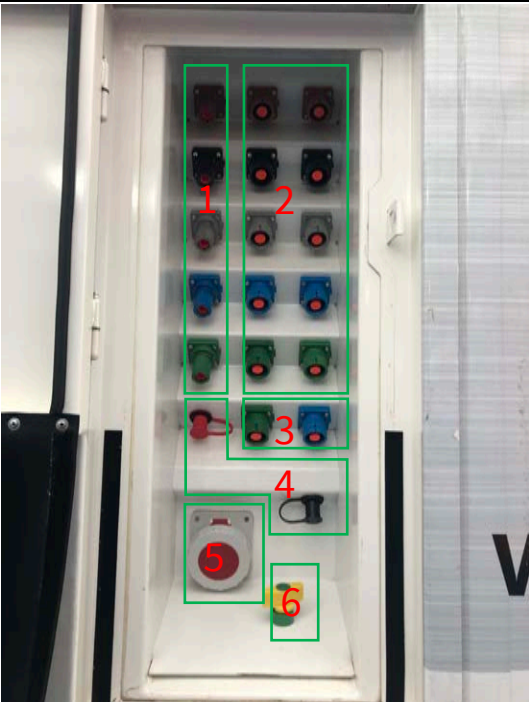


Exterior of the mobile battery container (2021 livery)

Exterior with access to connection board and control panel (2021 livery)



Explainer control cabinet and connection board

	Control cabinet		
	[blank]	Synchroniser	LAN port LAN port
	63 amp output group breaker	CB-1 (input breaker)	USB ports
	63 amp output group RCD		Reset Process stop
			Reset Fire alarm
			Start-up 24V
Positive sequence	HMI		
Negative sequence			
Manual switch			
Process stop	[blank]		
	Connection board		
	[1] powerlock IN (1x),		
	[2] powerlock OUT (2x),		
	[3] ground-neutral connection,		
	[4] 24 Vdc jumpstart,		
	[5] CEE 63 amp OUT,		
[6] auxiliary ground.			

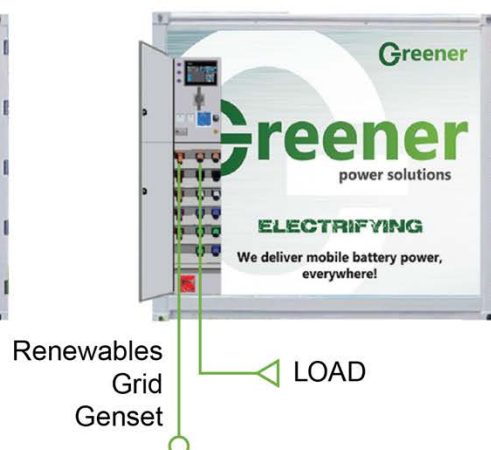
Spec sheet

Battery systeem:	10 ft. reefer, 8200 kg
Power:	318 KVA Danfoss Energy Storage Inverter
Capacity:	336 kWh BMW High Voltage System se09
Applications:	Mobile energy, Peak shaving, Back-up/ UPS, Trading (FCR/ aFRR)
Grid voltage:	3-phase 230/400 Vac, aansluiting via PowerSyntax (power lock) 400 amp connectoren (1x input, 2x output) en 1x 63 amp CEE output
Grid frequentie:	50 Hz (60Hz, 440V will be supported)
Operating temp.:	-20 °C - +40 °C
Climatization:	Liquid cooled batteries, air cooled power electronics compartment
Safety:	Battery packs actively cooled and monitored on cell level and individually controlled in case of emergency. (Temperature) monitoring on all power electronics, fire and smoke detection with direct pass through to Alfen and Greener back-office.
Transport:	Road and sea ADR class 9, UN 3536, UN 3481
Warranty:	Batteries 10 years via BMW/ Samsung, battery container 2 years by Alfen
Standards:	NEN3140, NEN3840, ISO9001, ISO14001, Low Voltage Directive 2014/35/EU, EMC directive 2014/30/EU, Batteries directive 2006/66/EU, HD IEC 60364: 2005, NEN 1010: 2015, IEC 61439-2: 2011, EN 61000-6-2:2005, EN 61000-6-4:2007+A1:2011, IEC 62619: 2017, IEC 60947, IEC 61439, IEC 62271-100, IEC 62271-102, IEC 62271-103, IEC 62271-200.

Off-grid



Peak shaving



Coupled



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