trak®power LiOn

Lithium-Ion battery systems for traction applications

Motive Power Systems
Reserve Power Systems
Special Power Systems
Service

Your benefits

- **Great saving of space in the installation space for additional fitments in the vehicle/machine –** due to a very compact and lightweight system
- **Enhanced machine/vehicle availability** – system capable of rapid charging
- **No costs for replacement during the life of the machine** – long life in cycling applications
- **Low operating costs** – the system is maintenance-free

Typical applications

- Industrial trucks
- AGV systems
- Cleaning machines
- Electric boats
- Electric commercial vehicles
- Municipal authority cleaning vehicles
- Wheelchairs
- Golf carts and electric caddies
- Lifting platforms
- Leisure applications
- Electric and hybrid vehicles of all kinds

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trak® power LiOn

As flexible as your requirements

Typical applications for Motive Power

Order pickers

Cleaning machines

Industrial trucks

Airport service vehicles

Electric refuse collection trucks, electric and hybrid vehicles

Electric and hybrid boats, caravans, leisure applications

Modular and reliable

HOPPECKE trak® power LiOn system

With the development of the lithium-ion basic module, trak® power LiOn gives HOPPECKE an innovative solution for the continually changing technical requirements of the market towards longer life in cycling applications and overall enhanced performance. The trak® power LiOn basic modules are produced at our German site in Zwickau and are then interconnected to form battery systems.

Our know-how is based on more than 85 years experience in researching and developing energy storage systems for industrial applications.

Modularity: Our strength

The HOPPECKE trak® power LiOn, lithium-ion battery systems are of modular design, built up from 24V and/or 36V basic modules. These basic units are designed so that they may be used as individual blocks or combined to build larger battery systems.

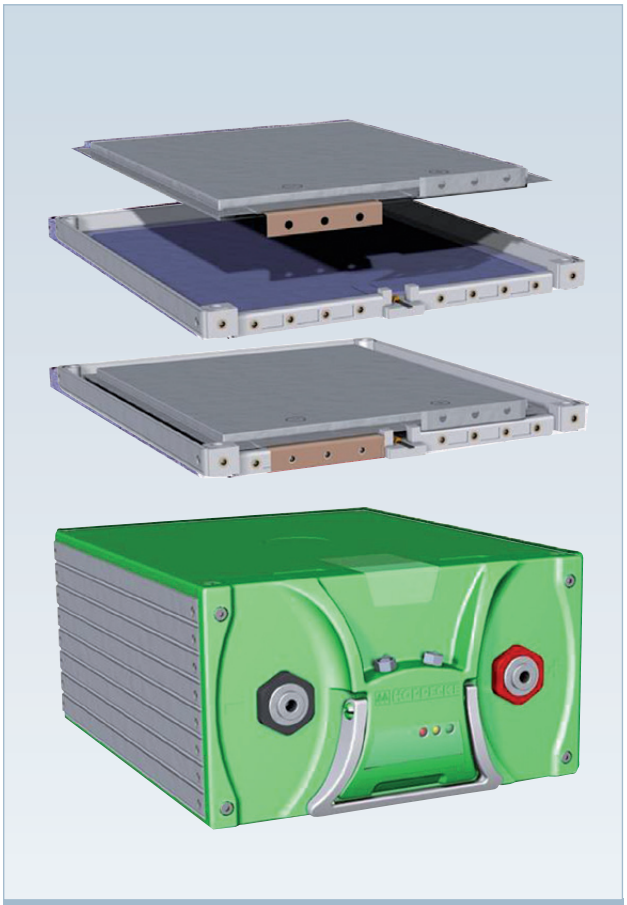
The trak® power LiOn modules are available as High Energy variants (with high energy content) or as High Power variants (able to take high current loads). HOPPECKE trak® power LiOn systems may therefore be designed for a wide range of applications.

The redundant structure of the modules ensures maximum reliability. Operation can be maintained even if one module is disconnected.

Battery management system: Focus on safe operation

Batteries involving lithium-ion technology require permanent electronic monitoring to ensure their safe operation and to protect their lithium-ion cells from damage. These functions are performed by the battery management system (BMS).

Each trak® LiOn battery module from HOPPECKE contains a specially developed BMS. This monitors the module and prevents operation outside the safe operating range by disconnecting battery terminals before critical conditions are reached.
This feature makes each module inherently safe.



Construction of a module

Your extra benefits: Open communication with your load system

The battery management system integrated in each battery module allows for communication with other modules in the battery system and with the connected load via CAN-bus (CAN2x).
All factors relevant to the system such as state of charge (SOC), of function (SOF) and health (SOH) – can be transmitted.

Integrated and flexible

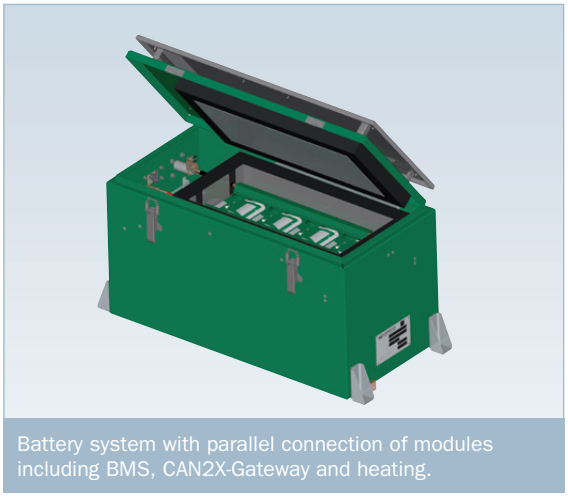
Structure of a basic module

Everything from a single source: Including the system integration

Starting with the system requirement analysis, through system and component design, HOPPECKE will also carry out for you the whole integration. The tests required by customer-specific standards and specifications are included as a matter of course. Customer service from our Internationally active service operation is a basic part of our offer, together with collection of life-expired battery systems and their subsequent recycling.

As flexible as you like

Our extended business models allow you not only to purchase Individual lithium-ion battery systems, but also to take advantage of special financing models such as rental, leasing or usage-dependent billing schemes.



Battery system with parallel connection of modules including BMS, CAN2X-Gateway and heating.

- Customer inquiry
- System requirements analysis
- System integration
- System design
- Integration testing
- Component planning
- Unit testing
- Component design
- Acceptance and Operation
- Support and Service
- Collection and Recycling

Everything from a single source

Decisive arguments

Satisfy yourself

Charging technology from HOPPECKE: perfectly coordinated

The HOPPECKE trak® power LiOn Charge battery charger is optimally matched to the battery and battery management system via CAN-bus. The intelligent electronics and the battery management system control and monitor charging, to ensure a gentle full charge. A full charge of your HOPPECKE battery may be obtained within half-an-hour!

Your benefits with HOPPECKE trak® LiOn

- Modular system structure - system may be individually configured and used in a wide range of applications
- Excellent flexibility – parallel connection of modules to increase output with large battery systems possible at any time
- Major savings in space in the installation area of the vehicle or much longer lifespan in the use of existing installation space due to the compact and lightweight design resulting from the especially high energy and output density
- Outstanding performance in cycling applications
- Long lifespan system – no costs for replacement purchases during “normal” machine lifetime due to the long life in cycling use up to 2,500 cycles at 80% depth of discharge
- Maintenance-free and emission-free system – completely self-contained
- Maximum operating safety through continuous monitoring of state variables and early detection and prevention of critical operating states by the integral HOPPECKE battery management system
- Ideally suited for applications with high withdrawal of capacity – the rated capacity is available even at high rates of power consumption

trak® power LiOn Charge

- Maximum vehicle availability without battery changeover and with no replacement batteries – rapid full charging through quick-charge capability
- Integral CAN-bus communication – transfer of battery state variables via any desired communication interface to BDI (vehicle) and charger via auxilliary contacts
- High energy savings in every charging operation due to high level of efficiency
- In-house recycling scheme for lithium-ion batteries
- Maximum reliability due to redundant system structure

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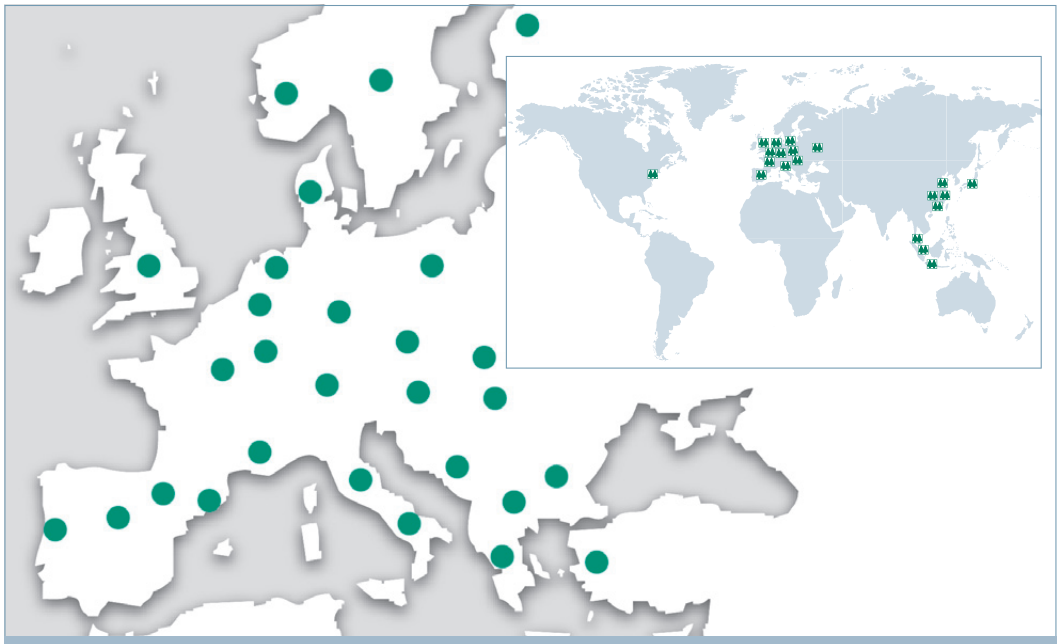

HOPPECKE subsidiaries and factories - European sales and service network

Industrial batteries - Complete energy systems - Full Service

- Low-maintenance and no-maintenance batteries
- Innovative battery chargers based on the latest technology
- Battery accessories
- Battery management systems and software
- Battery handling systems
- Battery/charger servicing
- Battery recycling
- Applications engineering and technology
- Battery room design
- Technical training and seminars
- Leasing
- Power by the hour

Your partner for sustainable energy solutions!

Further information on www.hoppecke.com

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