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trak | powerpack lion

Lithium-Ion-  
Retrofit-Solution

Maintenance and emission free

Low operational cost, High system efficiency

# 7

good reasons for trak | powerpack lion

General upgradeability, Plug & drive

High degree of vehicle availability, 24/7 operation

Dense service network in almost all of Europe

Safety

Transparency and user friendly





## trak | powerpack lion Components

trak | powerpack lion is a modular energy system based on lithium technology. The LION powerpack can be mounted into existing material handling equipment which was originally designed for lead-acid batteries.

- Modular energy system
- Based on Lithium technology
- Designed to replace lead-acid-batteries
- Doesn't require changes on vehicle side (Plug'n Play)

For the best performance HOPPECKE concentrated on an advanced system concept of battery and appropriate charger.

**trak | powerpack lion comprises all necessary components to replace lead-acid-batteries and chargers**

### LION battery

Depending on the work pattern and vehicle parameters you can choose from a wide range of 24 V, 48 V and 80 V batteries.

- 3.1 - 36.9 kWh
- UN38.3 transport certificate
- Smart battery management system
- High performance Lithium cells

### Adapter components

Since the LION batteries differ in dimensions from Pb-batteries, the LION battery comes in a tray built to the dimensions of the machine's battery compartment.

- Safe positioning
- Steel plates to match batteries min. weight
- Wide range of adapter cable

### Charger

The charger range was designed to charge the LION batteries with the highest efficiency possible by establishing a communication between battery and charger.

- Smart link to battery
- Boost function for rapid charging
- Up- and downward compatibility

# trak | powerpack lion

## Features

All system features are especially designed to ensure a smooth and safe operation.

### Product Range

24 V	48 V	80 V
120 Ah   3.1 kWh	240 Ah   12.4 kWh	360 Ah   24.6 kWh
240 Ah   6.2 kWh	360 Ah   18 kWh	480 Ah   36.9 kWh
360 Ah   9.2 kWh	480 Ah   24.6 kWh	
480 Ah   12.3 kWh		

Via the battery's infrared interface the software will analyse the data logged and provide essential information to the batteries „health“ and usage.



- Battery HMI:**
- Battery status (SOC, service mode etc.)
  - On/Off switch
  - IR interface

- Adapter Tray:**
- Easy replacement
  - Matched weight

- Separate plug for easy charging options:**
- On battery top
  - On either of the tray sides
  - On machine body

- Remote Control:**
- Magnetic attachment to cockpit
  - Battery status
  - On/Off switch

- IP 54 rated steel case:**
- Containing LFP cells controlled by a sophisticated battery management system

- Battery charger:**
- HF charger



Figure 1: On battery top



Figure 2: On either of the tray sides

## trak | charger HF lion

### Features

Smart linked charger range for efficient and fast charging.

- Fast charging
- Opportunity charging

#### Product Range

E 24 V / 70 A	D 48 V / 120 A	D 80 V / 160 A
E 24 V / 100 A	D 48 V / 200 A	D 80 V / 200 A
D 24 V / 120 A	D 48 V / 240 A	D 80 V / 240 A
D 24 V / 200 A	D 48 V / 300 A	D 80 V / 300 A
D 24 V / 240 A		
D 24 V / 300 A		



#### Charger HMI:

- Battery Status
- Charging Status
- On/off Switch
- IR-Interface
- Service Menu

#### Power boost (optional):

- Boosted charger power during first part of charging
- Available only with corresponding charger
- Refer to mix and match table (page 9)

## trak | charger HF lion

Boost operation for fast opportunity charging and reduced total charging time.

#### Boost Matrix

System-combinations		Chargers														
		24 V						48 V				80 V				
		70	100	120	200	240	300	120	200	240	300	160	200	240	300	
Batteries	24 V	120	100	120	200	240	300	-	-	-	-	-	-	-	-	-
		240	100	120	200	240	300	-	-	-	-	-	-	-	-	-
		360	100	120	200	240	300	-	-	-	-	-	-	-	-	-
		480	100	120	200	240	300	-	-	-	-	-	-	-	-	-
	48 V	240	-	-	-	-	-	120	200	240	300	-	-	-	-	-
		360	-	-	-	-	-	120	200	240	300	-	-	-	-	-
		480	-	-	-	-	-	120	200	240	300	-	-	-	-	-
		120	-	-	-	-	-	-	-	-	-	160	200	240	300	-
	80 V	360	-	-	-	-	-	-	-	-	-	160	200	240	300	-
		480	-	-	-	-	-	-	-	-	-	160	200	240	300	-

- Optional boost feature (select appropriate connector!)
- Standard configuration
- possible if requested (adaptor cable or larger connector on battery needed!)

## Software

### Hoppecke Energy Management Software (HEMS)

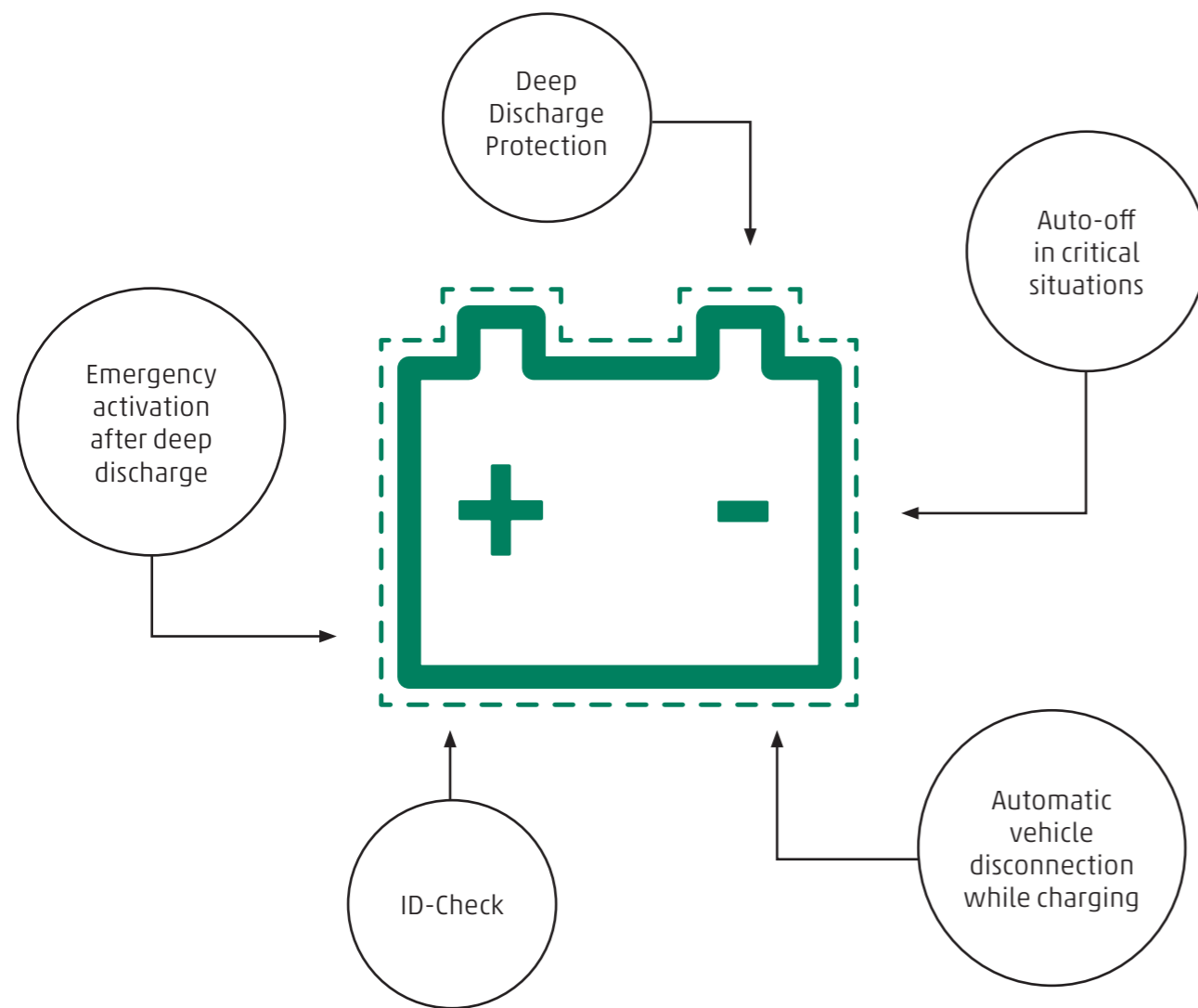
The HEMS analyses all data provided by battery and charger. It shows all information of battery usage and health status. Also all battery and charger parameters can be read out and set by connecting to the HEMS.

- Data collection: system data, load profile recorder, real time data, lifetime analyses, temperature recorder
- Data manager
- Visualization tool
- Service settings

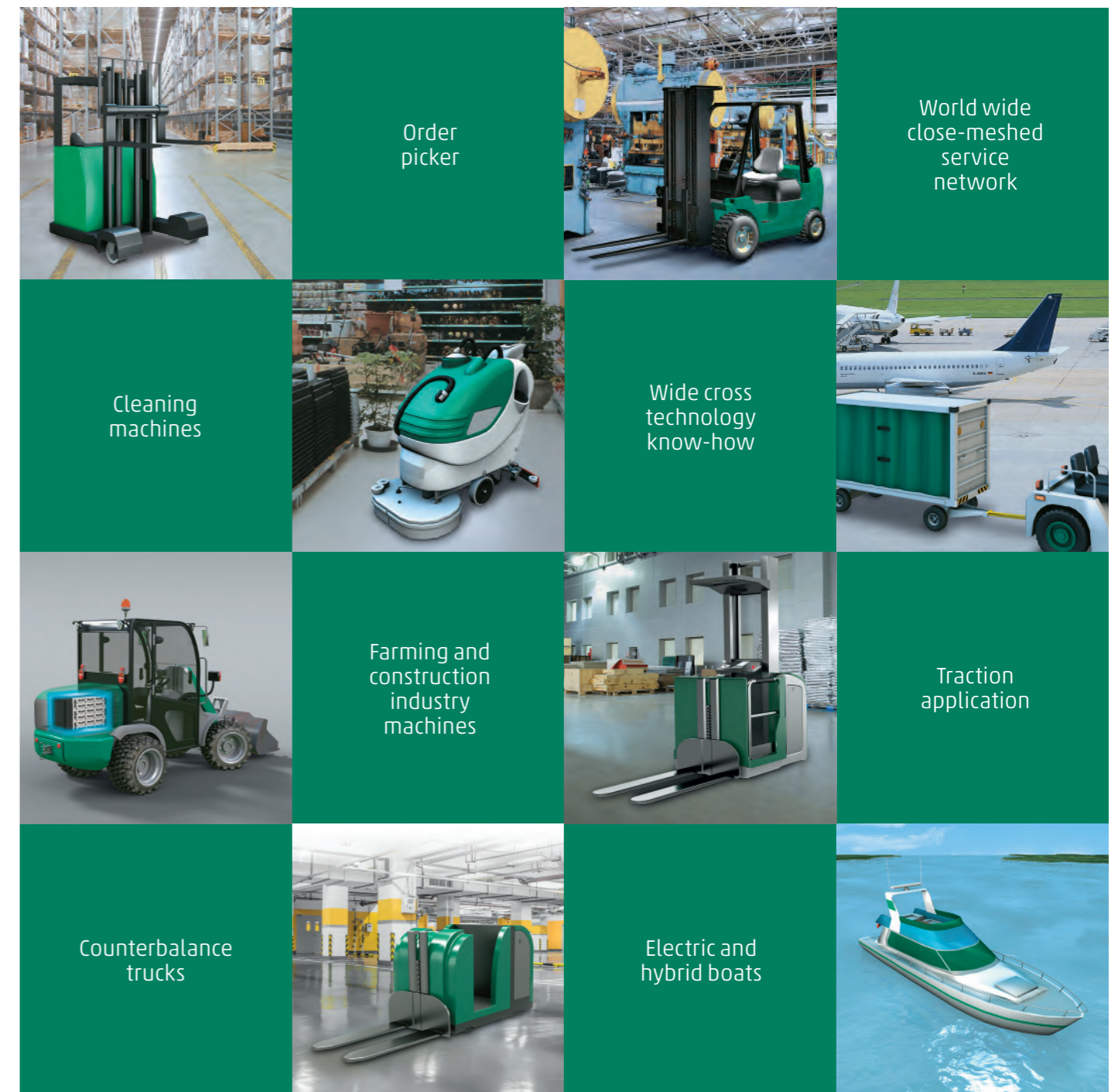
## Safety

### Battery Management System (BMS)

The Battery Management System monitors each individual cell 24 h on 365 days to ensure highest operational safety.



## Typical sectors of application



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