GOLDSCHMIDT
Smart Rail Solutions

Battery Operation

SRS Road-Rail vehicles

Document Name

SD-003 Battery Operation.docx

Document History

Rev	Date	Notes	By
A	2021-05-31	First Release	Jens Karlsson

Valid for

RB 18, LRB 18TC Road-Rail Vehicle

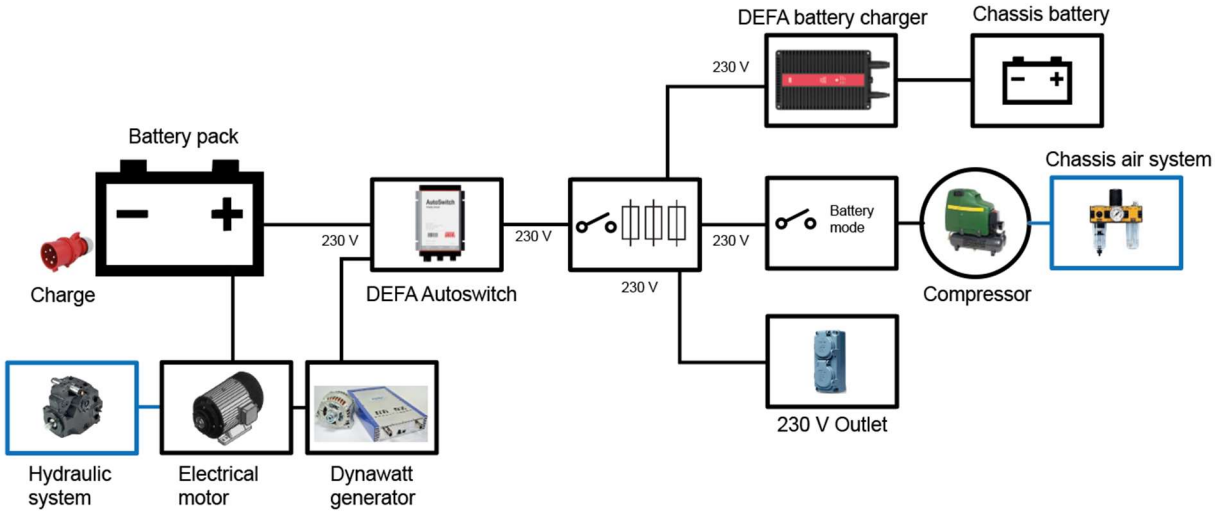
GOLDSCHMIDT
Smart Rail Solutions

Contents

Battery Operation

General description

Battery operation on the railway is possible using Lithium Batteries. The batteries drives a motor that rotates the Power take off (PTO) on the vehicle. Since the vehicle´s brakes requires air pressure a compressor is used to feed the air system. Battery operation is excellent for use in communities as it reduces the noise level from the vehicle during work. In tunnels, it is also advisable to use battery operation. The sound level from the machine is 68 dB which is 7 dB lower than normal diesel operation*.

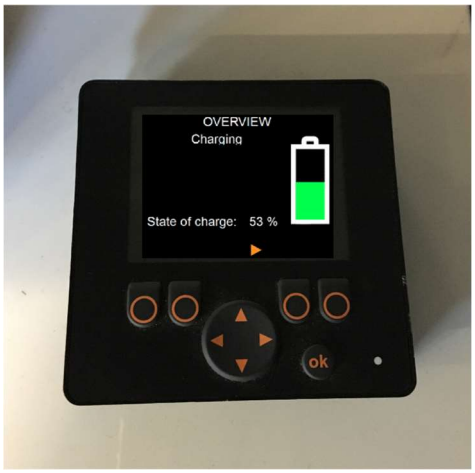


Normally the vehicle has a 61,5 kWh battery pack mounted at the back. One of the modules is a control and charge module.

*As a guideline, an increase in the sound pressure level by 8-10 decibels is perceived by most people as twice as strong. A normal conversation has a volume level between 60-70 decibels.

The batteries are charged by connecting 400VAC from the mains. A discharged battery takes 8 hours to charge.

A display in the cabin shows the status of the battery status.



To activate battery operation, the vehicle's power take-off must first be switched off. Then battery operation is activated easily with a switch in the cabin.

Operating time

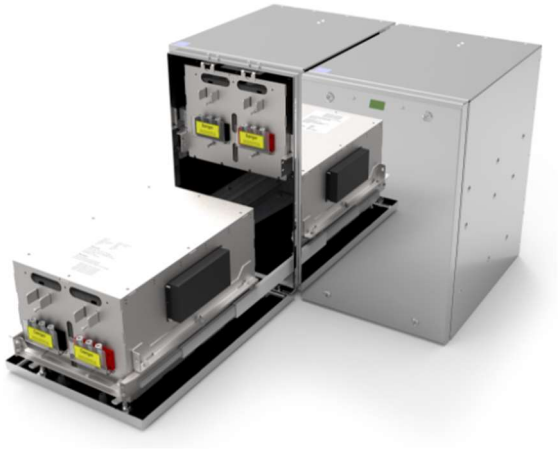
Working mode 4, using the lift 50% and driving on track 50 %. 100 % duty cycle.	3 hours, 45 minutes
Working mode 4, using the lift 50% and driving on track 50 %. 50 % duty cycle.	7 hours, 30 minutes

Valid for a LRB 18 with KLL 10-2T1 lift.
Tested was interrupted when there was 10% of the battery left.

Battery System

General

The system is an Electric Power Take-Off (ePTO) that replaces the traditional power take-off on the truck.



An ePTO drives the superstructure electrically, which means that it works emission-free and energy efficient. You can use your machine without exhaust fumes and noise from the diesel engine.

There are many benefits to using battery power

- REDUCE EXHAUST EMISSIONS - Work with diesel engine turned off. Batteries replaces idling for an entire working day, which means less impact on the global environment.
- QUIETER - Experience a quieter and more comfortable working environment.
- LOWER OPERATING COST - Significantly reduced operating cost thanks to electric power. The system is very energy efficient and charges at a low cost.
- HAPPY SURROUNDINGS - Work early in the morning or late at night without disturbing the surroundings. Better local environment for both operator and residents. "

Lithium-ion batteries of the type Lithium-iron phosphate, which is usually called LiFePO4. The advantages of LiFePO4 are that it is a proven and safe chemistry. The battery is monitored by an advanced safety system to optimize service life and protect the system from misuse. The system has an expected service life of 5 to 10 years depending on the degree of use.

The motor module contains chargers that start automatically when you connect a cord between the wall socket and the motor module.

The cord is equipped with standard connections of the type: CEE 3-Phase. 400VAC. 16A.

The battery is normally charged overnight for 8 hours.

As soon as the charging is complete, the chargers are switched off and the system is now ready for another working day.

You can also charge the battery during operation during stationary work, which significantly extends the driving time.

The robust modules are adapted to withstand all climates with rain, snow and salt but also hot summer days.

The modules are tight and protect the electronics from water.

Thanks to automatic heating in winter and air cooling in summer, Blue Pac can be used all year round without the operator having to do anything special.

Technical data

IP classification	Adapted for installation on trucks
Motor power	50kW, 155 Kg
Battery type	Lithium-Ion phosphate LiFePO4
Energy amount Battery	61.5kWh
Connection for charging	CEE 3-Phase 400VAC 16A
Charging time	8 hours
Battery safety	Monitoring at cell and system level
Ambient temperature	-20 to +40 degrees C
Cooling / Heating	Air cooling and hotplate
Communication	CAN and Digital signals
Weight Control Module	200kg
Dimensions Battery module	500 x 750 x 660mm
Weight Battery modules	1185kg