

Electrified and designed for working underground



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Battery-powered electric drive



- 1 Communication
- 2 High voltage
- 3 Mechanical connection
- 4 Hydraulic

Battery-powered electric drive for the underground bulldozer

AREA OF APPLICATION

Bulldozers remove materials inside the mine after blasting. The fact that diesel engines generate emissions and heat in addition to consuming oxygen, results in high ventilation requirements inside the mine. A diesel-free solution avoids this additional expense.

SYSTEM DIMENSIONING

The battery-powered electric drive system was designed for diesel-free underground equipment: an electric drive from Bosch Engineering, a Rexroth GFT chain gear and an Electrical Drive Control Unit for controlling the chain and hydraulic drives, plus the high voltage system. An additional e-machine supplies the hydraulic system for the dozer blade. The battery capacity and the required power of the charger are a result of the masses needed to be moved, as well as the typical usage profile. Even at high temperatures in the mine, the system reaches full power thanks to the battery's heat-resistant cell technology and the appropriately sized cooling system. For optimal utilization of the available space, the components are assembled with the shortest possible cables. All safety-relevant system developments comply with the valid standards for functional safety DIN EN ISO 13849, along with the guidelines for high voltage safety and fulfill the requirements for product safety.

SYSTEM BENEFITS

The battery-powered electric operation makes it possible to reduce emissions and waste heat. This significantly reduces requirements for ventilating the mine.

VEHICLE DATA

- ▶ Electrified chain drive: e-machine SMG180, inverter INVCON 3.3, reduction gear EDT180, Rexroth GFT chain gear
- ▶ Electrified hydraulic system: e-machine SMG180, inverter INVCON 3.3, reduction gear EDT180, Rexroth hydraulic pump
- ▶ Electric Drive Control Unit (EDCU) for controlling the three electric drives
- ▶ Power: 2 × 60kW
- ▶ Maximum speed: 6 km/h
- ▶ Total weight: 5 tons

