

SOCMA New Energy Construction Machinery- Advantage by comparison

The Advantage of SOCMA Electric Construction Machinery

- Zero emission, not pollution, low noise
- The operating cost is low, the energy cost of electric is about 30%, comparing with traditional construction machinery

Low-maintenance cost, not need to do regular maintenance for the diesel engine, including engine oil replacement, filters replacement

Suitable to work in high altitude area or poor ventilation area

The advantage of SOCMA electric forklift, electric construction machinery by comparison High safety standard for battery, not risk of spontaneous combustion and deflagration

- LFP (NCM /NCA)/

Adopt high volume lithium iron phosphate Batteries (LFP), as a solution to avoid the risk of spontaneous combustion and deflagration of three element polymer lithium battery (NCM /NCA), which is used by the passenger car. The safety has been improved essentially.

- The battery has high-temperature resistance. Even the most refulgent environment does not have any effect to performance and safety.
- BMS/CATL, *OVP/UV/PT/PCP*
- The battery group and BMS (Battery Management System) is supplied by the domestic leading brand CATL, which guarantee that every group of battery has stable high quality. The battery group is equipped with overcharge protection
- OVP, over discharge protection UVP, Over Temperature Protection OTP, Over current protection OCP.
- The power will be cutter off immediately if there is an accident.

The lifespan of the battery is more than 8-years

- lithium iron phosphate battery recycle lifespan is more than 4000 times, which is 2.5tons of same level of three lithium battery life and 10 times of lead acid battery.
- The volume of lithium iron phosphate battery decreasing during the lifespan will not have the effect of endurance shrinking dramatically like three element lithium battery

Optimizing energy management, excellent energy utilization efficiency and endurance, together with high-volume lithium iron phosphate battery, which guarantee the 6 to 8 working hours after full-charging.

- *50%*

Adopt multi-electric motor, which Substantially improve the energy conversion, compared with traditional diesel engine and single electric motor. The loading of construction machinery always fluctuates drastically, the average power is less than 50% of the peak power. Multi-electric motor drive can optimize the electric motors working mode reasonably. The reasonable matching of the electric motor loading power can solve the low-efficiency problem of electric motor and low-loading zone.

- Adopts the Permanent magnet synchronous motor, which has advantages of high efficiency, high power factor, low volume, high power density, large torque starting, low noise and low temperature, comparing with Asynchronous motor
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- Give full play to the great advantages of speed control of electric motor. Reach the high performance by using the simple, reliable quantitative pump system instead of complicate, expensive variable displacement pump system
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- Adopts new style variable Speed Control Coordination strategy, assisted by specialized controller and advanced machine hydraulic-electronic control system, which realize the all power matching of machine power to hydraulic pump and to loading.
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- **Because of power storage unit do the energy recovery to all negative load, which improve the energy-saving, environment protection effectiveness furtherly**

- **Adopts new energy vehicle specialized electric motor and controller with high reliability**
- Electric construction machinery needs to work outdoor; the working environment is bad. Vibration and impact which has very high requirement of safety standard, reliability, water-proof rank to electric component including electric motor, controller, battery. Thus, we cannot simply trans-plant the industrial electric motor and driving system relevant technology to electric construction machinery.

Multi-energy (Electric crawler excavator)

Adopts two power supply system, lithium battery and Plug-in power. Travelling working by lithium battery, fixed working zone by connecting the power cable to industrial power grid, which prolong the endurance of the fixed zone working hours substantially.

Multi-energy (Diesel-electric hybrid power wheel loader)

- Lithium battery and low power diesel engine work together, which improve the endurance and the working hours dramatically, comparing with electric vehicle.
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- Adopts peak load shifting, optimize the working operation performance, reducing the engine rated power, which improve the energy converting efficiency, reduce the oil consumption and emission effectively.