Battery management systems dakar

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Dakar recently introduced a fleet of electric Bus Rapid Transit (BRT) articulated buses (provided by Chinese CRRC). The delivery ceremony was held on November 28.

Dakar Mobilit?, owned by Meridiam (70%) and the Fonds souverain d"Investissements strat?giques du S?n?gal (FONSIS), has also recently announced that it has raised EUR135 million needed to deploy Dakar"s future electric BRT bus network. Proparco, EAIF, PIDG TA (Technical Assistance) and the European Union (EU) joined forces to secure the financing.

Dakar BRT project includes the operation and maintenance for 15 years of a new clean public transport network. Each bus has batteries with a capacity of 563.8 kWh. German company CarMedialab (part of INIT group) was selected to implement the charging management system.

Dakar Mobilit?, overseeing bus procurement, maintenance, and BRT operations, just received 121 large-capacity electric vehicles. This move aims to reduce atmospheric emissions and the carbon footprint associated with transport in Dakar, avoiding an estimated 59,000 tonnes of CO2 emissions annually.

When it goes into service, the BRT system in Dakar will link the Petersen bus station at Dakar Plateau (in the city center) to the prefecture of Gu?diawaye in the northern suburbs, thanks to a 121-bus fleet, powered 100% by electricity.

The BRT-system will become a major transportation option in the Dakar urban area,with an expected 300,000 passengers/day travelling between the suburbs and the city center. It will cover 18.3 km of Dakar, connecting 23 stations and 14 of the city"s most densely populated districts from north to south, via four lines (one "omnibus" line and three express or semi-express lines).

Electric vehicles (EVs) have become a ray of hope as the globe strives to address the issues of climate change and environmental sustainability. These electric-only vehicles mark a huge advancement in our search for greener, more environmentally friendly transportation options. The battery -- a crucial element that determines the performance, safety, and efficiency of the EV -- is at the core of these cars. The battery management system (BMS) is a sophisticated piece of technology that performs the complicated operation of managing this battery.

In addition to providing protection, the BMS regulates the environment of the battery by controlling the heating or cooling systems to keep the battery working within its ideal temperature range. Cell balancing is another crucial BMS function is that it ensure that each cell in a battery pack charges and discharges uniformly, enhancing the battery"s overall performance and durability. Modern rechargeable batteries" dependability and safety are maintained by this system"s extensive monitoring, reporting, and protection

functions.

The BMS functions as the battery pack"s "brain" in several ways. It makes judgments depending on the information it gathers, and these choices have an impact on the battery"s performance and longevity. Without a BMS, a battery might be overcharged or over-discharged, both of which have the potential to shorten its lifespan and cause battery failure.

The BMS is typically an embedded system and a specially designed electronic regulator that monitors and controls various battery parameters (e.g. temperature, voltage, and current) to keep the battery cells within a safe working range. Figure 1 depicts the overall structure of a BMS used in electric vehicles. The input, data processing, and output signals used in the BMS can be used to depict the data flow according to the architectural design.

The BMS serves a number of critical functions in the context of electric vehicles, including monitoring, protection, balancing, and thermal management. These functions are described in greater detail below.

The battery"s voltage, current, temperature, and SOC are all constantly monitored by the BMS. To evaluate the battery"s performance and condition, this information is essential. As an example, the SOC, which measures the battery"s remaining charge, has a direct impact on the EV"s driving range.