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In the electric power system, DC loads are divided into two categories: control loads and dynamic loads. The capacity and quantity of these two types of loads are different, and their characteristics and importance directly determine the wiring method of the DC system.

1. Control the load

Mainly include: electrical control, signal, measurement load; thermal control, signal, measurement load; relay protection, automatic device and monitoring system load, etc. This type of load generally has high requirements on voltage quality, a large number, a wide range, but a small capacity. This type of loads generally requires high quality of the voltage , is a large number, wide range , and small capacity.

2. Power load

Mainly include: all kinds of DC motors, such as steam turbine lubricating oil pump, generator hydrogen sealing oil pump, feed water pump lubricating oil pump, etc.; electromagnetic operating mechanism and closing mechanism of high-voltage circuit breaker; AC uninterruptible power supply device; DC/DC conversion device; DC emergency Lighting load and thermal power load, etc. The number of such loads is small, but the capacity is large, which plays a key role in the selection of the capacity of the battery pack. This type of loads is tiny quantities, but the power is large, which plays a key role in the battery bank capacity.

Since the charging voltage of the battery pack is generally higher than the operating voltage of the DC system used in power plants and substations, the blessing value higher than the system voltage depends on the number of batteries in the battery pack and the charging method. The greater the number of batteries, the greater the charging voltage amplitude. The voltage value in the boost charging mode is the highest, which generally exceeds the maximum allowable value of the system operating voltage. In addition, when the DC feeder is long and the DC load capacity is large, methods such as increasing the busbar voltage value or increasing the number of batteries are also used to ensure that the voltage at the end of the feeder and the end of the battery discharge can meet the system operating voltage requirements. In order to make the voltage of the DC bus (usually the control bus) meet the requirements of the system operating voltage, a step-down device (dropped diode) is required to ensure a safe operating voltage level.

In order to reduce the impact of the shock load on the pressure-reducing device during the input process, in order to reduce the impact of the surge load on the voltage reducing device during the start-up process, it is not recommended to connect the large-capacity power load to the control bus.