Series-Parallel Circuit Test 18650 Lithium-Ion Battery For 800 Watt BLDC Electric Motorcycle

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ABSTRACT

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This study aims to determine how to assemble an 18650 lithium-ion battery as a power source for battery life for an 800Watt BLDC electric motorcycle. The battery assembly uses a 13 series and 12 parallel scheme. In this study, to meet the input power of 48V, the battery is arranged in 13 series 12 parallel, it requires 156 cell Lithium-Ion 18650 batteries to get an electric bicycle battery with a full capacity of 50.255 V 24 Ah. The test was carried out with a rider load of 60Kg and efficiency motor BLDC 800 watt 75% - 85%.. In the first test, the discharging time was 51.79 minutes and the battery charging time was 92 minutes with a battery efficiency of 56.29% covering a distance of 9,013 Km with a power consumption of 733.76 Wh. In the second test, the discharging time was 55.78 minutes and the battery charging time was 90 minutes with efficiency. 61.98% battery covers a distance of 10.67 Km with a power consumption of 947.41 Wh. In the third test, the discharging time is 61.68 minutes and the battery charging time is 94 minutes with a battery efficiency of 65.92%. It can cover a distance of 12.7 Km with 1079.2 Wh power consumption. 3 which is 12.7 Km. The battery power consumed by the three-wheeled BLDC 800Watt electric motorcycle is 1079.2 Wh in the 3rd test.

Key Word: *Lithium Ion, Power, Battery Management System, BLDC 800 Watt, charging, discharging.*