

M.E.A. Scooter Motor Tester

NEW: Fast and accurate method for testing Scooter motors



The performance data of electric motors in the majority of all cases is performed by a brake test. Power input is calculated from current and voltage. Torque and power output are measured with a brake. It is important to reach, for each point, a persistent temperature. In case of large outer rotor BLDC motors, which are usually used for electric scooters, this traditional procedure may take many hours to complete and is very complicated.

For several years, an innovative motor tester of M.E.A. Testing Systems Ltd. is on the market. This test system avoids any temperature confusion by testing a motor at constant temperature over the entire speed range. The test procedure is very fast and gives the full load performances including PWM current, voltage, torque, and driver efficiency, from stall up to no load.

During the test procedure, the motor is freely accelerated from stall to no load speed. The load of the motor is only the predetermined inertia of the rotor. From the moment of inertia and the acceleration, the torque of the motor is calculated and, also, the power output over the whole speed is given. Since the entire measuring time, depending on the motor size, is usually less than one second, the motor has no time to warm up. It remains at room temperature.

Test Example

Picture A shows a scooter electric motor under testing procedure. The motor is connected to the wheel (A), which is connected to the holding device (B). A small sensor is connected on the top. Running the motor few seconds will give the complete static and dynamic data at any predefined temperature. Fig. A shows the motor's static test data results from stall up to no load.

Fig. B shows the motor's Driver Efficiency vs Speed results. To get the driver efficiency, the input power to the driver was also measured and compared to the input PWM power to the motor's three-phase line.

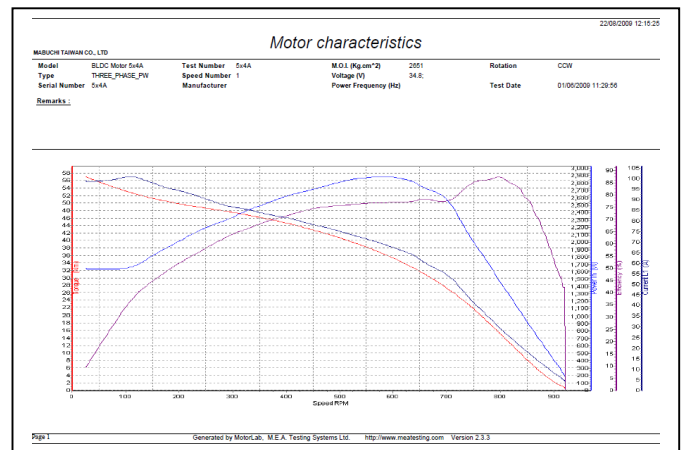


Fig. A - Static Test Results

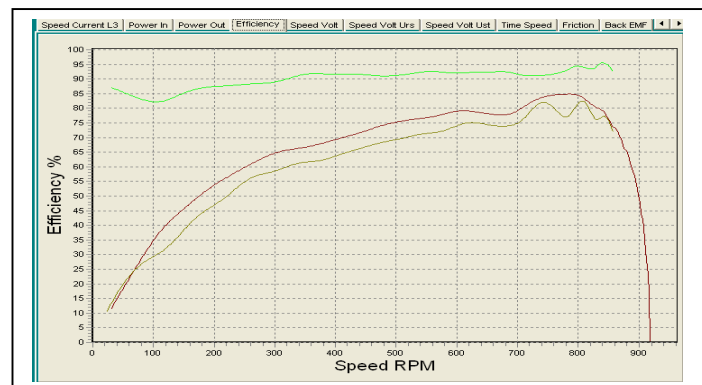
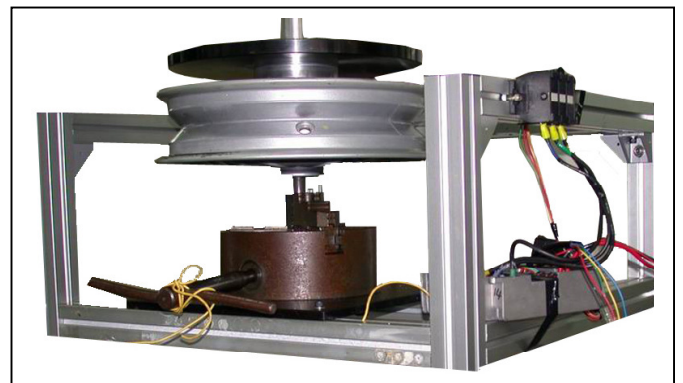


Fig. B - Extract Motor Driver Efficiency



Picture A - Scooter motor under test