Comprehensive Test Stand Solution for Electric Motor Development, Validation, and Durability Testing

Electric Motor Test Stand

TITAN-EMTS

Versatile Application Support

Electric Motor Test Stand (EMTS) series is a complete development and testing solution for electric motors (E-motor) and components related to PHV, HV and extended range EV. Optimized to E-motor specifications and test cycles, the system offers broad application support for:

- Evaluation and Development of Thermal Management Systems
- Power and Efficiency Measurements
- Torque Analysis
- Accelerated Life Cycle Testing
- E-Component Validation
- Vehicle Range Studies
- Optimization of Energy Management System Controls

Rugged Mechanical Design

The central feature of EMTS is a high-speed, low-inertia, liquid-cooled dynamometer engineered specifically for E-motors. Available in single-ended and double-ended configurations, this proven dynamometer has a very stiff shaft, provides 200% overload, and maintains full torque at zero speed. The E-motor housing is custom designed to duplicate in-vehicle geometry. E-motor lubrication and forced cooling/heating are integral features of the housing.

Temperature Extremes for Endurance Testing

Internally and externally sealed, the E-motor housing supports hot and cold temperature cycles from -40°C to +120°C for accelerated life cycle (endurance) testing. Condensate and corrosion mitigation reduce maintenance. The optional Fluid Conditioning Units are capable of handling multiple fluids (ethylene glycol and ATF) depending on customer requirements.

Advanced Simulation & Measurement

EMTS incorporates HORIBA’s Virtual Battery Solution, allowing E-motors to be tested with accurate simulation of in-vehicle battery performance. A fully integrated power analyzer precisely measures electric motor efficiency and torque-speed characteristics. Stored data can be used to generate efficiency maps of the E-motor specimen.

Electric Motor Test Stand

A AC Dynamometer, Headstock, Bedplate
B Fluid Conditioning Units (Optional)
C SPARC Controller, AC Motor Inverter, Battery Simulator
D Drive Isolation Transformer
E Interface & Lockout Enclosure with Power Quality Analyzer for TPIM
F STARS Test Automation System
Electric Motor Test Stand with Environmental Housing and Battery Simulation

Proven Dynamometer Design

- Single- or double-ended configuration
- High-speed, low-inertia design specifically for E-motors
  - Speed: up to 18000 rpm single-ended; up to 12500 rpm double-ended
  - Inertia: 0.1 kg/m² or less
- Excellent torque density and extremely quiet operating levels
- Extremely rigid steel base and stiff shaft

Space-Efficient Bedplate

- Provides excellent vibration dampening with polymer composite material filling
- Isolation pads reduce the vibration amplitude and decouple the system from the test cell floor
- Leveling features assure easy and proper installation
- Can be mounted on industrial flooring
- Precision T-Slot allows the headstock to translate axially without having to realign the system

Headstock Engineered for Ease of Use

- Easy setup with specially designed piloted inserts for E-motor fixtures
- Simplified maintenance with slide-out lubrication and cooling unit
- Separate circuits for E-motor lubrication and for thermal cycling provide maximum flexibility, ease of E-motor installation, and thermal transfer
- Axial translation allows easy access to both ends of the dynamometer for E-motor/shafting changes and torque calibration

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Please read the operation manual before using this product to assure safe and proper handling of the product.

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