

# Electric Machine and Driveline Testing

Millbrook delivers a range of solutions to characterise, validate and support testing and certification of electric driveline components and systems.

The expandable test laboratory is configured to support component and system level performance and durability sign-off of electric traction motors and generators. Millbrook offers a comprehensive service including formal testing and certification.

## Equipment and Facilities

- Installed capacity: 400kW 3 phase supply
- 400kW DC regenerative power supply delivering 650-750 Vdc
- Electrical supply 32kW 500A 65V DC (hybrid applications)
- Bespoke climatic enclosures for thermal simulation from -40°C to +90°C

## Example Test Stands

- Functional test rig: 0-7,000rpm drive and absorption
- 132kW drive and up to 400kW absorption
- Measurement of torque, speed, voltages, currents, temperature, coolant flow with sampling rates up to 50kHz

## Electrical Test Measurements

- Back EMF
- Dielectric voltage withstand (Hi-Pot)
- Insulation resistance (Megger test)
- Temperature through rise by resistance

## Shock and Vibration Testing

- Electro-magnetic shakers and associated slip tables for shock and vibration testing
- Electro-hydraulic actuators for vibration testing of heavy systems
- Bench handling and transit shock testing
- Drop testing



Millbrook Proving Ground Ltd  
 Millbrook, Bedford, MK45 2JQ, UK  
 +44 1525 404 242 • [info@millbrook.co.uk](mailto:info@millbrook.co.uk)

[www.millbrook.co.uk](http://www.millbrook.co.uk)



## Electric Machine and Driveline Testing

### Cycle Fatigue Rig

- Measurement of speed, temperatures
- Measurement of voltage and current using HBM e-Drive
- Steel disc to represent driven inertia

### Durability Rig

- Configured to use two similar machines in back-to-back configuration to minimise power demand
- Measurement of torque, speed, voltages, currents, temperature, coolant flow

### Cooling Systems

- Fully controlled oil supply systems delivering oil at controlled temperature, flow and pressure
- Fully controlled water glycol cooling delivering coolant at controlled temperature, flow and pressure

### Additional Capabilities

- Complete drive testing for full electric, range-extender hybrid, conventional hybrid and stop-start systems
- Driveline layout mounted as per the in-vehicle situation
- Single or twin dynamometers for power absorption and drive cycle simulation
- LabView based control and data acquisition systems

### Typical Applications

- Initial and post-test electrical and mechanical performance characterisation
- Environmental
- Vibration
- Durability
- Witness testing and certification

