

HIGH VOLTAGE FUNCTIONAL TEST BENCH HV-FTB

Intertek Transportation Technologies

Milton Keynes' High Voltage Functional test bench enables integrated, automated and transparent development of the necessary High Voltage support systems found in a modern EV or Hybrid vehicle.



Our background

Our Transportation Technologies team at Milton Keynes, UK, has designed and developed a unique High Voltage Functional test bench (HV-FTB) in order to expand its eMobility test and validation capabilities outside of the direct sphere of rotating machinery. This custom test bench enables integrated, automated and transparent development of the necessary High Voltage support systems found in a modern EV or Hybrid vehicle, including HV junction boxes, battery management systems, DC:DC converters, AC and DC charging interfaces and other HV systems that are now routinely powered from a traction battery.

The modular, expandable HV-FTB

The HV-FTB is modular, expandable and evolves a single point testing architecture into an arena, that previously has required many, individual support systems each with their own test agenda. To streamline the optimisation or validation of functional hardware, simultaneous near real time generation of all primary Vehicle and EVSE Power-buses is supported.

In conjunction, the HV-FTB allows the validation of control code, which is often new, unproven and unique to the Device Under Test (DUT) and can be multi-dimensional in scope, especially where networked communication buses such as Flexray or Green-PHY are involved.

Key features

- High Voltage DC generation – 0 to 1000Vdc in two 32kW bi-directional (sink-

source) units. Units can be connected in series or parallel, and can operate, and transition, seamlessly between either load quadrant. This functionality is to simulate the vehicle's main traction battery and also EVSE DC charging, and can run in various modes (CV/CC, Batsim etc)

- High Voltage AC Generation – 0 to 680Vac, 12kW, 1 or 3ph variable VF supply. Providing power to support the test and integration of EVSE AC charging systems, and able to simulate grid disturbances (fundamental frequency shift, harmonic

HV-FTB AT A GLANCE

High Voltage DC Generation:
0 to 1000Vdc

High Voltage AC Generation:
0 to 680Vac, 12kW

High Voltage AC/DC Passive Configurable Load Bank

High Voltage DC Linear Load Bank:
5kW 600V

EVSE DC Fast Charger

FOR MORE INFORMATION



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HIGH VOLTAGE FUNCTIONAL TEST BENCH

HV-FTB



HV junction box undergoing dynamic load carrying test

- content, voltage glitches etc)
- High Voltage AC/DC Passive Configurable Load Bank – A water cooled 5kW resistive load bank arranged in a ladder type arrangement gives the ability to stimulate AC or DC systems with variable loading. It also enables rapid (<1ms) step-wise load changes, designed to test the output stability and damping of DC:DC converters.
- High Voltage DC Linear Load Bank – 5kW 600V highly dynamic DC load. Providing a high fidelity, low noise sink for DC:DC converter testing or other DC loading tests
- EVSE DC Fast Charger – 50kW - Supporting industry standard DC fast chargers, and enabling validation of High Voltage Junction Box type devices, as well as functional test on charging system interface controllers
- All units are housed in standard sized, custom racking that enables the FTB to be easily shrunk or expanded. This brings simple hardware integration for additional future capability.

All units within the HV-FTB are networked, allowing a single, central test automation system to manage both the DUT and the HV-FTB resources themselves. Further integration of networked data acquisition and analysis devices (oscilloscopes, power analysers, temperature sensing etc) is also both possible and expected to leverage the highest level of single point, integrated testing.

About Intertek

Intertek is an industry leader with more than 44,000 employees in 1,000 locations in over 100 countries. We deliver Total Quality Assurance expertise 24 hours a day, 7 days a week. Whether your business is local or global, we can help to ensure that your products meet quality, health, environmental, safety,

and social accountability standards for virtually any market around the world. We hold extensive global accreditations, recognitions, and agreements, and our knowledge of and expertise in overcoming regulatory, market, and supply chain hurdles is unrivalled.



All of our test facilities are fully accredited to ISO 9001.



FOR MORE INFORMATION

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