Test Services

summary

1 ITI provides comprehensive and extensive test services in following technological areas: E-drive, ICE, Hydrogen, Intelligent Driving and Thermal Management.
Given advantage of one-stop R & D validation capabilities in the test for automotive component, sub-system and finished vehicle, we are competent to provide test service for local and international OEMs as well Tier customers 24 hours a day and 7 days a week.

2 Now there are more than 500 of test engineers and professionals and 400 sets of various of benches in ITI, which enable us to operate in Full-Environmental @ Load Simulation of Real Working Condition, HIL/SIL Simulation, As result we are committed to advance every customer in R & D efficiency improvement and lead time shorten.

E-drive

Rotor 12 rigs
- Dynamic speed test
- Burst test

Stator 20 rigs
- HOTE PTCE HTHE

E-motor 45 rigs
- B2B（PTCE,HTOE,HTHE)
- Efficiency and performance (up to 30000rpm)

E-axle 150 rigs
- B2B
- 2Dyno

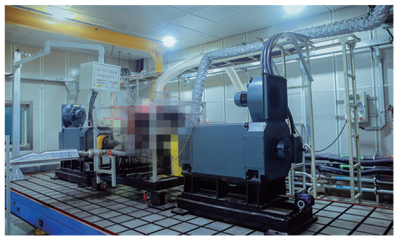
Reducer 20 rigs
- Parallel shaft reducer
- Coaxial reducer

Inverter 63 rigs
- Durability with dummy load
- Durability with active load
- Powerhil test

NVH Test 2 rigs
- E-Drive test

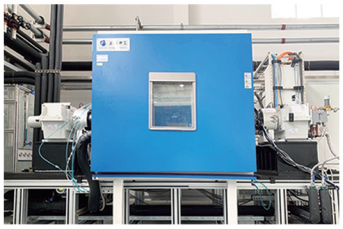
EMC Test 4 rooms
- E-Drive Test
- Vehicle test（in 2025)

Environment 100+rigs
- themal shock
- shock and vibration
- water/dust proof
- salt spray



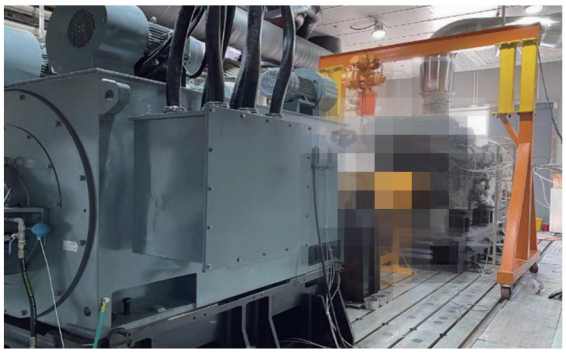








Engine



- **DYNO Capability:** 250/405/560/850/1000/2000/3000/5000kW
- **Fuel supply type:** Gasoline、Diesel、NG、Methanol、H2、NH3
- **Test items:** Thermodynamic development、Emission calibration, Performance development 、Functional development、Durability test
- **Test objects:** Gasoline engine, Diesel engine, Hybrid power, Range extender engine, Engineering machinery, Marine engine
- **Test capacity:** 30+sets of emission equipment that meet the national VI emission standards
- **Number of Test Bench:** 52
- **Special test:** - 30 °C Thermal shock, Three-High environmental simulation test, SIL technology

Hydrogen Energy

- **Hydrogen ICE :**250/560/1000kW, Pressure of hydrogen supply: 0-20MPa
- **Hydrogen fuel cell engine:** 150/200/400kW
- **Hydrogen fuel cell stack testing:**20/350kW
- Electrolytic cell test: 500W/1000W/150kW
- **Electric stack simulator** (cathode subsystem /anode subsystem)
- **Fuel cell BOP testing** (membrane electrode, air compressor, circulating pump, injector, etc.)
- **Fuel cell in loop simulation testing**
- **Fuel cell vehicles and powertrain in the loop simulation testing**
- **Three-High calibration test** (temperature -40 °C -60 °C, altitude 0-5000)



Test Services

Intelligent driving

01 VIL-vehicle in loop

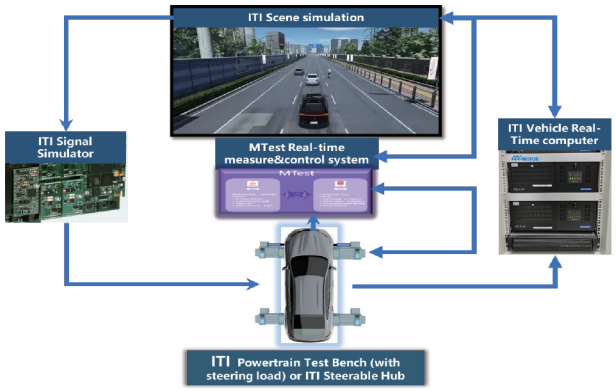
- Functional testing（ACC/AEB/LKA/APS)
- Functional safety testing
- Vehicle energy flow testing

02 XCU-HIL

- Functional testing
- Functional safety testing
- Multi-domain coordination testing

03 Steering/braking-HIL

- Control strategy calibration
- Functional testing
- Performance testing
- Functional safety testing



Semiconductor



Power Cycling Test System (Power Test 1800A)



Scanning Acoustic Microscope (JOINSUN UTSCAN400)



HTXB/H3TRB Test System



Dynamic Parameters Test System



Static Parameters Test System (B1506A)

The primary test systems are showing up. The Lab capability covers AQG324 standards, including

01 Module characteristics parameters test

Dynamic parameters test
Static parameters test
Ultrasonic scanning

02 Environmental test

Thermal shock test
Vibration test
Mechanical shock test

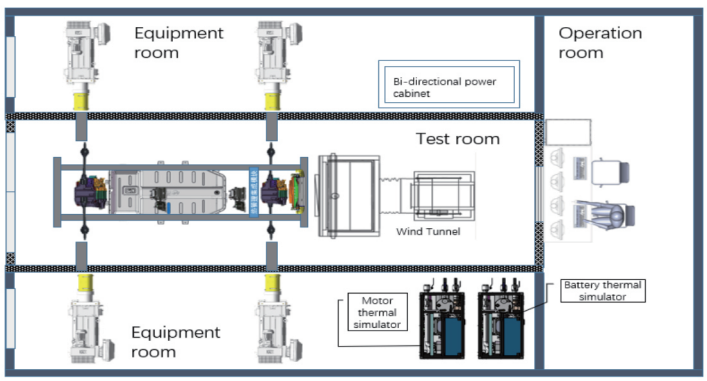
03 Lifetime test

Power cycling test
High-temperature storage(HTS)
Low-temperature storage(LTS)
High humidity high temperature reverse bias(H3TRB)
High- temperature reverse bias(HTRB)
High-temperature gate bias(HTGB)

Thermal Management

01 Testing Capabilities

- Component performance and endurance testing
- Architecture development testing
- Performance calibration and system-in-the-loop testing
- Vehicle thermal management testing



02 System Features

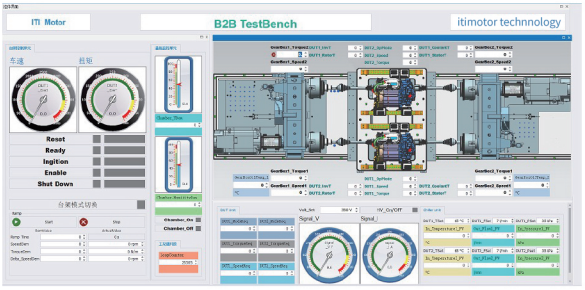
ITI Original Thermal Management System + Battery + Electric Drive + Bumper Dynamic In-Loop Test Bench, filling the gap between the thermal management test from the system enthalpy differential bench to the whole vehicle level test, can be the whole vehicle ring mode thermal management test front to the system in-loop bench, saving test costs and shortening the development cycle.



Test Systems

Overview

ITI's main control system platform is based on MTest which adopts the real-time C/S architecture, it can realize the X-in-loop test systems with all kinds of UUTs. This platform has stable control, high flexibility and strong scalability characteristics. It has been widely used in powertrain system, intelligent driving, hydrogen energy, thermal management and other fields.



Automation Platform

MTest automation software is state-of-art software which running on C/S architecture real-time system, it has the characteristics of stability and reliability. This software has model running capabilities, supports Simulink, FMI, and can perform power testing in loop testing, such as engine-in-loop testing, multi-MCU test, intelligent driving test etc. it is a powerful simulation and control platform software.

Test Systems Catalog

01 Powertrain TB

- E-Motor TB
- PTTB
- Transmission TB
- NVH TB

02 ADAS/AD TB

- SIL
- HIL
- Steering in loop
- VIL

03 Hydrogen energy TB

- Hydrogen ICE TB
- FC engine TB
- Electrolytic cell TB
- FC cathode/anode TB

04 Thermal management TB

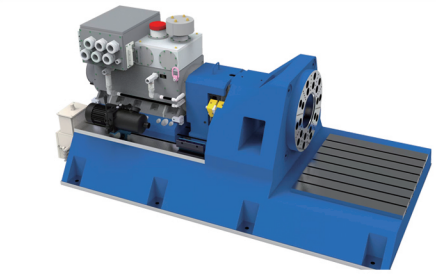
- Component TB
- Thermal management in loop TB

05 Instrumentations

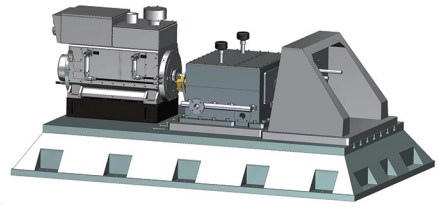
- Early failure analyzer
- Resolver simulator
- Hydrogen consumption measuring device
- Fuel consumption measuring device

Typical Test Bench

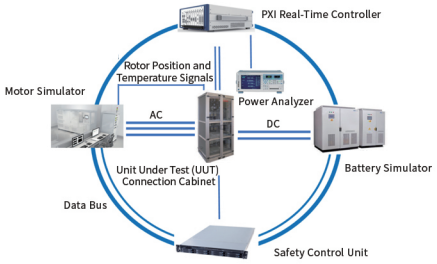
High-Speed E-Motor Test Bench - Direct Drive Solution



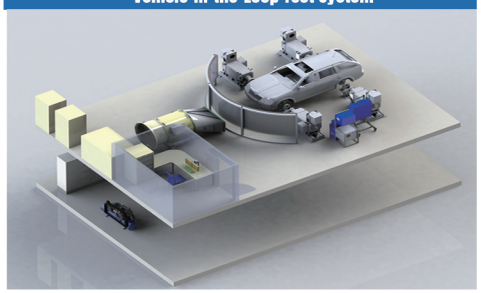
High-Speed E-Motor Test Bench-Gearbox Solution



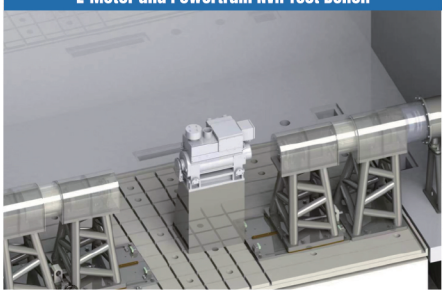
Motor Controller Power-in-the Loop Test System



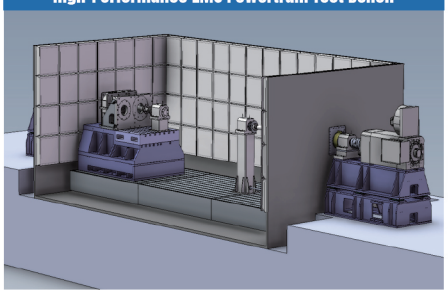
Vehicle-in-the-Loop Test System



E-Motor and Powertrain NVH Test Bench



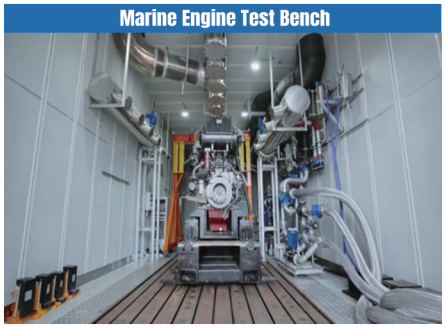
High-Performance EMC Powertrain Test Bench



Multi-fuel Engine Test Bench



Marine Engine Test Bench



Commercial Vehicle Powertrain Test Bench

