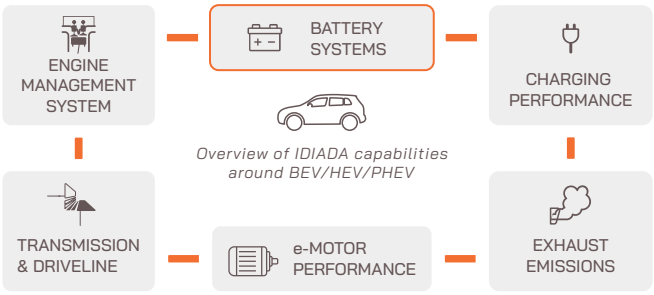
Battery Systems Testing and Engineering Services

IDIADA offers first-class facilities and engineering services for the testing and development of battery systems. Our approach is function-oriented, by merging our design engineering capabilities with expert technical proficiency in traction batteries.

TESTING & VALIDATION



Overview of IDIADA capabilities around BEV/HEV/PHEV

AGING & PERFORMANCE TESTING

- End-of-Life testing
- Calendar and cycling aging
- Endurance tests with customized profiles
- Durability standard cycles such as: HTOE, PTCE, ...

We execute a full design validation plan (DVP) at cell, module and battery system level, including pre-damaged samples.

- Charging and discharging performance
- Real driving cycles at different temperatures
- Electrochemical impedance spectroscopy (EIS)
- Validation of BMS functions

ABUSE TESTING & SAFETY VALIDATION

Full validation services including BEV and FCEV traction components. Adapted to various worldwide standards and regulations such as ECE R100,03, UN 38,3 and FreedomCAR, among others.

- Electrical abuse testing: Short-circuit, Over charge, Over discharge, Insulation resistance, Over current
- Thermal testing: Over-heating, Thermal shock, Thermal propagation
- Mechanical abuse testing: Drop test, Nail penetration, Vibration, Mechanical shock
- Water immersion

FACILITIES

IDIADA's state-of-the-art facilities are designed to handle pre-damaged samples, battery failures and other unexpected events.

BATTERY LAB FOR AGING AND PERFORMANCE TESTING

- 4 Climatized test benches from -45ºC up to 75ºC
- Coolant conditioner of 15KW @ 0ºC
- High power cyclers up to 500KW/1000V/1000A
- Low power battery cyclers up to 50KW/800V/150A
- More than 500 data channels: Voltage, current, temperature (thermocouples and NTCs), strain gauges, gas sensors and video cameras

BATTERY SAFETY LAB

More than 2000m^2 for battery abuse testing procedures, including safety measures and gas scrubbing & water treatment systems.

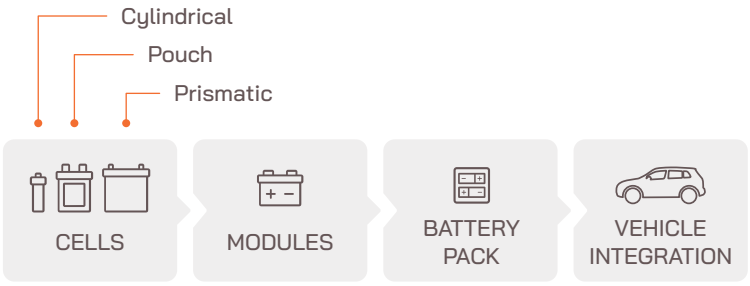
- Abuse testing: over-heating, thermal propagation, fire resistance, drop test, nail penetration, ...

ENGINEERING

IDIADA's battery engineering services, combined with our complementary services in the electric (EV) and hybrid (HEV, PHEV) vehicle field, place IDIADA in a leading position to support your battery systems development, from concept to full vehicle validation.

BATTERY SYSTEM DESIGN

- Cell selection and cell integration to module architecture definition
- Battery architecture definition
- Battery design: housing and thermal system
- BMS integration, power box and junction box design
- Battery system design validation plan definition and execution
- Full engineering support in HV safety & battery safety



IDIADA scope

VIRTUAL DEVELOPMENT

From virtual design to virtual validation, our experimental validation processes can be replicated to all virtual test models.

- Reduction of manufacturing costs through the implementation of battery optimization strategies
- Battery modelling conducted through our characterization methodology provides extensive data on battery behavior
- Virtual validation approach through thermal and electrical simulation, from which we gather valuable data on systems' reliability

BENCHMARKING ANALYSIS

Functional evaluation

EXPERIMENT DESIGN

- Target oriented
- State-of-the-art vehicles
- System characterization

TESTING

- Standardized tests & evaluation procedures
- Bus data acquisition
- Pair-wised test case matrixes
- Test-to-failure approach

ANALYSIS AND REPORTING

- Vehicle strategies
- Control logistics
- Consultancy

Failsafe testing

Obtaining exhaustive data on system response to induced failures.

BATTERY PACK DISASSEMBLY → BMS SENSOR AND RELAY BOX ANALYSIS → V&I&T SENSOR INSTRUMENTATION → INDUCED FAILURES → VCU CONTROL ANALYSIS

Battery teardown

Identifying battery component parts, circuits, sensors & system functionality, and providing information on component costs.

BATTERY PACK DISMANTLING → DETAILED BILL OF MATERIALS → MODULE CONFIGURATION → HV CIRCUIT ANALYSIS → BMS CIRCUIT ANALYSIS

CONTACT INFORMATION

Headquarters & Technical Centre · *L'Albornar - PO Box 20* · *E-43710 Santa Oliva (Tarragona) Spain*

For further details, please contact: *info@idiada.com* *+34 977 166 039*