

## Fatigue Test Laboratory (FTL)



**INTERNATIONAL CENTRE FOR AUTOMOTIVE TECHNOLOGY**

## Photograph(s) of Key Facility



High Frequency Multi Axis Simulation Table with Climatic Chamber

## Introduction of Lab

The Fatigue Laboratory of ICAT is the state-of-the-art testing and validation facility accredited by NABL, having expertise in structural evaluation of vehicles and its component to determine life as per real-world accelerated loading conditions.

Leveraging an advanced combination of Road Load Data Acquisition (RLDA), simulation, and physical testing, the laboratory delivers highly correlated, accurate, and actionable insights that support product validation, durability enhancement, lightweighting strategies, and regulatory compliances across Automotive, Non-Automotive like Defence, Railways etc.

## Capabilities

1. Fatigue & Structural Validation of Vehicles, Components & its aggregates.
2. ROPS and FOPS testing accredited by NABL & VCA.
3. Road Load Data Acquisition (RLDA) & analysis for duty cycle generation & lab simulation on 4-Poster and multi-axis simulation testing.
4. Advanced Instrumentation capabilities like Strain Gauging, Accelerometers, LVDTs, WFT, Temperature, Pressure, Torque Telemetry, Flow sensors, Seat /Tyre pressure mapping & Data acquisition systems.
5. Environmental Vibration Testing of Automotive, Railway & Defence Components accredited by NABL.
6. HVAC & Cold start performance under environmental condition.
7. Teardown & Benchmarking
8. EV Performance Testing.

## Specific Capabilities / USPs

1. High Frequency Multi Axis Simulation Table up to 200 Hz with Walk-in Climatic chamber and solar simulation
2. Self-aligned 4 pillar servo-hydraulic actuator of 1000 kN for fatigue testing
3. 21 nos. of servo-hydraulic actuators, capacity ranging from 15 kN to 1000 kN
4. 4 nos. of Wheel Force Transducers (WFTs) to acquire wheel forces simultaneously.
5. 6 Ton shaker with Climatic Chamber of size 2.5x2.5x2.5 m<sup>3</sup>
6. EV Data Logger of 8 channel to acquire voltage/current up to 1000V/1000A
7. OECD and NABL accredited Roll Over Protective Structure (ROPS) testing facility.
8. NABL accredited facility for testing of Railway & Defence Components.
9. Highly approachable, quick responsive & customer-oriented team

## Details / Brief Specifications of Test Facilities:

### UTB Area:

- Servo-Hydraulic actuator of capacity ranging from 15 kN to 1000 kN (21 Nos.)
- 1000 kN self-aligned load frame for dynamic testing
- Flywheel burst test rig
- ROPS facility up to 40 Ton
- FOPS testing facility
- Rotary actuator up to 10 kN-m



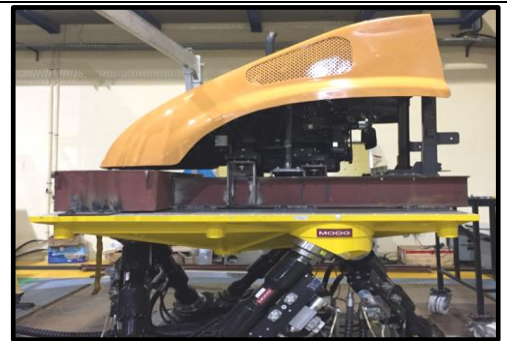
### Vibration Area:

- Electro Dynamic shakers with capacity of 3 Ton and 6 Ton with Climatic Chambers of range from - 40 °C to + 180°C
- DVP testing facility
- Rain Simulation Test Rig
- Mud Simulation Test Rig



### MAST Facility:

- Multi Axis Simulation Table (MAST) with 100 Hz and 200 Hz Capacity (2 Nos.)
- Equipped with climatic chamber having range from - 40 °C to + 80°C & Solar Simulation with IR and Metal Hallide Lamps up to 1200 W/m<sup>2</sup>
- Payload up to 1.1 Ton



### 4-P & RLDA Facility:

- 4 Poster with capacity of 3.5 Ton and 16 Ton (2 Nos.)
- Both can be integrated to simulate 2/3/4/6 Poster

### Instrumentation:

- DAQ for channels up to 150 Nos.
- EV Data Logger of 8 channel to acquire voltage/current up to 1000V/1000A
- WFT to passenger vehicle (4 Nos.)
- Torque Telemetry

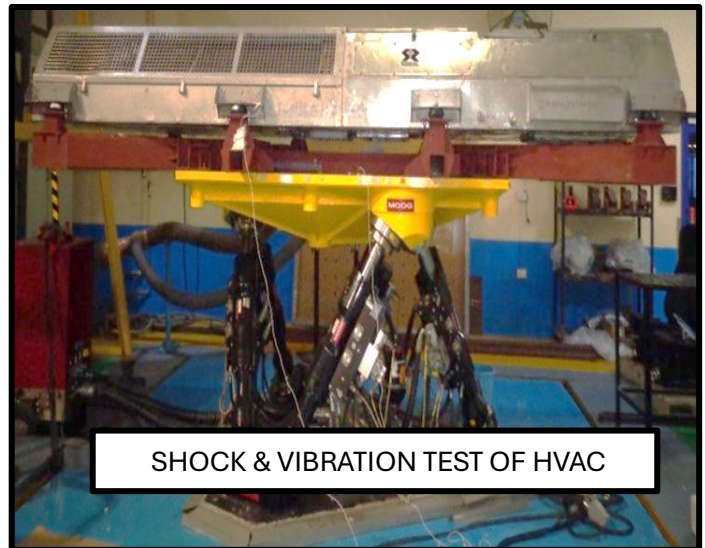
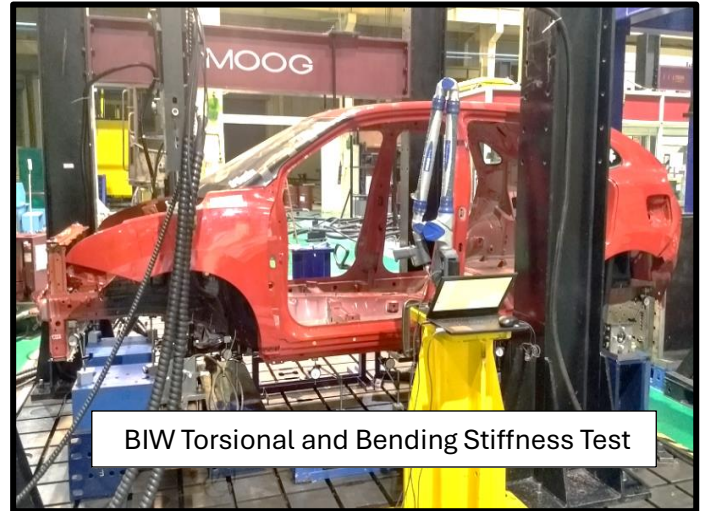


### HVAC & Cold Start Performance Testing:

- For Passenger Cars, Tractors, Commercial Vehicle and Off-Road Vehicles
- Testing can be done as per IS 14618:2022 for N2/N3 category vehicles & ISO 14269
- Climatic Chamber having range from - 40 °C to + 80°C & Solar Simulation with IR and Metal Hallide Lamps up to 1200 W/m<sup>2</sup>



## Key Projects Executed:



## Standards / Regulations (National & International):

- AIS 091 & AIS 160
- IS 14618:2022 HVAC
- IS 1184 -ROPS; ISO 3471 – ROPS & ISO 3474 -FOPS
- ISO 7092

## Compliance / Lab Accreditations / Recognitions:

- NABL; IMS and OECD accreditation

## Correlation & Benchmarking:

### Name of Lab

E-mail:

| Phone:

| Website: [www.icat.in](http://www.icat.in)

**International Centre for Automotive Technology**  
Centre-\_\_\_, Plot No. \_\_\_, Sector-\_\_\_, IMT Manesar, Gurugram- 1220\_\_\_, Haryana (INDIA)