

# AMRITA AUTOMOTIVE RESEARCH & TECHNOLOGY CENTRE (AARTC)

LAB ESTABLISHED AT AMRITA VISHWA VIDHYA PEETHAM, COIMBATORE  
(A Joint Venture of Automotive Test Systems & Amrita University)



**RESEARCH, TESTING AND ENGINEERING SERVICES**



## AREAS OF WORK

- 1. VEHICLE PERFORMANCE & HANDLING**
- 2. ROAD LOAD DATA ACQUISITION**
- 3. POWERTRAIN TESTING**
- 4. NVH**
- 5. SIMULATION**

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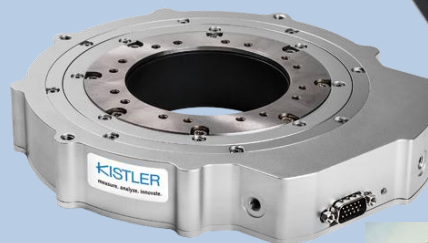
## VEHICLE PERFORMANCE TESTING

### INSTRUMENT CAPABILITY

- Various type of data loggers
- Optical and GPS based speed sensors
- Steering measurement
- Standard and ABS Brake test setup
- Fuel flow measurement sensors
- NVH measurement systems
- Wheel Speed Sensors

### TESTING CAPABILITY

- Acceleration and Brake test
- ABS performance test
- CSFC trials & Duty Cycle
- In cabin/Pass By Noise measurements
- Speedometer/Odometer calibration
- Physical Measurement of Vehicle C.G.
- Coast Down measurements
- Steering effort and returnability tests
- Speed Governor test
- Wheel Slip Measurement



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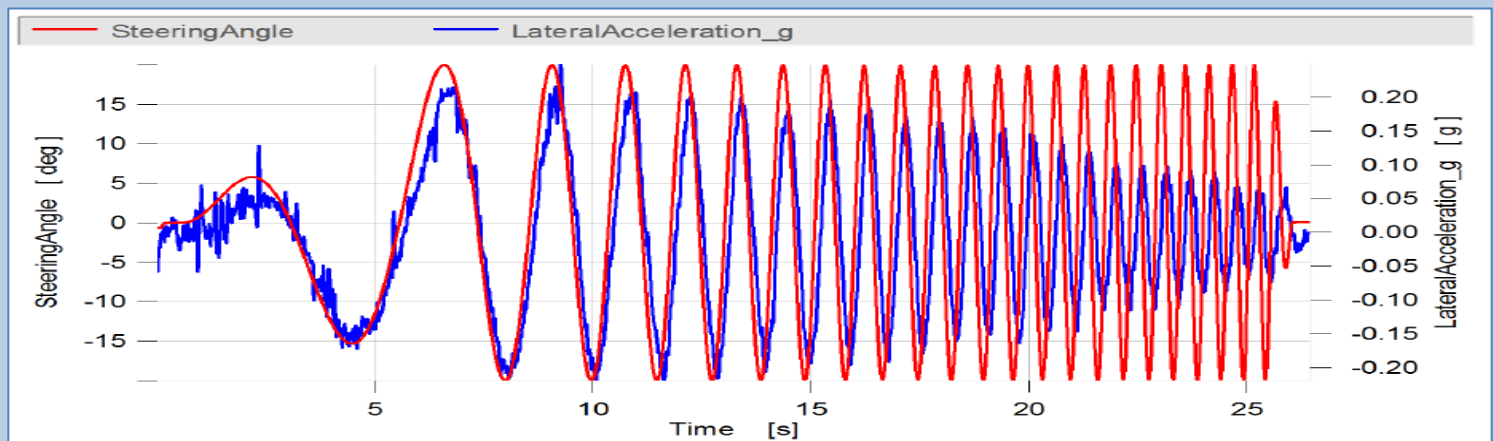
## VEHICLE HANDLING TESTING

### INSTRUMENT CAPABILITY

- High end data loggers
- Steering Robot
- INS and GPS Navigation sensors
- Height Sensors
- Slip angle measurement sensors
- IMU based Sensors
- Wheel vector measurement
- Dynamic Camber measurement

### TESTING CAPABILITY

- Close loop handling tests
- Open loop tests using steering robot
- Time domain and frequency domain analysis



### Frequency Sweep Test

Speed-80 km/h, lateral Acceleration-0.2g, Steering Sweep Frequency (0.2 to 2 Hz)

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## COOLING PERFORMANCE & HVAC TRIALS

### INSTRUMENT CAPABILITY

- Data loggers to capture more than 254 channels at a time
- K and T type thermocouples
- Pressure sensors
- Optical type RPM sensor
- Electromagnetic coolant flow meter
- Torque Telemetry

### TESTING CAPABILITY

- Engine Cooling trials
- Temperature mapping
- Pressure measurements
- Axle/Shaft Torque Measurement
- Current measurement up to 500 Amp
- Brake line temp and pressure measurement
- Temp measurement of rotating parts
- AC Pull Down Performance measurement
- Static De-aeration and Pump Cavitation
- Flow measurement and Drawdown test



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## RESEARCH, TESTING AND ENGINEERING SERVICES

### ENGINEERING PROJECTS ACCOMPLISHED

We have successfully executed more than 150 testing projects in this area. We are providing end to end solution to various OEMs in India, right from Instrument support, Measurements & data analysis/post processing till report generation, using our state of the art facilities under one roof.

Just to quote, few examples for kind of Projects we have executed.

1. Complete Vehicle Handling Comparison including Instrument set up, measurements, data analysis/post processing and report generation for Indian SUV's & Indian Cars done at VRDE Test Tracks. Various dry & wet handling trials conducted like "J" Turn, Slalom test, Double Lane Change, Steady State Circular trials etc.
2. Complete benchmarking trials conducted for small cars including CSFC, Coast Down, Cooling trials, Gradient, Acceleration, Braking, Turning Circle, Steering Effort & Returnability and various Handling trials.
3. Fuel Efficiency City & Highway Drive cycle measurement including Gear Position, RPM, Speed, GPS parameters, Fuel Consumption using DFL Sensor, Axle Torque etc. for SUV & cars (back to back). Complete data analysis including report generation containing % utilization for various parameters.

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4. ABS Performance Evaluation for Cars using complete Instrument set up at VRDE & WABCO Test Tracks for an Indian Car Manufacturer company.
5. Transient Handling Trials using Steering Robot & Data Analysis (time as well as frequency domain) for an SUV at VRDE Handling Test track. Various tests like Frequency Response, Step Steer, Sine test, On Centre Handling were carried out.
6. Cooling Trials & Temperature mapping in Trucks, Tractor trailers & Buses using more than 256 sensors at various locations (Temperature & Pressure), coolant flow measurement in static & dynamic condition, Coolant System verification trials etc. These trials conducted multiple times and on variety of vehicles.
7. Transmission oil Temperature measurements, temperature measurements of rotating parts for disc brakes & drum brakes etc. during brake test.

**Amrita Automotive Research & Technology Centre (AARTC)**

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