

EMISSION CERTIFICATION LABORATORY



ABOUT US :

- The Emission Certification Laboratory (ECL) is engaged in emission certification and performance evaluation & development support for vehicles ranging from 2 Wheelers to Heavy duty vehicles and engines including Automotive & Non-Automotive application as per national & international standards.
- The ECL facilities are established at two locations in Pune, viz. ARAI-Kothrud and ARAI HTC-Chakan
- The ECL facilities are established with on-road emission measurement on LDV & HDV as well as non-road vehicles

Emission Certification Lab- Activities and Capabilities



TEST FACILITIES



4Wh (4 X4) CHASSIS DYNAMOMETER @Kothrud

- 155 kW AC Machine, 4X4 chassis dyno, 48" roller diameter, Max Speed - 200 Km/h
- Inertia simulation range from 450 Kg to 4820 Kg
- Equipped with highly accurate exhaust emission analyzer for measuring CO, HC, Nox, CO2, CH4, PM and PN

4Wh (4X4) CHASSIS DYNAMOMETER @ Chakan

- Compatible for WLTP cycle as per GTR 15
- 150 kW AC machine & 48" roller diameter, Max Speed 250 Km/h. 4X4 chassis dyno
- Inertia simulation range from 454 kg to 5448 kg
- Equipped with highly accurate exhaust emission analyser and associated equipment for measuring CO, HC, NOx, CO2, CH4, PM and PN



UNIVERSAL DYNO FOR TESTING OF 2, 3, & 4 WHEELER @Chakan

- Inertia Simulation - 150 to 1500 Kg
- 87 kW, AC Machine, 4 X 2 chassis dyno with 24" roller diameter
- Chassis Dyno with Provision for Automatic Engaging/Disengaging two rollers in case of 2 wheeler Testing
- Equipped with highly accurate exhaust emission analyser and associated equipment for measuring CO, HC, NO, NOx, CH4, N2O, Co2, PM & PN
- Homologation test as per Japan (Accredited by NTSEE) & other export homologation

CLIMATIC VEHICLE TEST CELL(CVTC) WITH 4X4 CH. DYNO @ Chakan

- 220 kW, AC Machine, 48" roller diameter, Max speed 250 Km/h 4x4 Chassis dynamometer with solar simulation upto 1200w/m2
- Export Homologation emission testing @ -7 Deg.C and 14 Deg. C.
- Facility can also be used for HVAC validation, Electric vehicle performance, calibration development including vehicle emissions with extreme climatic conditions from -30 °C to 55 °C with control ability of 1°C



LOW TEMPERATURE SOAK ROOM (LTSR) @ Chakan

- Dimensions - Width= 9.8 m, Length= 19.0 m, Height= 5.5 m.
- Temperature simulation from -30°C to +55°C
- Cold startability of freezing tests, etc during engine / vehicle performance validation
- EV Charging tests of CEV, gensets, tractors, buses, trucks, etc.

Dedicated for 2Wh. and for 2Wh/3Wh/4Wh CHASSIS DYNAMOMETER @ Kothrud

- AC machine single roller chassis dyno with max speed upto 200 kph
- Can also be used for durability mileage accumulation with Robotic Driving
- 3Wh dyno is Suitable for Compact 4Wh also
- Homologation test for export homologation
- Compatible for testing of Flex fueled vehicles up to E100/M100 test fuel along with conventional fuels



2 Wheelers



2/3/4 Wheelers

TEST FACILITIES



HEAVY DUTY ENGINE TESTING FACILITIES

- **Heavy Duty Transient Test Cells (Kothrud)**

500 kW@ 2200 to 4500 rpm, 3000 Nm@ 1000 to 2200 rpm, Max speed 8000 rpm (TC5)
 220 kW @ 2200 to 4500 rpm, 960 Nm @ up to 2200 rpm, Max speed 8000 rpm (TC4)
 250 kW@ 2000 to 5000 rpm, 1200 Nm @ up to 2000 rpm, Max speed 5600 rpm (TC3)
 100 kW @ 2000 to 5000 rpm, 500 Nm @ up to 2000 rpm, Max speed 6000 rpm (TC6)
 Type: Eddy current dynamometer
 20 kW@ 2800-8000 rpm, 80 Nm @ 1400 to 2800 rpm. (TC6)

- **Heavy Duty Transient Test Cells (Chakan)**

500 kW@ 2200 to 4500 rpm, 3000 Nm@ 1000 to 2200 rpm, Max speed 8000 rpm (ETC1)
 220 kW @ 2200 to 4500 rpm, 960 Nm @ up to 2200 rpm, Max speed 8000 rpm (ETC2)

- **Emission Analyser : Suitable for measurement up to BS-VI/EURO-VI**

- **Particle mass and number measurement using CVS & Partial flow system**

- **FTIR/ LDS for NH3 measurement**

- **Certification and Development tests for:**

- Automotive BS-VI, EURO-IV & EURO-III
- Tractor /CEV Trem IIIA, BS-IV, BS-V, EU Stage IV and V
- Vehicle Simulation, Export Homologation, as per 40CFR 1065 requirement High Altitude Simulation,
- Friction Mapping testing

EMISSIONS MEASUREMENT@Kothrud & Chakan

- Large volume VV VT SHED to test vehicles of different sizes
- Capability to test evaporative emissions from gasoline and gasoline fuel blends with ethanol and methanol fueled 2Wh/3Wh and 4Wh vehicle as per Indian and Global standards including export Homologation test
- Fuel Conditioning system compatible for all types of alternate fuel and fuel blends with ethanol & methanol fuel.



MILEAGE ACCUMULATION CHASSIS DYNO (MACD 1 & MACD 2) @ Chakan

- AC Machine 4X4 Chassis dyno with 220 kW power and inertia simulation range from 454 to 5448 kg
- Max Speed 250 Km/h Equipped with a roller dia of 48"
- Exclusively used for mileage accumulation with robotic driver
- Equipped with Automatic Refuelling System

CHASSIS DYNAMOMETER FACILITY FOR HEAVY DUTY VEHICLE TESTING @ Kothrud

- Roller diameter 98" Inertia Range 3500 kg to 60000 kg with tandem axle
- This facility has a provision to carry out summer trials up-to 50° C to perform engine calibration, HVAC trials, BMS performance, etc.
- Capable for testing on all trucks, trailers, Bus, Tippers, drive away chassis, tractor head, EV's, HEV's can be tested with LNG, flex fuel, CNG, LPG, diesel, gasoline vehicles
- This facility has special feature of vehicle loading device up to 8 ton to avoid bumpy rides
- Can be used for testing for
 - Evaluation of fuel Economy and oil/fuel performance on vehicle.
 - Emissions measurement using PEMS.
 - Electric Vehicle Range test, energy consumption and BMS development trials. Dedicated Charger for these vehicles has installed.



TEST FACILITIES

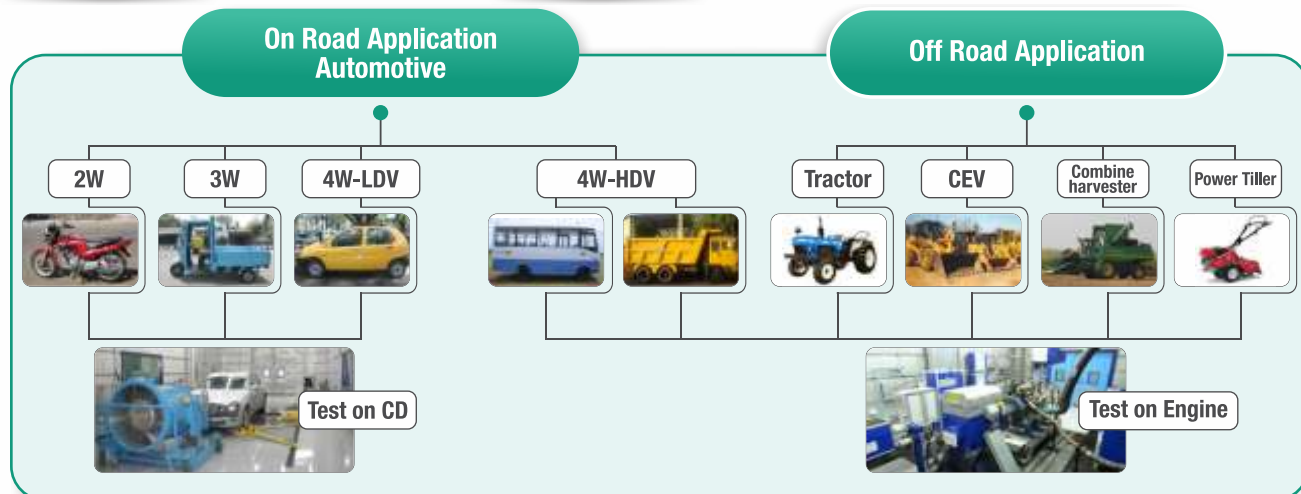
BS-VI - Real Drive Emission / PEMS Testing

RDE Capabilities includes

- 5 PEMS equipment
- Range of different flow meters to cater requirement of each vehicle testing.
- System is compliant to RDE package 4 testing as per EU 1151

RDE test equipment are being used for

- Light Duty RDE Tests
- Raw Emission Measurement for Engine/Vehicle Calibration on Chassis Dyno in Different Environmental Conditions
- HDV PEMS Tests



UPCOMING FACILITIES



Electric Vehicle Charging (120 kW DC)



Cannister conditioning system as per



Raw Exhaust Gas Emission

Altitude Simulation in Climatic Chambers -

Altitude Simulation Facility for simulating the altitude from Sea Level upto 5000 m at Chassis Dynamometer Test facility for testing the vehicle performance under existing chamber climatic condition having Temp range of -30 to +55 Deg C, RH :15 to 90% (Without heat load) and up to 85% (With heat load of 100 kW)

Altitude Simulation for simulating the altitude from Sea Level upto 5000 m at Soak Room under existing chamber climatic condition having Temp range of -30 to +55 Deg C.

Vehicles covered - 4W Passenger Cars, LCVs on Chassis Dynamometer and Buses, CEV, Agriculture Tractors, Gensets in Static Conditions.



EMISSION CERTIFICATION LAB FACILITIES AT A GLANCE

ECL-Kothrud

4 Wheeler Chassis Dyno 155 kW

3 Wheeler Chassis Dyno 50 kW

2 Wheeler Chassis Dyno 70 kW

EVAP- VTVV SHED
87.48 cu-m

4 Transient & 1 Eddy Current Dyno Test Cells
20 kW, 100 kW, 220 kW, 250 kW, 500 kW

HCV Chassis Dyno-60tons
1100 kW (3 motors)

ECL-Chakan

4x4 Chassis Dyno 150 kW

CVTC-4x4 Chassis Dyno with Climatic
control 220 kW (-30 to +55 Deg. C) with LTSR

4x2 Chassis Dyno With Solar Simulation
(2/3/4W) 87 kW

EVAP- VTVV SHED 54.0 cu-m

2 nos. of MACD: 220 kW 4x4-with
robot & auto-fuel filling, Ki Factor evaluation

2 nos. Transient Engine Dyno
Test Cells 220 kW and 500 kW

Large capacity soak rooms with
environmental conditions maintained
as per standards

**5 NOS. OF PEMS FOR
4W RDE/HDV PEMS TESTING**

Dedicated workshop area for
Customers to carry out maintenance /
servicing/Storage

ECL SERVICES

CERTIFICATION : TA / COP / ISC

- Chassis Dyno Tests < 3.5 Ton Vehicles
- Engine Dyno Tests > 3.5 Ton Vehicles
with FFV testing up to E100/M100 fueled vehicles.

RDE / PEMS

- < 3.5 Ton Passenger car and goods carriers
- > 3.5 Ton Automotive application for Bus/Trucks/Tippers/Tractor Trailers
- > 3.5 Ton Non - Road application for Tractors and CEV

DEVELOPMENT TESTS ON VEHICLES / ENGINES

- Emission and performance evaluation projects on vehicles,
oil / lubricants evaluation, aftertreatment evaluation, etc.
- Engine emission and OBD calibration assistance to OEMs
- Facility for engine calibration development and validation.
- Facility for evaluation of aftertreatment devices, Drivability checks
for cold and hot start trials, evaluation of fuel consumption on
different fuels/lubricant/vehicle configuration.
- Testing at extreme climatic conditions with solar simulation
from 30°C to 55°C
- Testing of hybrid electric vehicles.
- Mileage accumulation and durability testing as per OEM
prescribed methods.

TRAINING / STANDARDS FORMULATION

- Workshops and training
- Standards formulation
- Involvement in Global Technical Regulation formulation
under United Nations World Forum (UNECE-WP.29/GRPE)

