

# Variable Temperature Emissions Chamber

The Variable Temperature Emissions Chamber (VTEC) is a climatic chassis dynamometer vehicle emissions testing facility designed for light and heavy duty vehicles.

The facility is designed for highly repeatable emissions, fuel economy and energy consumption to enable the development and approval of vehicles fuel/lubricants and components to a wide variety of industry standards. Although primarily designed for emissions testing for both light and heavy duty vehicles, the facility can also undertake test activities which require a controlled environmental condition or drive cycle.

## Test Chamber

- Secure facility with large customer room next to the facility
- Size: 26.5m long, 6.5m wide, 5m high with space for large heavy duty vehicles of maximum legal design size or multiple passenger vehicles
- Temperature range -30°C to +50°C
- Controlled fresh air make up system
- Vehicle directional air flow speed tracking fans
- Solar load array 6mx3m and up to 1500W/m<sup>2</sup>

## Chassis Dynamometer

- 200kW power absorption at 118km/h and above
- Tractive effort of 6110N continuous
- Single axle 48" rolls
- Full road load simulation for heavy duty vehicles
- Coast down match to real road resistance times and forces
- Inertia simulation from 454kg to 20,000kg in 1kg increments
- Light duty maximum speed 200km/h
- Heavy duty maximum speed 130km/h
- Gradient simulation (dependent on vehicle inertia)



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## Vehicle Cooling

- High capacity twin nozzle speed tracking cooling fan
- Speed range: 10 to 120km/h; 0 to 134,810m<sup>3</sup>/h

## Analytical System

- Custom built to accommodate a wide variety of vehicles
- Full CVS emissions sampling system bag HC, CO, NO<sub>x</sub>, CO<sub>2</sub>
- Petrol/Diesel: Raw engine out & tailpipe real time modal analysis, CO<sub>2</sub> tracer & bag
- Particle number measurement
- FTIR for NO<sub>x</sub> species and ammonia measurement
- Data logging acquisition system for temperatures, pressures and voltages
- E.L.P.I. real time modal particulate size (10 micron down to 0.03 micron in 12 sizes) and mass distribution analysis system

## Emission Test Capabilities

- All world wide light duty test cycles (Petrol and Diesel)

- Steady state (Petrol and Diesel)
- Heavy Duty whole vehicle emission tests to customer test schedules (Petrol and Diesel)
- Bespoke drive cycles; WHVC, FIGE, MLTB, Revised LUB, LowCVP UK bus (LUB), LowCVP UK Coach (LUC), LowCVP UK HGV
- Testing to Industry procedures such as; TfL, LEB, LowCVP HGV accreditation scheme,
- Fuel consumption repeatability down to 0.3% test on test

## Non Emission Test Capabilities

- Cold start engine performance
- Cold/hot engine lubricant assessment
- Solar load testing
- Solar load testing
- Heater and demist test
- Air conditioning performance assessments
- Engine derating testing
- Driveability performance assessment
- Energy consumption and range testing

