Millbrook Proving Ground

«4WD Climatic Emissions Chassis Dynamometer»

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4WD Climatic Emissions Chassis Dynamometer

Millbrook's 4WD climatic emissions chassis dynamometer operates at temperatures between −20°C and +50°C

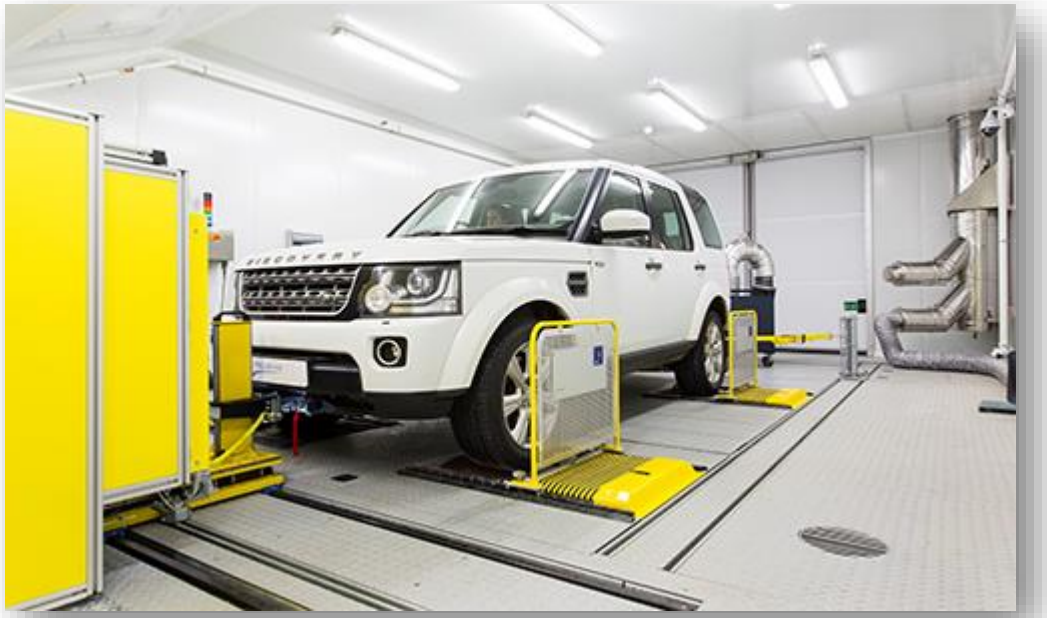
It is used to measure:

- Vehicle emissions (air quality)
- CO_2
- Fuel consumption
- Electric Consumption and Range
- Performance
- Climatic performance

of passenger cars and light commercial vehicles under repeatable conditions.
Real world drive cycles can be performed and logged and then replicated on the dynamometer.

Capability

- Large test cell: L13m × W6.5m × H3.5m
- A high performance 4WD chassis dyno for emissions testing
- Ambient temperature range of -20 to +50ºC
- Compliant with current and known future European Federal and Japanese light duty emissions regulations including the WLTP
- Separate exhaust extract system for when not wanting to use the emissions system
- Suitable for gasoline, diesel, LPG, CNG, hybrid, electric and hydrogen vehicles
- Connected to 12 vehicle soak bays



Dynamometer Specifications

- 4 wheel drive centre mounted motor
- Roller diameter: 1.22m (48”)
- Wheelbase range: 1.8m to 4.6m
- Inertia range: 454kg (800kg in 4WD) – 5448kg over WLTC
- Max operating speed: 250 km/h
- Max axle load 4500kg
- Continuous power: 220kw per axle 2WD, 330kW 4WD (total)
- Overload power (10s): 432kW per axle 2WD, 648kW 4WD (total)
- Continuous tractive effort: 7333N per axle 2WD, 11000N 4WD (total)
- Overload tractive effort (10s): 14666N per axle 2WD, 21600N 4WD (total)
- Dynamic gradient simulation for 3,500 kg inertia, at least 20%
- Simple restraint system has no vertical or lateral load on vehicle. Flexible approach to allow wide variety of vehicles to be tested

Emissions Equipment

- AVL PUMA with IGEM operating system
- 4 phase multi-phase CVS sample system up to 30m3 flow
- Bag bench: THC, Methane, CO, NOx, NO, NO2, N2O, CO2
- Tailpipe and engine emissions bench (1Hz): THC, Methane, CO, NOx, NO, NO2, N2O, O2, CO2
- EGR on engine bench
- SESAM FTIR (5Hz) – NO, NO2, N2O, NH3, CO2, CO, CH4, alcohols, carbonyls
- Dilute CVS CO2
- Particulate mass applicable for Euro 4 (phases and backups) and Euro 6 single filter across all phases
- Dilute Particle number counter
- State of charge measurement and correction for 12v and HV traction electrical systems
- Heated and insulated CVS tunnel for Federal tests

Speed Tracking Fan

- Speed tracking fan frontal area of 0.5m2 up to 140km/h and 0.3m2 at 200km/h
- Adjustable up and down to match vehicle height
- Frontal vanes to be able to be angled
- Fan able to be placed in set speed modes
- Fan calibration meets regulatory requirements as a minimum

Environmental Performance

- Temperature range: -20°C to +50°C
- Climatic control to +/-1.5°C over test cycles measured at air onto vehicle
- Heat absorption: 250kW @ 20°C, 150kW @ -7°C, 50kW @ -20°C
- Temperature set-point rate of change minimum criteria: 30°C/hour if temperature >0°C, 20°C/hour if -20°C< temperature < 0°C, 1 hour from -10°C to +20°C
- Vehicle soak temperature range: +10°C to +30°C