



ALTITUDE SIMULATION SYSTEM

The ETC Altitude Simulation System is used for a variety of engine testing applications, including power and emissions testing, in both steady and transient use. The system is capable of simulating various altitudes with a range of temperatures and humidity to choose from, without the use of a costly, conventional fully welded altitude chamber.

Comprised of sub-systems that enable installment in space limited areas, the ETC Altitude Simulation System offers configurations designed for your custom test cell needs. An EPA 1065 CVS emissions tunnel can be integrated for altitude testing up to 8,000'.

ETC's proprietary altitude control valves are capable of keeping up with the dynamic changes associated with various profiles including FTP, NTE, EPA, EU, etc.



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ALTITUDE SIMULATION SPECIFICATIONS

FEATURES

PARAMETER

Altitude Control Range

Steady State Control Stability

Transient Response to Throttle Change

Transient Response to Setpoint Change

Temperature Control Range

Temperature Control Stability

Humidity Control Range

Humidity Control Stability

Barometric Pressure Simulation

ALTITUDE SIMULATION PRESSURE

Site pressure to 15,240m (50,000 ft)

$\pm 30\text{m}$ (100 ft)

Able to maintain pressure control within ± 0.15 Psi
(depending on disturbance characteristics)

Maintain altitude control within $\pm 30\text{ m}$ (100') for altitude ramps up to 1000 FPM

-45°C to 90°C

$\pm 0.5^{\circ}\text{C}$

1.5°C to 35°C Dew Point

$\pm 0.5^{\circ}\text{C}$ Dew Point

Up to 3 psi above site pressure,
steady state control $\pm 0.02''$ Hg (± 0.01 psi)

APPLICATIONS

Emissions Testing

Gasoline Engine R&D

Diesel Engine R&D

Fuel Economy Testing

Aircraft Engine R&D

Induction System R&D

Turbo Charger and Aftercooler R&D

Steady and Transient State Testing

CONTROL SYSTEMS

ETC's sophisticated control system utilizes either a feedback or feed forward approach. An industry standard programmable logic controller (PLC) is used, which digitally communicates with the existing facility control systems. The link passes test profiles, engine and dynamometer status, and Altitude Control System information upstream and downstream.

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