Test Chamber for Small Sensor & Component Analysis

A uniquely designed test chamber which is able to produce, replicate, sustain, and sequence through a variety of ambient environmental conditions for in depth product testing and analysis. In addition to standard temperature and humidity control, the chamber may be configured with automated gas dilution and particle generator systems to provide specific atmospheric conditions in which to test the robustness of sensors and components. Coupled with an external analytical system, sensor response may be tested for accuracy, precision, and linearity.

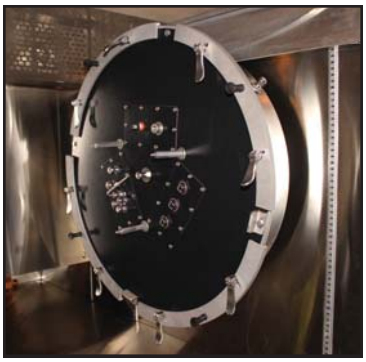
Above: Chamber front with particle generator mounted at the top.

KEY FEATURES:

- Humidification System - Range (10 to 95%)
- Temperature Control System - Range -30 to 170 degrees C
- Automated Multi-point Temperature and Humidity Control
- Analog and Digital Communication Ports
- Variable speed air circulation system.

OPTIONAL FEATURES:

- Automated Integrated Gas Dilution System
- Automated Integrated Particle Generation System
- Zero Air Generation System
- Independent Gas and Particulate Analysis System
- Inner Chamber
- Custom sensor and component mounting platforms



Above: Analog & digital communications platform on customized inner chamber platform.

Right: Independent gas analytical system.

info@ambilabs.com (401) 247-0100 www.ambilabs.com

Field Use

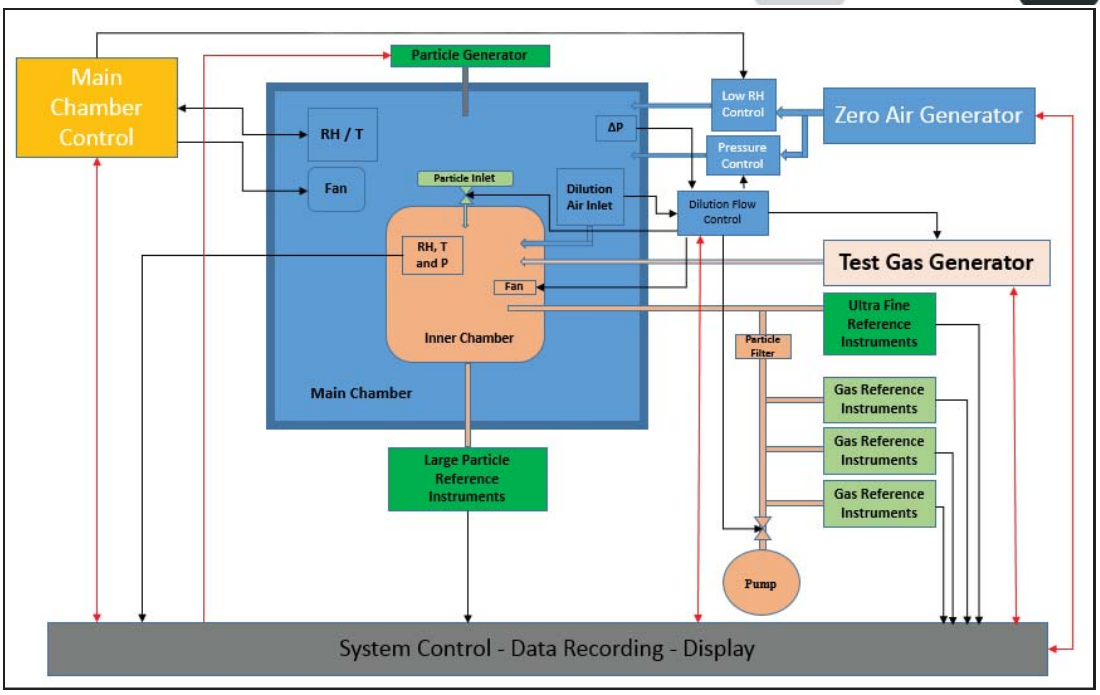
The chamber operates on two different modes; gas mode and particulate mode. Each mode has been optimized for fast response and stable reading analysis.

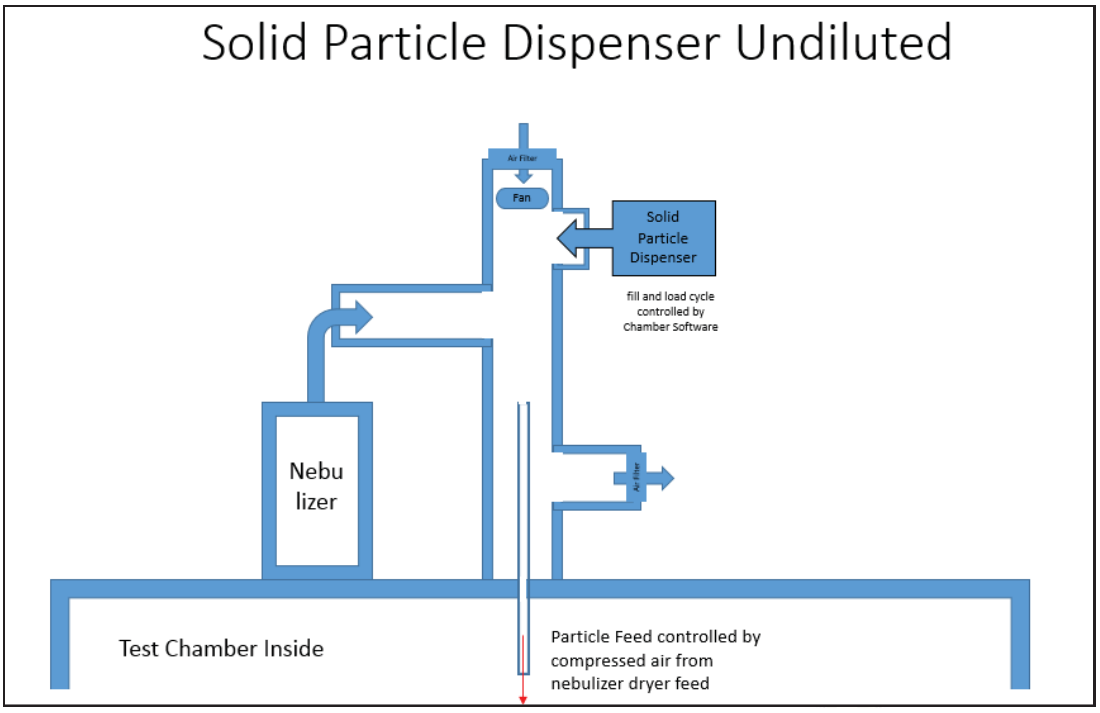
Gas Testing:

The chamber has a smaller volume inner drum that is used to first reduce the volume of air that is being used during testing of gas sensors, and at the same time ensure a temperature controlled zero air is being used in the dilution system. By doing this, the test performed has minimum delta temp and effects. In order to achieve the above, Ambilabs® engineers have adjusted the calibrator to use the flow coming in and out of the inner chamber drum as the source and zero air dilution instead of performing the mix outside at a different ambient air temperature.

Figure A (above right) shows a diagram of the main components including EPA Reference Equivalent Method analyzers used as reference to compare to instruments inside the chamber.

Figure A





Particulate Testing:

For the particulate testing, the chamber has two particulate generators; a nebulizer and a solid particulate dispenser. Both of these can produce different types of particulate in the chamber, and by utilizing a pulse with modulation technique, the generators can be set to produce a stable concentration inside the chamber on an average of 1 minute.