

## OZONE TESTING SYSTEMS SIM

### Testing Chambers. Ozone Generation and Control

#### Ozone Testing in the Rubber Industry

Ozone is naturally occurring triatomic oxygen, typically present in atmospheric concentrations up to 10 - 15 parts per hundred million (pphm) of air, and occasionally higher. Even at these low levels, ozone reacts readily with unsaturated elastomers, promoting cracking and possible failure of rubber parts in service.

Ozone test chambers provide an effective means of assessing the resistance of rubber compounds to ozone degradation under controlled atmospheric conditions.

#### Anseros Testing Systems

Anseros test chambers are available with internal capacities of 50 to 8,000 litres, permitting the testing of large products as well as laboratory specimens.

Ozone is generated using a long-life Corona Discharge tube and measurement is done by maintenance-free UV Absorption. Ozone concentrations are controlled continuously and automatically up to 200 pphm (or higher), with chamber temperatures up to 70°C and optionally relative humidity up to 80%. Proprietary AMACS software allows remote operation by PC.



#### Key Benefits

- ++ Stable ozone supply without deterioration of the generator electrodes with time
- ++ Calibration-free spectroscopic ozone measurement, requiring no chemicals
- ++ Exhaust gas catalyser, eliminating discharge of ozone into the atmosphere, for a safe environment
- ++ Continuous unattended operation

## Testing Systems

### Ozone Generation

Ozone generation is by corona discharge. The discharge electrodes are not located directly in the ozonised air stream, thereby protecting them from deterioration in the oxidising ozone atmosphere. The ozone supply is very stable, and flow is controllable across a wide range. Ambient air is used as intake, with no need for humidity control.

### Ozone Measurement and Control

Ozone concentration is measured with a single-beam UV photocell that requires no routine calibration. As well as offering superior precision, the preparation and control of the chemicals associated with electrolytic ozone measurement is eliminated.

The range of measurement of the UV photocell is adjustable, with a resolution of 0.1% of the chosen range. Temperature and pressure compensation is automatic.

Ozone concentration is controlled continuously via a PID servo with adjustable ranges.

### Humidity Control

Peltier units provide silent and maintenance-free humidity control.

### AMACS Software

AMACS software allows remote control from a central computer, with output to a printer/recorder. Data logging and service interrogation can be made over the Internet.

### Operational Safety

Anseros test chambers operate below atmospheric pressure, preventing any tendency for ozonised air to escape into the laboratory atmosphere.

A door safety interlock ensures that the test chamber cannot be opened until the ozone concentration is below a safe limit. Discharge of residual ozone to the atmosphere is prevented since all ozone in the exhaust stream is destroyed by catalysis before discharge.

The test chambers are stand-alone systems, requiring no ducting or water supply, thus simplifying laboratory installation.

## Standard Testing Systems

### 6050-T System

50 litre test cabinet  
Ozone generator, analyser and controller  
Temperature control  
Exhaust gas catalyser  
Particle filter, carbon and gas filter

### 6050 System

All features of 6050-T  
Humidity control  
Recorder

### 6300 System

170 litre test cabinet  
All features of 6050 system  
16 station static tension sample rotation disc

### Retrofit Package

Replacement units providing ozone generation, measurement and control for an existing test cabinet.

## Custom Testing Systems

Test cabinets with internal capacities between 50 and 170 litres, and also over 170 litres up to 8 m<sup>3</sup> are available to special order.

AMACS software for computer control of temperature, humidity and ozone

Ozone safety sensor

## System Options

PC, printer and interface

Sample clamping rigs for static tension, static bending, and static+dynamic tension. Ozone sensors for personal safety monitoring.

## Conformance with International Standards

Anseros testing systems meet the requirements of international testing standards ISO 1431, DIN 53509 and ASTM D1149.

## Specifications

### Ozone Generator Unit

Principle	Corona discharge
Tracing gas	Ambient air
Gas connections	¼ inch
Power requirements	230V/50Hz

### Ozone Measurement Unit

Principle	Single beam ultra violet absorption
Range	0-100/1000/10000 pphm
Detection limit	1 pphm
Accuracy	2% of reading or 1pphm, whichever is higher
Repeatability	0.2% of range
Temperature compensation	Automatic in the range 0-60°C +/- 1°C
Pressure compensation	Automatic in the range 600-1500 mbar +/- 2 mbar
Gas connections	¼ inch
Power requirements	230V/50Hz

### Testing Systems

	6050-T	6050	6300
Chamber inner lining:		Stainless steel	
Chamber door:		With viewing window	
Velocity of air inside chamber:		600 mm/s	
Air exchange rate:	400 l/h		600 l/h
Temperature range:	26 - 60 °C (RT = 23°C)		15 - 70 °C (RT = 23 °C)
Accuracy:		± 0,5 K	
Recovery:		0,4 K/min	
Humidity range:	Ambient humidity		30 - 80 % Relative humidity
Humidity accuracy:	-		-1/+4 % of % Relative humidity
Recovery time to reach 95% of set humidity:	-		20 min
Ozone control:		Automatic (PID type)	
Ozone test range:		25 – 200 pphm (other ranges to order)	
Ozone accuracy:		± 5 pphm (in the test chamber)	
Recovery time to reach 95% of set ozone concentration:		10 min	
Power supply:		230 V/50 Hz	
Overall chamber size (Width,Height,Depth)	670x620x510 mm	670x620x510 mm	950x870x610 mm
Free, usable space of chamber, and volume	425x460x270 mm 50 litre (52,7)	425x460x270 mm 50 litre (52,7)	680x650x400 mm 170 litre (178,6)
Size of generator, controller and monitor unit (h,w,d)	650x550x600 mm		1600x550x600 mm

Advanced technology for efficient ozone resistance testing in the rubber industry

- ? Sensitive and reliable ozone generation, measurement and control
- ? Temperature and humidity control
- ? Testing rigs for tension and bending, in static, dynamic and static+dynamic modes
- ? Unattended, continuous operation
- ? Optional remote operation via PC, with Internet access if required.
- ? Test chambers for small laboratory samples or large moulded products
- ? Custom systems for maximum flexibility

Retrofit ozone generation and control modules available for existing test chambers

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