

Gas Sensor and Catalyst Testing System (GSCTS)

Gas sensor interacts with a gas to measure its concentration. Each gas has a unique resistance, conductivity and breakdown voltage and the electric field at which it is ionized. Sensor identifies gases by measuring these characteristics.

This device is manufactured by integration of two devices: Catastest (for Heterogeneous Catalyst's performance measurement) and semi conductive sensor's performance tester. It can well satisfy the semi conductive sensor's research center supplies. It is a qualified device for use in laboratory which investigates the synthesis and evaluation of the heterogeneous catalysts.

Since optimization of sensitive materials in semiconductor sensors are linked to the performance of the catalyst, this equipment is able to simultaneously measure sensor performance and catalytic properties of material.

Features and facilities:

- Gas flow controller
- Automatic and manual control valves
- Accurate fluid injection pump
- Manual and automatic control of flow
- Max furnace temp: 1000°C
- Temperature controllers
- Gas injection port
- Reactor chamber and sensor holder
- Catalytic reactor
- Humidity controller
- Software for data and signal collection

SPECIFICATION

Resistance	$5 \times 10^2 - 5 \times 10^{10} \Omega$
Gas Concentration	0.1 – 10000 ppm
Gas Flow Rate Control	1 ml/min
Fluid Flow Control	1 μ l/h
Temperature Control	0.1 % Accuracy
Dimension	80cm×90cm×50cm

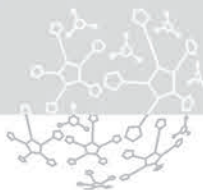
Application of Gas Sensor

- Process control industries
- Environmental monitoring
- Boiler control
- Fire detection
- Alcohol breath tests
- Detection of harmful gases in mines
- Home safety
- Grading of agro-products like coffee and spices

Applications of Catalyst Performance Test:

- Hydrocarbon partial Oxidation
- Fuel Cells
- Catalytic Cracking
- Hydrocracking, Hydrodesulfurization, and Hydrodenitrogenation Catalysts
- Fischer-Tropsch Synthesis
- Isomerization
- Catalytic Reforming





Membrane Gas Separation and Permporometry System (MGSPS)

The membrane industry is one of the growing ones in the field of gas separation which is the key sectors of various industries including petroleum, petrochemical and natural gas industries. Permporometry is a method by which the characteristics of the interconnecting active pores of membrane that are responsible for the actual membrane performance, can be measured. Permporometry is a relatively new characterization method to evaluate the active pores of membrane. It is based on the controlled stepwise blocking of pores by condensation of a vapor, present as a component of a gas mixture and the simultaneous measurement of the gas flux through the membrane. MGSPS device as the first Iranian apparatus for testing the membrane, has taken a major step in meeting the membrane industry requirements.



Features and facilities:

- Gas flow controller
- Electric and manual control valves
- Manual/ automatic control of flow
- Max furnace temp: 500°C
- Temperature controllers
- Cold trap chamber
- Babbler flowmeter
- Back pressure regulator
- Saturator
- Pressure monitoring
- Membrane processes test module
- Pressure transducer

Capability

- Gas separation membranes.
- Review and analysis of the gaseous component in feed gas penetration, and exhaust
- The ability to combine various amounts of gases using MFC
- Separation measurement at various pressures
- Equipped with oven and temperature controller
- Used for tubular microporous membranes, mesoporous membranes
- Measurement of pore size distribution of all kind of porous membrane
- Capable of working at low pressure

SPECIFICATION

SPECIFICATION	
Membrane Test	Max Pressure:7 bar - Max Temperature: 500°C
Permporometry Test	2-50 nm
Dimension	80×45×80 cm