ALTAMIRA INSTRUMENTS

The First Name in Custom Reactor Systems

AMI-300HP High Pressure Catalyst Characterization Instrument

Based on our successful AMI-300 instrument, the **AMI-300HP** represents an automated high pressure catalyst characterization system. The **AMI-300HP** performs dynamic high pressure temperature-programmed experiments designed to reach 100 barg (higher pressures available in custom instruments). When integrated with a pump, the **AMI-300RHP** provides the most sophisticated and automated characterization and micro-reactor instrument in the industry.

The AMI-300HP

The **AMI-300HP** can be designed with any number of pressure and temperature ranges in mind. The **AMI-300HP** utilizes our proven technology to perform:

- Temperature programmed desorption (TPD)
- Temperature programmed reduction/oxidation (TPR/O)
- Pulse chemisorption
- Catalyst treatment
- Pulse calibration
- Dynamic BET (optional)

Up to 99 procedures can be linked together back-to-back to provide a complete characterization experiment. Routine experiments can be designed and stored for easy retrieval.

The **AMI-300RHP** is also able to perform:

- Temperature programmed reaction experiments with vaporized liquids (TPRx).

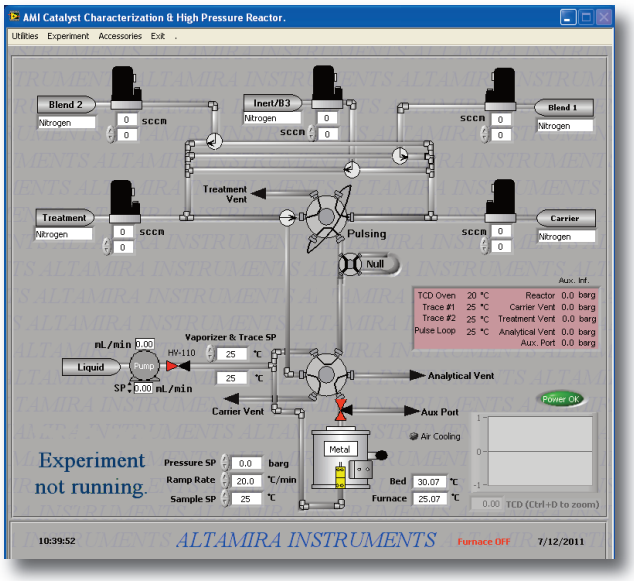
Hardware and Operation

The **AMI-300HP** is a fully automated, atmospheric and/or high pressure system. Features include:

- A clamshell furnace capable of 1200°C (reactor type limits max temperature) with ramp rates from 1°C to 30°C per minute.
- High-precision mass flow controllers (MFCs) to ensure TCD baseline stability with changing temperatures.
- A heat-traced stainless steel flow-path to alleviate concerns of condensation and to provide an inert surface.
- A highly linear Thermal Conductivity Detector (TCD)
- Options for:
  - Dynamic BET
  - Quartz Reactor,
  - Vacuum Activation
  - Liquid delivery
  - Inconel, Hastelloy, or other high temperature reactors.
  - Sub-ambient (-100°C) temperatures

Computer Control and Data Acquisition

The **AMI-300HP** is fully-automated for ease of use and reliability. The control portion of the software controls and regulates all valve positions, temperatures, flow rates, and detector parameters. Data acquisition occurs at a selected rate for optimum performance. The front panel screen shows the status of the unit at a glance. This screen provides information on the position of all valves, type of gas connected to each port, temperatures, and detector signal.



Operating Screen - A complete overview of all experimental parameters

The data handling package allows the user to display and integrate signal peaks, calculate chemisorptive parameters, and overlay data.

Choice of Detectors

With the **AMI-300HP** you can use the standard thermal conductivity detector or choose other detectors of your choice. We supply integrated mass spectrometers that can be used in addition to the TCD. In addition, we can incorporate any detector that provides an analog output or can communicate through Dynamic Data Exchange (DDE).

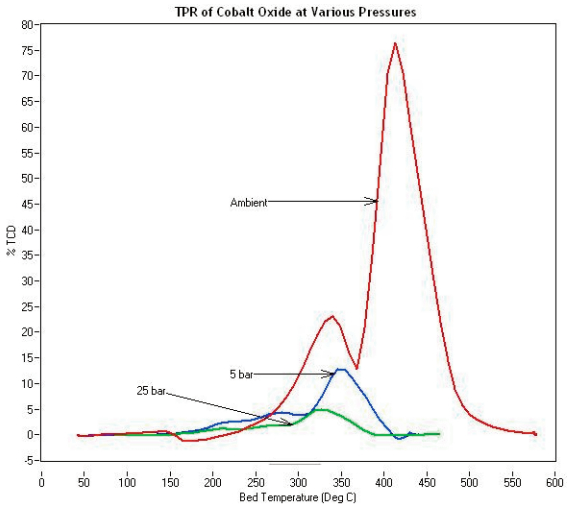
Specifications:

Catalyst charge:	0.1 - 1 g[1]
Temperature range:	-100 to 1200°C[2]
Ramp rate:	1 - 30°C/minute
Operating pressure:	100 barg[3]
Gases:	5 MFCs for carrier, treatment, pulse, and TCD gases[4]
Gas flow rates:	User defined
Reactor types:	SS 316[5]
Detector:	4 filament TCD with choice of filament type (W, Au/W)

Materials of construction: stainless steel

Notes:
1 Custom reactors available for increased loading
2 Standard temperature range is 25°C - 650°C, -100°C - 1200°C requires options
3 Higher pressure available in custom instruments
4 Number of MFCs can change to increase capability or lessen cost
5 Other reactor materials are available

Representative Data



TPR of 10% Co / 1% Re on Al_2O_3 at different pressures

ALTAMIRA INSTRUMENTS

149 Delta Drive, Pittsburgh, PA 15238 • 412-963-6385 (Voice) • 412-963-6485 (Fax)
Email: info@altamirainstruments.com
Visit our Website: www.altamirainstruments.com