Apex Instruments, Inc. 204 Technology Park Lane, Fuquay-Varina, N.C. 27526, U.S.A.
800-882-3214 or 919-557-7300 Website: www.apexinst.com / Contact: info@apexinst.com

**Installation Solutions**

With over 25 years in the industry, Apex Instruments recognizes the wide variety of customer site conditions and offers a range of equipment installation solutions to best suit your application.

**Current XC-6000EM System Installations**

- Laptop Tray
- Sorbent Traps
- Heated Umbilical & Umbilical Cable Jumper
- Enclosure Cabinet w/ Air Conditioning
- Optional Pedestal Stand
- Modbus Via IP/TCP
- Dry Contacts for Remote Pause & Alarm Signal
- SGC-4000HG

*Training & Set-Up Available.*

**MERCURY**

Compliance Monitoring Solutions for Mercury & Air Toxics Standards (MATS)

40 CFR Part 60 and 63

On December 16th, 2011 EPA finalized the Mercury Air Toxic Standards (MATS) Rule.

The First National Standards to reduce emissions of Mercury and other toxic pollutants from new and existing coal and oil fired power plants.

Approximately 1400 Power Plant Units will be effected by the MATS Rule.

The Date of Compliance is April 16, 2015.

**Time is Running Out Will You Be Ready?**

For more information on these Mercury and Air Toxics Standards go to: http://www.epa.gov/mats.

**Advantages of Sorbent Trap Monitoring**
- Simple to Install and Operate
- Highly Accurate
- Very Low Detection Levels <0.5 ng/m³
- Sample Captured Directly in the Stack
- Long Term Sampling
- NIST Traceable SRM for QA/QC
- No Calibration Gas Requirements
- Traps are Non-Hazardous, Easy to Ship to Lab

**MercSampler™ Software** Easy, Intuitive with Data Management

- **Test Profile/Configuration Set-up**
  - Customize test setup with the user defined profiles and configurations.

- **Leak Test**
  - Automated pre-test leak check with variable vacuum and an Automated post-test leak check.

- **Active Test Data**
  - Real-time Test Screen to see instantaneous data.

- **Calibration**
  - This application provides electronic documentation that is stored with each test run.

- **Alarms**
  - Proportional Tolerance
  - High Vacuum
  - External Flow Signal Loss
  - Return from Power Failure

The HgCalc Software uses sample run data and trap analysis. The sample run data from the MercSampler™ XC-6000 is imported into the application, where total mercury mass, hourly and total mercury emissions are calculated. The software ensures the specifications in 40CFR, part 75 are met. The software will also verify QA/QC specifications regarding Section 2 breakthrough, relative deviation, and Section 3 in PS 12B.
The Thermocouple Multiplexer:
- Accepts Type K thermocouple inputs; input protection includes gas discharge tubes for ESD and surge protection.
- 11 PTC microcontrollers, 1 for each channel and MUX circuitry;
- MUX circuitry to receive multiple inputs and transmit selected output.
- 10 microcontrollers, one for each optically isolated channel.

Integrated Temperature Control:
- Designed into DAC for probe/trap heat control output via 25 amp SSR.
- Barometric Pressure: 600 to 1100 mbar, 17.7 to 32.4 Hg, temperature compensated, amplified output.

Vacuum: 0 to 30" Hg, 0 to 101 kPa, 2% accuracy.

Communications:
- PC User Interface via Ethernet, USB, or optional wireless router.
- Remote access and control via onboard software.
- Communications to the DAHS system via TCP/IP Modbus.
- Interface to DAHS system via TCP/IP Modbus.
- USB 2.0 Comm Input connection.

Technical Specifications:
- Dry Gas Meters:
  - Positive displacement type.
  - 0.4 liter per revolution.
  - Optical encoder sensor with quadrature pulse output.
  - 8 digit LCD Display, 1 cc resolution.
- Sample Pumps:
  - BTR Diaphragm, Brushless Motor - 12 VDC, 20" Hg
  - Vacuum, 10,000 hour MTFB, 3900 RPM, Max. PSIG 24".
- Sample Flow Control:
  - Stainless steel sample manifolds fitted with mass flow sensors, vacuum sensors, and proportional valves.
  - Proportional or constant flow sampling.
  - Mass Air Flow: proportional flow control, 100 to 2000 ccm, port style, manifold mount.
- Proportional Valves: Voltage Sensitive Orifice (VSO), 12 VDC.
- Data Acquisition Control Board (DAC):
  - Enhanced Flash 16 bit RISC based microcontrollers; main Digital Signal Processing (DSP).
  - Real time clock with automatic backup and write protection to external SRAM.
- High Speed 14bit A/D converter with parallel DSP interface.
- 1 GB SD Memory Card for data storage – stores up to 99 tests (30 day data runs). Embedded Ethernet Port with full TCP/IP Protocol and 256 bit encryption.
- USB 2.0 Comm Input connection.

The Apex Instruments SGC-4000HG Stirling Gas Cooler is specially designed for removing moisture and acid gases from flue gas samples. This gas cooler uses an industrial grade super efficient Free Piston Stirling Cooler (FPSC) for chilling the gas to a constant dew point. The module is hermetically sealed in stainless steel casing allowing for fast and easy installation and service.

Features:
- No additional tubing
- Digital temperature control
- Constant set temperature
- Integrated heater
- Free Piston Stirling Cooler (FPSC) has only two moving parts.
- Closed system, no condensate pump required.

Dry Gas Meters:
- Positive displacement type.
- 0.4 liter per revolution.
- Optical encoder sensor with quadrature pulse output.
- 8 digit LCD Display, 1 cc resolution.
- Sample Pumps:
  - BTR Diaphragm, Brushless Motor - 12 VDC, 20" Hg
  - Vacuum, 10,000 hour MTFB, 3900 RPM, Max. PSIG 24".
- Sample Flow Control:
  - Stainless steel sample manifolds fitted with mass flow sensors, vacuum sensors, and proportional valves.
  - Proportional or constant flow sampling.
  - Mass Air Flow: proportional flow control, 100 to 2000 ccm, port style, manifold mount.
- Proportional Valves: Voltage Sensitive Orifice (VSO), 12 VDC.
- Data Acquisition Control Board (DAC):
  - Enhanced Flash 16 bit RISC based microcontrollers; main Digital Signal Processing (DSP).
  - Real time clock with automatic backup and write protection to external SRAM.
- High Speed 14bit A/D converter with parallel DSP interface.
- 1 GB SD Memory Card for data storage – stores up to 99 tests (30 day data runs). Embedded Ethernet Port with full TCP/IP Protocol and 256 bit encryption.
- USB 2.0 Comm Input connection.

The Thermocouple Multiplexer:
- Accepts Type K Thermocouple inputs; input protection includes gas discharge tubes for ESD and surge protection.
- 11 PTC microcontrollers, 1 for each channel and MUX circuitry;
- MUX circuitry to receive multiple inputs and transmit selected output.
- 10 microcontrollers, one for each optically isolated channel.

Integrated Temperature Control:
- Designed into DAC for probe/trap heat control output via 25 amp SSR.
- Barometric Pressure: 600 to 1100 mbar, 17.7 to 32.4 Hg, temperature compensated, amplified output.

Vacuum: 0 to 30" Hg, 0 to 101 kPa, 2% accuracy.

Communications:
- PC user interface via Ethernet, USB, or optional wireless router.
- Remote access and control via onboard software.
- Communications to the DAHS system via TCP/IP Modbus.
- Interface to DAHS system via TCP/IP Modbus.
- USB 2.0 Comm Input connection.

Technical Specifications:
- Dry Gas Meters:
  - Positive displacement type.
  - 0.4 liter per revolution.
  - Optical encoder sensor with quadrature pulse output.
  - 8 digit LCD Display, 1 cc resolution.
- Sample Pumps:
  - BTR Diaphragm, Brushless Motor - 12 VDC, 20" Hg
  - Vacuum, 10,000 hour MTFB, 3900 RPM, Max. PSIG 24".
- Sample Flow Control:
  - Stainless steel sample manifolds fitted with mass flow sensors, vacuum sensors, and proportional valves.
  - Proportional or constant flow sampling.
  - Mass Air Flow: proportional flow control, 100 to 2000 ccm, port style, manifold mount.
- Proportional Valves: Voltage Sensitive Orifice (VSO), 12 VDC.
- Data Acquisition Control Board (DAC):
  - Enhanced Flash 16 bit RISC based microcontrollers; main Digital Signal Processing (DSP).
  - Real time clock with automatic backup and write protection to external SRAM.
- High Speed 14bit A/D converter with parallel DSP interface.
- 1 GB SD Memory Card for data storage – stores up to 99 tests (30 day data runs). Embedded Ethernet Port with full TCP/IP Protocol and 256 bit encryption.
- USB 2.0 Comm Input connection.
MERCURY PROBES
Apex Heated Mercury Sorbent Trap Probes are designed to accept a pair of standard 10 mm O.D. sorbent traps. The sorbent traps are placed at the probe inlet to prevent Hg transport losses during sampling. The traps are sealed in place with compression fittings using glass-filled PTFE ferrules. The probe is constructed from corrosion resistant tubing; the outer sheath is 2” O.D. and the inner lines are ¼”. Alloy C276 is recommended for its extreme corrosion resistant. The probe is fitted with two heaters; one to heat the traps and the second for heating the portion outside of the stack. Standard lengths are available from 4 to 12 ft. Longer lengths are available upon request.

MERCURY AIR COOLED PROBE & BLOWER
The Air Cooled probe is designed for speciated sampling and high temperature stacks. Probes are constructed similar to our standard probes however they accept an external source of cooling air that is released outside of the stack. The cooling air exhaust is returned and directed down through the center of the probe to cool the traps. The cooling air is returned and released outside of the stack.

MERCURY PROBE ACCESSORIES
- Stainless Steel Shields
- 4” & 6” Stainless Steel Flange

MERCURY SORBENT TRAP SHIELDS
- Reduces Sorbent Trap Plugging when Used in High Particulate & High Moisture Environments.
- Easily Installed on Existing Mercury Probes.
- Simple Removal for Access to Sorbent Traps.

MERCURY SORBENT TRAP SHIELDS
- Stainless Steel and C276 Alloy Shields Mount on Apex Dual Stream Sorbent Trap Mercury Probe. This Device Protects Sorbent Traps from Particulate and Moisture.

Mercury Sorbent Traps
High quality sorbent traps for optimum mercury adsorption and retention. All sorbent media goes through rigorous QA/QC procedures to ensure that you receive the finest sorbent media available for your monitoring requirements. Traps can be spiked to meet your specific needs.

MERCURY BRAIDED HEATED U-CORDS
- Heavy Duty for Permanent or Portable Installation
- Lightweight, Self-Regulated
- Replaceable Sample Lines
- Braided Insulation Construction with High Temperature Jacket

Heated Umbilical Line Features
- Heavy Duty for Permanent or Portable Installation
- Lightweight, Self-Regulated
- Replaceable Sample Lines
- Braided Insulation Construction with High Temperature Jacket

Heated Umbilical Line Features
- New improved heavy duty heated umbilicals with replaceable sample lines are designed to provide years of trouble free service.

The umbilical includes the self-regulating heater cable, flexible conduit with two replaceable ¼” PFA sample lines, pass through power and thermocouples for the probe heater and is protected by a tough high temperature silicone jacket. The heated core is insulated with several layers of braided lightweight Pyron OPF yarn that will not burn or conduct electricity. Braided design provides extreme flexibility, strength, and protects the heater cable by minimizing movement (kinking and twisting). The ends have Cam and Groove connectors for easy installation and strain-relief.

Heated Umbilical Line Features
- Heavy Duty for Permanent or Portable Installation
- Lightweight, Self-Regulated
- Replaceable Sample Lines
- Braided Insulation Construction with High Temperature Jacket

Cable Specifications
- Heater Cable: 15 watts per ft @ 50°F (10°C) (49 watts per meter).
- Supply Voltages: 110V - 120V or 208V - 277V.
- Maintenance Temperature: Up to 250°F (120°C), +/- 25° F.
- Maximum Exposure Temperature: 366°F (185°C).

Mercury Trap Legend
- MT = Method 30B
- HT = High Temperature
- Acid Gas
- Custom Spiking Available
- Textured, Easy Grip Caps will ensure Accurate Leak Checking
- Heavy Wall Glass Tubing
- Protective Transport Tubes
- Chain of Custody Included

Any trap can be customized for special stack conditions. For high particulate and wet stacks, we recommend using the Apex Sorbent Trap Shield to reduce sorbent trap plugging.