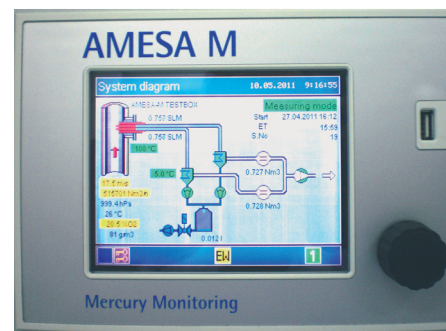


Sorbent Trap Monitoring System (STMS) for continuous mercury emission monitoring

PROCESS & EMISSIONS MONITORING SYSTEMS

More than 20 years experiences of continuous sampling of Dioxins and Furans (PCDD/PCDF) with the AMESA system, MCERTs & TÜV certified, were used to design the AMESA M for continuous sampling of mercury.



SPECIFIC FEATURES:

- Sorbent Trap Monitoring System (STMS) to US EPA Performance 12B (30B Test Reference Method)
- Extraction of a portion of the flue gas by a heated sample probe
- Mercury sampling on a paired adsorbent traps (for quality assurance purposes, as required by US EPA regulations)
- Integrated display for flow control (pitot tube) - direct measurement of flue gas flow
- Sampling rate proportional to flue gas flow
- Fully automated sampling periods from 30 minutes up to 4 weeks
- Remote control via Internet or Intranet using a TCP / IP connection
- Easy transfer of operating data protocol via USB flash drive
- Moisture measurement, "dry" correction for the report
- Totally autonomous. Each step can be done directly from the integrated display: it is not necessary to add electronic devices such as a laptop.
- All parts of the system installed and well protected in a cabinet that takes advantage of the many years of experience gained with the AMESA dioxin sampler
- Highly reliable system requiring low maintenance

Accurate monitoring of mercury at emission in the $1 \mu\text{g}/\text{m}^3$ range



MAIN APPLICATIONS:

- > Municipal and Hazardous Waste Incinerators
- > Cogeneration and gas turbine
- > Industrial Boilers and Furnaces
- > Power & Combustion
- > Glass, Chemical & Petrochemical Plants
- > Cement Kilns

Sorbent Trap mercury Monitoring System (STMS) **AMESA-M**



Built-in pitot tube and a thermocouple to sample under volume proportional conditions



Sampling cabinet: Includes flow, temperature and pressure measurement and interface for starting leak tests



Control cabinet with sample gas conditioning to collect condensate (for moisture calculation) and accurate measurement of volume and flow. IP40 enclosure (54) protects all components - chiller, gas meter, ... - against harsh environmental conditions.

PRINCIPLE OF OPERATION:

The AMESA-M long-term sampling system is designed to meet the requirements of continuous mercury monitoring applications. This unique system is a development of the proven AMESA system originally designed to measure micro-pollutants (such as dioxins/furans) in flue gas streams. The AMESA-M consists of a control cabinet and a sample probe assembly. The heated sample probe is equipped with paired Hg-sorbent traps which extract a sample from the flue gas stream under volume proportional conditions. Gaseous mercury (elemental Hg and oxidized forms of Hg) is collected in the sorbent trap.

A process control computer is located in the stack box which performs all measurement and control functions in the stack (i.e. static pressure, the flue-gas temperature, flue-gas velocity (optional), etc.). The controller of the stack box and the control cabinet communicate by TCP/IP protocol. After flowing through the stack box, the extracted sample gas passes through an umbilical to the control cabinet for precise volume determination. The gas passes an electric gas cooler with a Jetstream heat exchanger in which the gas is cooled down to 5 °C. The moisture in the gas condenses and is pumped away by a peristaltic pump. Optional the condensate flows into a condensate tank, where the condensate volume is measured and the flue-gas moisture is determined.

After the gas cooler, the dried gas passes to a rugged single-tube dry volumetric gas meter. The control system converts the measured operating volume into standard volume. The gas is then directed to a thermal mass-flow controller which determines and accurately controls the mass flow (kg/s) independent of gas pressure and temperature. It requires no maintenance under normal operating conditions with clean, dry gases.

The unit stores sampling data, that is available to download on a USB flash drive. Data is stored for up to a four-week period.

