MERCURY MONITOR

AM-6F

AUTOMATED CONTINUOUS MERCURY MONITOR

Atmospheric Gaseous
Elemental Mercury (GEM)
Measurement

GOLD-AMALGAMATION
COLD-VAPOR
ATOMIC FLUORESCENCE
SPECTROSCOPY

CE

Cutting Edge Continuous Mercury Monitoring Measurements in Ambient Air

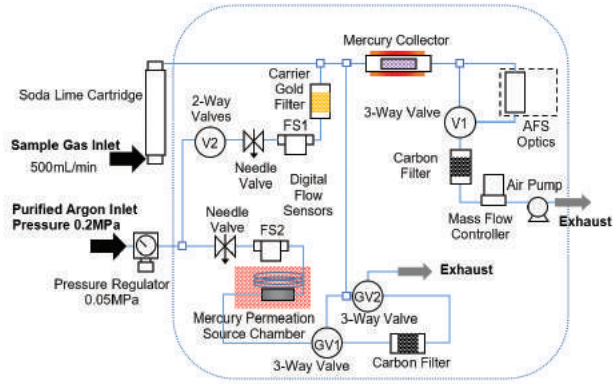
Mercury in the atmosphere comes from both natural and anthropogenic sources. Atmospheric deposition is the main source of mercury infiltrating into our aquatic and terrestrial ecosystems via dry and wet deposition mechanisms.

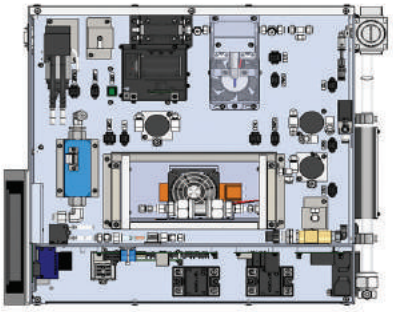
3 Main Forms of Mercury in Ambient Air

- Gaseous Elemental Mercury (GEM) - also commonly known as elemental Hg vapor, Hg^0, predominates and exhibits endurance with long range transport capability due to its volatility and low chemical reactivity.
- Reactive Gaseous Mercury (RGM) - RGM is highly water soluble, therefore, usually affects to local deposition.
- Total Particulate Mercury (TPM) - consists of mercury bound or strongly adsorbed to atmospheric particulate matter, it could be either GEM or RGM absorbed to the particle surface.
  Both concentrations of RGM and TPM are relatively low comparing to GEM. Thus, measurement of Total Gaseous Mercury in ambient air can be referred to measurement of total Gaseous Elemental Mercury (GEM).

How Does It Work?

SCHEMATIC DIAGRAM





Sampling (Gold Amalgamation)
Ambient air is drawn through a 47mm Teflon pre-filter (0.2µm pore size) to protect the gold amalgamation tube from against plugging by airborne particulate matters.

In-line with the Teflon prefilter, a dryer cartridge (containing purified grade Soda Lime) dries the sample gas before entering the instrument for gold-amalgamation.

Detection (CVAFS)
The amalgamated mercury is thermally desorbed onto an Argon carrier gas stream into the optics of Atomic Fluorescence Spectroscopy detector for measurement.

Cooling (Forced-Air)
The gold amalgamation tube is rapidly cooled by fan and sweep clean with the carrier gas before repeating the Sampling cycle.

AM-6F
Offers Uncompromising Reliable,Accurate & Precise Extended Period Ambient Air Measurements

All Controls Within A-Single-Touch

All functions of AM-6F are controlled by an embedded microprocessor. All analysis parameters can be set via the rugged industrial touch-screen display. Operation is fully automated once the analysis cycle is started.

Exceptionally Stable Ultra-Violet Excitation Source

Low-pressure mercury lamp is temperature-voltage self-regulated, generating a consistent UV light beam, allowing each atomic fluorescence measurements done with unmatched precision.

Flowrates Are Precisely and Intelligently Managed

Sample gas and Argon carrier gas flows are precisely controlled and intelligently managed by Mass Flow Controller (MFC) with the best efficiency to achieve maximum sensitivity and precision to each measurement.

Calibration – Static Vapor and Permeation Source

Every unit of AM-6F comes complete with built-in mercury permeation source. It allows user to preset periodic auto-calibration to check and auto-correct for any bias during unattended operation.

Standard calibration is done with the static saturated mercury vapor source, conveniently introduce with gas tight syringes into the Cal-Injection Port.

Know Your Instruments Remotely

Ability to retrieve the diagnostic sequence log file remotely is critical, to ensure the monitor and measurement is done properly and smoothly.

- Allow user to prepare the necessary parts and tools prior site visit if there is any error indication from the diagnostic sequence log file.
- Helps to make each site visit/preventive maintenance trip much more efficient, minimizing downtime and risk of delay.

Continuous measurement is not just about quality data but also the ability to keep the measurement going with minimum downtime.

Save Resources • Less Waste • Save Energy
NICares
Use Responsibly

Save Energy; Save Gas; Save Labor

NICares
Save Resources

Ultra-saving in Argon carrier gas consumption, typically ~1,000 liter/month running 24/7. Each 5 foot tall cylinder of Grade 4.8 Argon gas can generally last for up to 6 months, minimizing attention and care to frequent need to replace the cylinder, ideal usage and deployment for unattended continuous measurement in remote installations.

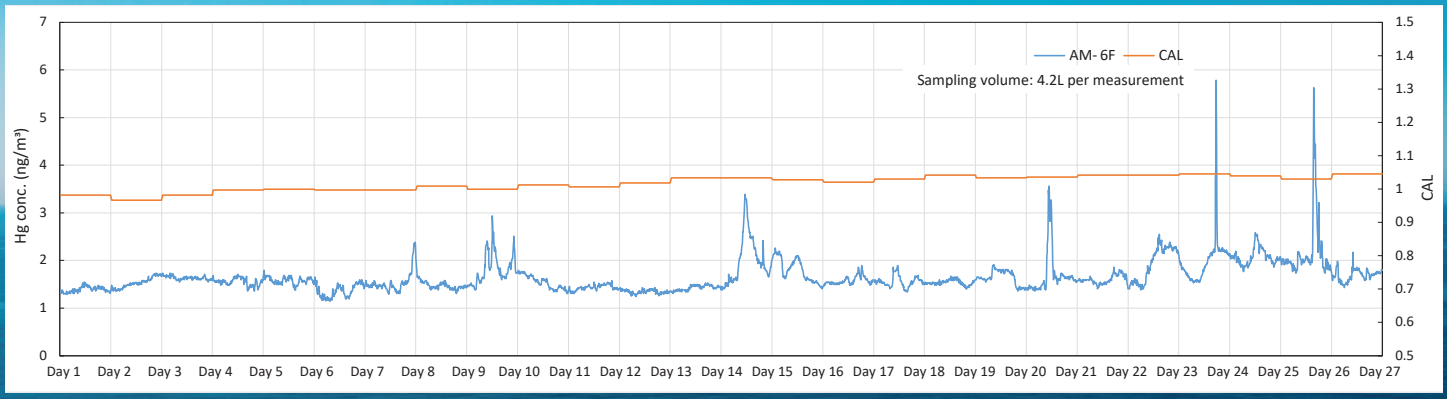
NICares
Save Energy

AM-6F is designed for energy efficiency, running at a low 0.4kVA maximum power, reducing energy consumption and cost.

NICares
Less Waste

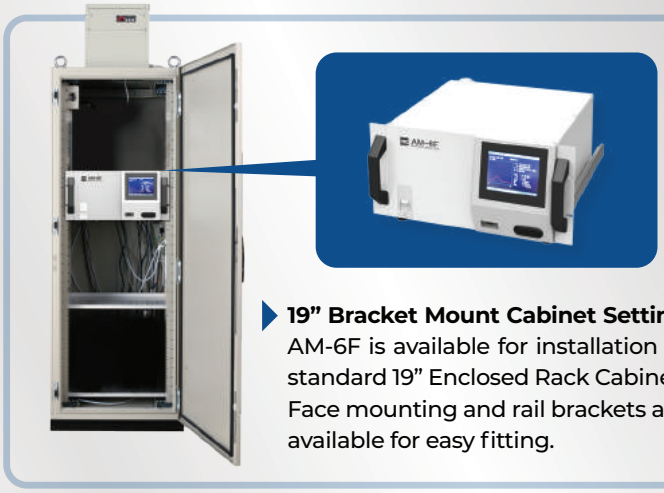
AM-6F minimizes the environmental CO_2 emission impact.

Continuous Mercury Monitoring in Kyushu, Japan, facing towards Sea of Japan



Optional Accessories

Model MB-1 Mercury Vapor Supply Box generates saturated mercury vapor by its thermophysical vapor pressure properties. Traceable calibration can be simply done with this mercury vapor using direct gas-tight syringe injections.



19" Bracket Mount Cabinet Setting
AM-6F is available for installation in standard 19" Enclosed Rack Cabinet. Face mounting and rail brackets are available for easy fitting.

Data Acquisition Software AM6Win with Remote Connectivity

Parameters in diagnostic sequence log files are critical to allow users to know the key components operating performance, which directly affects the measurement readings. Despite the AM-6F is being installed in a remote location, with tele-or-internet connectivity, you can still enjoy the convenience to access AM-6F from your office desktop with:

- **Remote Monitoring**
  Monitor on measurement readings, calibration data, and instrument status (including errors that happened) from your office
- **Initiate Data File Transfer Via Email**
  Data types include sampling time, flow rate, sampling volume, ABS, mercury mass, mercury concentration, and more.
- **Initiate Sequence Diagnostic Log File Transfer Via Email**
  Data types include hardware parameters like detectors signals, lamp signals, optics temperature, amalgam ready and heat temperatures, MFC, sample, and carrier gas flow rates, and more.
- **Ultimate convenience**
  Before any preventive maintenance or breakdown repair visit, the user can know from the diagnostic sequence log file which components failed and need replacement or repair, not missing out on any parts during the site visit and risk delaying the recovery.

Product images are for illustrative purposes only and may differ from the actual product

Nippon Instruments Corporation

Osaka office / Tech. cent : 14-8 Akaoji-cho, Takatsuki-shi, 569-1146 Osaka, Japan
TEL + 81-72-694-5195 FAX +81-72-694-0663
E-MAIL info-nic@rigaku.co.jp URL www.hg-nic.com
ISO 9001:2015 & ISO 14001:2015 Accredited

Singapore office : 61 Bukit Batok Crescent,
#04-04A, Singapore 658078
TEL +65-6873-7068 FAX +65-6873-6362

Distributors