ENGEZER

SOLUÇÕES EM ANÁLISE DE GASES

Detecção Contínua de Mercúrio em Água e Soluções Aquosas PA-2

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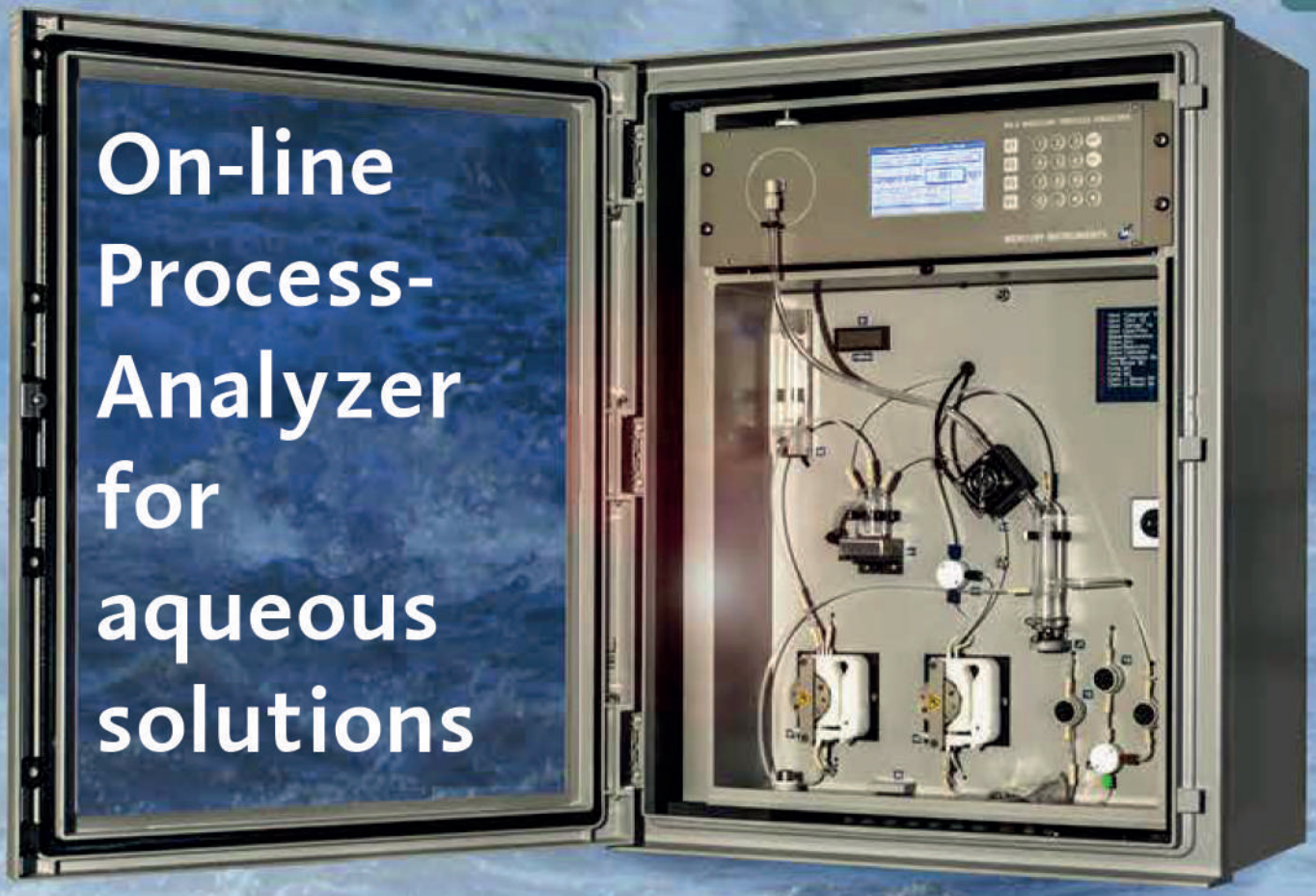
MERCURY INSTRUMENTS
Analytical Technologies

PA-2 / PA-2 Gold

On-line Process-Analyzer for aqueous solutions



- Fully automatic system
- Easy menu-driven operation
- Proven and reliable detection method: UV absorption
- Measuring ranges: 0 ppm . . 10 ppm (PA-2 Standard)
  0 ppb . . . 10 ppb (PA-2 Gold)
- Suitable for complex sample compositions
- Low reagent consumption
- Corrosion-protected consumption
- Automatic self diagnosis system for reliable operation

On-line Process Control of Mercury with the PA-2 / PA-2 Gold

The mercury process analyzer PA-2 is used for continuous monitoring of mercury concentrations in industrial processes and in the environment. Applications include effluent and quality control in chlorine-alkali plants, monitoring of scrubber water of waste incinerators and power plants, control of industrial sewage and purification plants, quality control of sulphuric acid and caustic solutions, drinking water, surface water etc.

Flexibility in Sample Digestion

n practice mercury analysis sample matrices very often show different and variable compositions. Depending on the chemical process the forms of mercury differ: elementary, ionic, as an organic compound or as insoluble sulfide. The PA-2 offers a variety of sample pretreatment procedures to allow highly precise determination of total mercury in all these samples, with the results from the PA-2 showing very good correlations with stand-ard laboratory analyses. High flexibility is achieved by the modular structure of the sample pretreatment. This allows the user to choose from the following digestion methods:

- **Hydrochloric acid (or sulphuric acid) + potassium permanganate**
- **Hydrochlic acid + sodium peroxodisulfate**
- **Bromide / Bromate**
- **Fenton´s-reagent**

The integrated heated reaction module allows accelerated sample digestion at higher temperatures.

Proven Measurement Principle

The detection of mercury contained in the sample occurs in an optical cell made of fused silica (Suprasil). In a first step mercury is reduced to the elementary state by means of tin(II)chloride or $NaBH_4$. Subsequently mercury is stripped from the aqueous phase with an air stream and carried into the optical cell. Here the UV absorption measurement is conducted at a wavelength of 253,7 nm. This analytical technique called „cold vapor method“ shows extreme sensitivity and selectivity. It has been reliable and proven for many years. In contrast to the occasionally recommended atomic fluorescence method the analytical technique utilized by the PA-2 is extremely low in interference and does not require expensive noble gas as a carrier.

Minimum Maintenance Work and Maximum Service Life

The PA-2 is not a laboratory analyzer simply converted for process applications but has especially been designed for operation under harsh industrial conditions. The number of parts subject to wear has been minimized and particularly durable components have been chosen for use in critical locations. This results in extended maintenance intervals. The stripping unit is based on an aerosol-free principle and the need for cleaning the optical cell is particularly low.

Easy to operate

The PA-2 is operated via a waterproof mem brane keypad. All inputs required are selected in a readily under-standable menu shown on the graphical display. It is also possible to ini tiate some functions like Auto Zero from an external computer via the RS 232 interface.

Continuous and Interval Operation

The PA-2 analyzer is controlled by a built-in computer and operates fully automatic. The continuous measuring mode can be switched over to a periodic measuring mode (for example 10 minutes of measurement every hour).

Auto-Cal. Check: The instrument switches periodically from the sample stream to a calibration solution to check any deviation from the reference value.
A status signal is generated if the value measured is out of range.

Auto-Zero: The zero line of the analyzer is adjusted automatically after a preset period of time.

Auto-Cleaning: Precipitations like manganese dioxide are dissolved by an automatic rinse step which makes manual cleaning superfluous.

Industrial Grade Design

o provide optimum protection against corrosive environ-ments all parts of the PA-2 Mercury Process Analyzer are enclosed in an industrial-grade cabinet made of fibreglass-rein-forced polyester (protection class IP 66; NEMA 4X;). The electronic circuitry is shielded from the wet chemical section by a chemi-cally resistant wall.

Automatic Self Diagnosis System

The PA-2 is equipped with sensors to detect malfunctions of the system and triggers an alarm for the operator. The following functions / malfunctions are checked and indicated: leakage of fluids, no reagents, stripping of air flow, UV lamp, implausible calibration.

Communication with external Computern

The following data is available at the serial RS 232 interface of the PA-2:

- **Currently measured mercury concentration**
- **Status (Calibration - Zeroing - Maintenance - Malfunction)**

Options

- **Dilution Unit:** for samples with high concentrations of salt or caistic soda, dilution ratio up to 1 : 50, automatic on-line control.
- **Multiplexer:** alternativelymeasuring two different sample points
- **PA-2 Gold Module:** for measuring very low mercury concentrations by means of preconcentration with gold amalgamtion technique (GoldTrap, Mercury Ultratracer UT-3000)

PA-2 / PA- 2 Gold: Technical Specifications

Measuring principle:	UV-Absorption (AAS)
Wavelenght:	253,7 nm
UV source:	Electrodeless low-pressure mercury lamp
Stabilization method:	Double beam (reference beam) method
Optical cell:	Fused silica (Suprasil)
Optical cell heating:	ca. 55 °C
Measuring range:	**PA-2:** continuously adjustable 0 ... 10 µg /l to 0 ... 10 mg/l (with dilution unit up to 100 mg/l **PA-2 Gold:** continuously adjustable 0 ... 1 µg/l to 0 ... 10 µg/l
Response time:	approx. 1 min.
Carrier gas:	Air, 1 - 2 bar
Reduction agent:	Tin-II-chloride or sodiumborhydride
Liquid-gas separation:	Aerosol-free principle
Output: (concentration)	4 ... 20 mA (analogue); RS 232
Output for status:	Operation - Service - Malfunction according to NAMUR 64
Housing:	Fibreglass-reinforced polyester IP 66 (EN 60529) for use in highly corrosive environment; Reagant case: acid-proof synthetic
Dimensions:	approx. 62 x 78 x 35 cm (W x H x D)
Weight:	approx. 30 kg

ISO 9001

Specifications subject to change without notice

Caso queira adaptar este produto a suas necessidades usando um sistema de condicionamento, uma automação ou formando um produto, contate:

COMERCIAL@ENGEZER.COM.BR

**para mais informações ou preços*

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