



MONITORING OF THE **MERCURY** REMOVAL PROCESS AT SULPHURIC ACID PRODUCTION PLANTS

INTRODUCTION

Sulphuric acid is an important byproduct at zinc and copper plants. Copper and zinc ores often have elevated mercury content. During heating in the process of roasting, mercury is evaporated from the ore and, if not removed, will finally appear in the sulphuric acid. The elevated mercury content in sulphuric acid that is further used in the food and other industries is not permitted, so various mercury removal methods are used in the sulphuric acid production process.

Mercury removal from the roast gases may be effectively controlled by the RA-915M/RA-915AM mercury analyzers, as its distinctive feature – Zeeman background correction of the nonselective absorption – allows mercury determination even in the presence of high contents of SO₂. Thanks to this fact sulphuric acid manufacturers can monitor the efficiency of the mercury removal process on-line, and take action before mercury contaminates the final product.

Furthermore, the mercury concentration in the final product – concentrated sulphuric acid – may be easily controlled by a conventional cold vapor technique using **RA-915M mercury analyzer** with **RP-92 attachment**.

MEASURING METHOD

The method of direct determination of elemental mercury in the process gas is based on the measurement of atomic absorption in the single-path analytical cell of a **mercury analyzer RA-915M/RA-915+** with Zeeman background correction. Differentiation into oxidized and elemental mercury species is needed if the gas is not passed through a wet scrubber, and can be performed with LUMEX sorbent traps.

ANALYSIS FEATURES

- Direct on-line analysis of elemental mercury without sample preparation.
- Low cost.
- Fast and simple method, which can be readily mastered by plant personnel after a short training.
- Speciation into Hg(2+) and Hg(0), where needed, with the use LUMEX sorbent traps.

MEASUREMENT RANGE

The measurement range of the mercury concentration in gas samples is **1–5.000 µg/m³**.

EQUIPMENT AND REAGENTS

The following equipment and materials are used for analysis:

- Mercury analyzer RA-915M (RA-915 AM for continuous operation);
- RP-92 attachment (only for analysis of final product);
- LUMEX sorbent traps and PYRO attachment if speciation is required;
- PC with Windows® 2000/XP/Vista/7/8 and RAPID dedicated software.

The information in this leaflet is supplemental. To get more specific information on this method, please contact the developer of this method Lumex Instruments Group.

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