

Measurement of Mercury Emission.

Portable Sampling System PSS-STS.



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For the Determination of Total Mercury Concentrations in Flue Gas.



▼ An Overview of the System

The PSS-STS portable sampling system is used to determine the total mercury concentration in flue gases. Our expertise in the field of gas conditioning as well as experience with system components in mobile conditioning units have been incorporated in the development of the PSS-STS sampling system.

Gas is extracted from the process using the heated gas sample probe and passed through the Sorbent Traps which collect the total mercury of the extracted process gas. The gas is dried by means of a downstream cooler unit and then directed to the control unit. The control unit is used for precise determination of the extracted gas volume and is also equipped with a panel PC for monitoring and controlling the sampling process, including automatic leak tests. For complete documentation, a measurement report is automatically generated after each measuring.

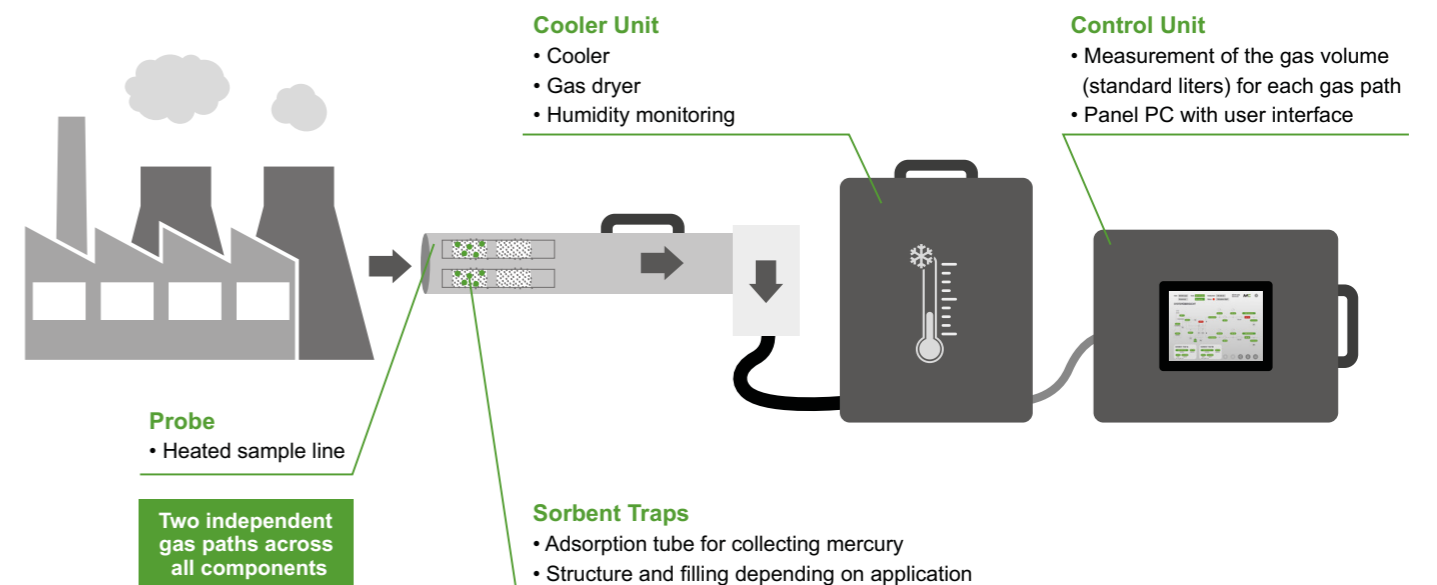
After the collection time (individually adjustable) has elapsed, the Sorbent Traps are removed and sent to a laboratory for analysis. The mercury mass is then determined and the mercury concentration in the exhaust gas is calculated. The high measurement accuracy during sampling enables extremely low detection limits that even surpass the current regulations (DIN CEN/TS 17286) for measuring mercury emissions.

Our PSS-STS is an extremely robust sampling system that not only meets demanding industrial operating conditions, but is also ideally suited for mobile and outdoor applications on account of two robust cases (IP42) allowing for convenient handling.

▼ Product Features



- ▶ Two parallel sampling channels for traps with 10 mm diameter and up to a length of 400 mm
- ▶ Simple replacement of the traps
- ▶ Automatic leakage tests before and after the collecting cycle
- ▶ Designed for short- and long-term measurements up to 2 weeks
- ▶ Flow rates from 2 to 87 NI/h
- ▶ Peltier cooler for condensate separation
- ▶ Control and cooler unit in two mobile and portable plastic cases
- ▶ Ready for operation incl. warm-up phase in 30 minutes
- ▶ Suitable for monitoring of low emission limits



▼ The Probe



Our heated gas sample probe was specially developed for the Sorbent Trap system. The associated sample tube is available in different lengths (1 m, 1.5 m, 2 m).

The probe has two independent gas paths, one each for sorbent traps with 10 mm diameter and up to 400 mm in length.

The gas sample probe is heated continuously and evenly and is equipped with several sensors for temperature monitoring and control.

A thermally insulated handle allows a convenient change of the Sorbent Traps, even on the heated probe.

▼ The Cooling Unit

The cooling unit contains a Peltier gas cooler with an outlet dew point of 3 °C and two peristaltic pumps for condensate disposal, which can be controlled by the system. A condensate vessel with filling level alarm can also be added as an option.

A gas dryer and a colorimeter for monitoring humidity are also integrated into the unit. The colorimeter is a sensor that monitors the color changes of an added chemical indicator and generates a fault alarm as soon as the threshold of color change is exceeded so that the sampling is stopped immediately.



▼ The Control Unit



With the most important component, the control unit, the gas volume (standard liters) can be measured for each gas path. The instrument is controlled by a front-panel PC with an intuitive touch user interface.

Both gas paths are each equipped with a pump, a filter and a mass flow controller. Optionally, oxygen sensors for leakage monitoring can also be added.

All relevant data is recorded and exported in the form of a measurement report.

The user is guided through the entire measurement process by the software: from the input of all parameters through leak tests and sampling right up to the creation of the measurement report.

▼ The Sorbent Traps

The Sorbent Traps developed by us can be used to determine the total mercury concentration in flue gases.

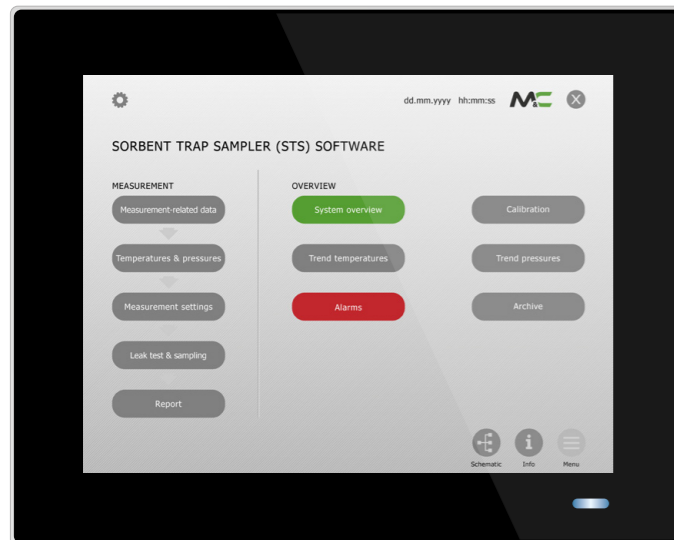
For measuring, the traps are inserted into the heated probe and removed again after a defined and programmed collection cycle with a duration of 30 minutes up to a maximum of 14 days.

Our Sorbent Traps are available in different versions with various filling volumes, different quantities and types of sections. The choice of traps depends on the measurement duration (short or long-term measurements), the respective application and regulatory requirements.

Separate analysis of elemental and ionic mercury is also possible with special Sorbent Traps if required. We will be pleased to advise you on this topic.



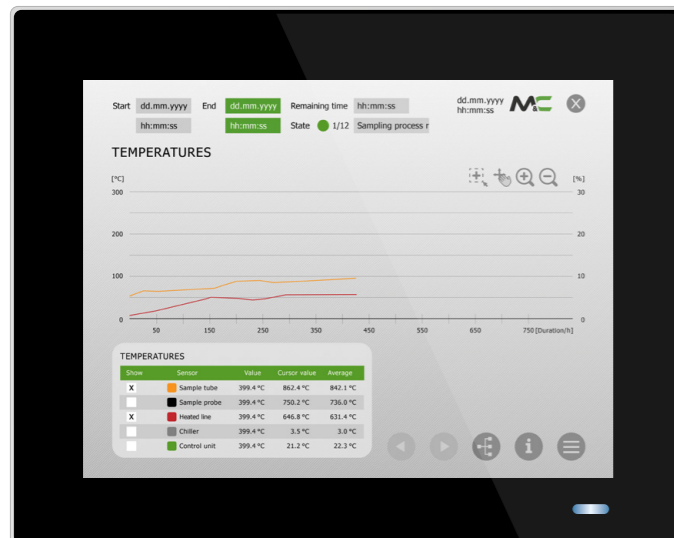
Intuitive User Interface



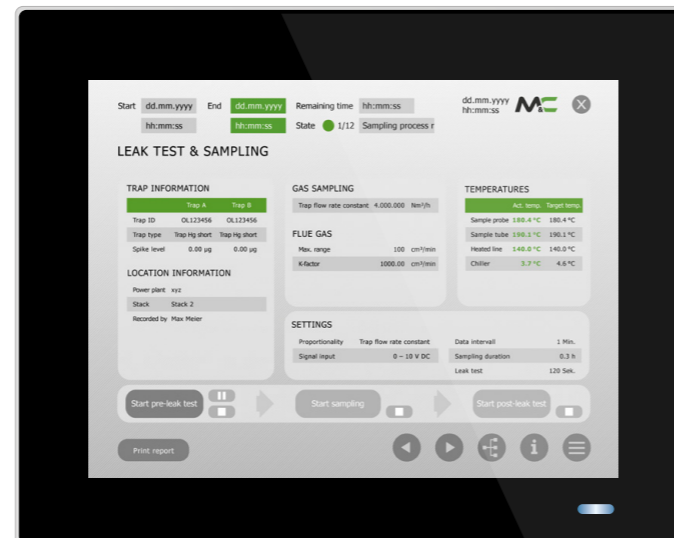
Example: Main menu



Example: System overview



Example: Temperatures



Example: Leak Test & Sampling

Trap Structure

- ▶ Two sections with activated carbon
 - Collection of mercury
 - Breakthrough section
- ▶ Optional sections
 - Inspection section with spiked activated carbon
 - Sections for separate determination of oxidized and elemental mercury
- ▶ Measuring time
 - 30 minutes to 14 days
 - Short-term measurement: <12 h, trap length: 270 mm
 - Long-term measurement: >12 h, trap length: 400 mm

- ▶ Acid section
- ▶ Hg²⁺ collection section
- ▶ Hg²⁺ breakthrough section
- ▶ Hg⁰ collection section
- ▶ Hg⁰ breakthrough section
- ▶ Spiked inspection section




Sampling probe in process



Detailed view of traps in the sample probe



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