

# SULPHUR 35 BUBBLER

## GAS SAMPLING SYSTEM: GSS 3



LOW COST, EFFECTIVE MONITORING OF SULPHUR 35 GAS EMISSIONS AS REQUIRED BY CURRENT REGULATIONS.

COLLECTION EFFICIENCIES OF NEAR 100%

SUITABLE FOR CARBON/ CARBON DIOXIDE/TRITIUM AND SULPHUR (USING DIFFERENT COLLECTING MEDIA AS APPROPRIATE)

DUAL VACUUM PUMP ARRANGEMENT

POSSIBILITY OF ADVANCED NETWORK CONFIGURATIONS

EASY CALIBRATION

The monitoring of radioactive isotopes of Sulphur 35 has become increasingly prevalent in the nuclear industry with the regulators scrutinising the effective and accurate monitoring of all stack emissions.

The Lab Impex Systems Gas Sampling System (GSS) is specifically designed for stack and duct applications. The GSS takes a continuous sample from the ventilation system and passes this through a series of Bubbler bottles which allow the collection of any radioactive gas passing through. The level of activity in the liquid (of specific volume) is then measured at regular intervals using a liquid scintillation counter. The results from such a measurement is used to calculate total activity released from the ventilation system over a time period.

With the option of stack flow monitoring or totaliser, the system is tailored for customer requirements and offers resettable and cumulative flow totalisers.

The Bubbler is housed in a 1600 x 800 x 600mm glass fronted cabinet and the unit runs on a 110/230V AC mains. All sample pipes are 10mm stainless steel, supplemented by PVC where necessary. The stack sample pipes are connected into the enclosure are via 10mm to -10mm head fittings.

Two sets of five borosilicate glass bottles are used within the system. In each stage, three are used for sample collection and two to ensure that the collection medium is not carried upstream or downstream through the system. The bottles are designed to minimise surface evaporation and maximise sample exposure to the collection medium.

The operator determines the volume of air sampled and flow alarm outputs are provided. Collection bottles have capacity of up to 500ml and if required the system has the option of retro fitting other, smaller sized bottles via the same mounting hardware.

A furnace is used prior to the second stage of bottles to oxidize gaseous forms of sulphur. The furnace has a temperature capability of up to 1000°C but is set by the user and maintained by the PID controller. With alarms or high and low temperature a second controller provides an over temperature cut out.

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## PERFORMANCE SPECIFICATION

<b>Furnace Catalyst</b>	<ul style="list-style-type: none"> <li>A full range of furnace temperatures is available: 300-1000°C. The furnace control includes temperature display and alarm set points</li> </ul>	<b>Power Consumption</b>	<ul style="list-style-type: none"> <li>1150W max</li> </ul>
<b>Flow Rate</b>	<ul style="list-style-type: none"> <li>Sample air flow is adjustable 300-800cc/min</li> <li>Flow meters are used to set up the required flowrate and produce a 4-20 mA signal proportional to flow which is displayed as both rate of flow and totalised flow</li> </ul>	<b>Voltage Frequency</b>	<ul style="list-style-type: none"> <li>50Hz/60Hz</li> </ul>
<b>Totalised Flow</b>	<ul style="list-style-type: none"> <li>The totalised flow signal is displayed in two formats (i.e. resettable and non resettable). A counter is incorporated to indicate the time period between sample changes</li> </ul>	<b>Outputs</b>	<ul style="list-style-type: none"> <li>Alarms for high/low flow rate and over/under temperature with automatic cut out for over temperature</li> <li>Door open alarm</li> </ul>
<b>Airflow Accuracy</b>	<ul style="list-style-type: none"> <li>+ /- 1%</li> </ul>	<b>Simultaneous Display</b>	<ul style="list-style-type: none"> <li>The system simultaneously displays the following to the operator.</li> <li>Furnace temperature</li> <li>Door open warning</li> <li>Instantaneous air flow and volume accrued i.e.               <ol style="list-style-type: none"> <li>Sample flow rate</li> <li>Stack flow rate</li> <li>Accumulated sample volume flow</li> <li>Accumulated stack volume flow</li> </ol> </li> </ul>
<b>Collection Efficiency</b>	<ul style="list-style-type: none"> <li>99%</li> </ul>	<b>Other Information</b>	<ul style="list-style-type: none"> <li>Consumables</li> <li>Bottles - Part No 4214/003 Item 10</li> <li>Filter Cards - BTS 493 Catalyst</li> <li>Copperoxide - 4214/003 Item 32</li> <li>Palladium - 4214/003 Item 34</li> </ul>
<b>Enclosure Characteristics</b>	<ul style="list-style-type: none"> <li>2 Vacuum pumps (1 run and 1standby)</li> <li>Electrical control box which not only contains the main electrical isolation pump selection switch but also power supply for flow</li> </ul>	<b>Product No.</b>	<ul style="list-style-type: none"> <li>047/001</li> </ul>
<b>Electrical Characteristics</b>	<ul style="list-style-type: none"> <li>Signal: 4 - 20 mA stack flow input voltage requirement</li> <li>230V external power supply</li> <li>110V (available on request)</li> </ul>		



making a difference

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