

CARBON 14 BUBBLER

GAS SAMPLING SYSTEM: GSS 2



LOW COST, EFFECTIVE MONITORING OF CARBON 14 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 Carbon 14 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 carbon. 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.

CARBON 14 BUBBLER: GAS SAMPLING SYSTEM: GSS 2

PERFORMANCE SPECIFICATION

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



making a difference

Ultra Electronics

NUCLEAR CONTROL SYSTEMS
Innovation House, Lancaster Road
Ferndown Industrial Estate
Wimborne, Dorset BH21 7SQ, England
Tel: +44 1202 850450
Fax: +44 1202 850451
Email: information@ultra-ncs.com
www.ultra-ncs.com
www.ultra-electronics.com

Ultra Electronics reserves the right to vary these specifications without notice.
© Ultra Electronics Limited 2016.
Produced in England
UENCS-L202E