

Improve the Results of Ambient Air Monitoring with Good Sample Conditioning Unit

Ambient air contains hydrocarbons that can be analysed continuously with a Synspec Gas Chromatograph (GC). The sample condition is important: dust and humidity should be reduced to levels that are acceptable for the GC. In some cases this implies that the air must be dried, for other hydrocarbons this is not advised.

Calibration gases must also be provided to the system; an automatic switch is a good option. Calibration gases can be provided from bottles, and for a span check a permeation device is a good option.

Synspec provides a sample conditioning unit that contains these functions in a practical 3 HU box.



GC955—600 series

GC955—800 series

Sample Conditioning Unit (SCU)

Zero-air generator

N₂ and H₂ generator



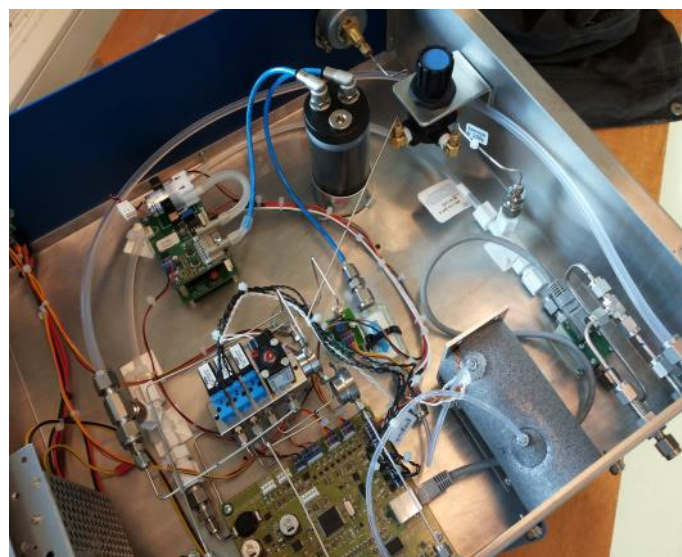
Option 1: Perma Pure dryer

Module 2: Permeation Oven and Switch between Sample, Span and Zero Gas

Calibration gases with complex hydrocarbon mixtures are generally expensive. Though, the performance of Synspec GC can be validated by checking the response on a selection of the components, e.g. one to five components.

The SCU can be supplied with a small permeation oven at one temperature, regulated within 0,1 °C. A constant gas flow is directed continuously through the oven as a standard, completely separated from the normal gas flow. This flow can be connected to the span inlet or the sample inlet.

Interference with the measurement can be easily avoided by leading the overflow out of the cabin. For this we advise to place a small carbon filter trap in the line.



Option 2: permeation oven

Module 1: Sample Dryer and Switch between Sample, Span and Zero Gas

For the application with the GC955-900 series, where a cooled preconcentration trap is implemented, water condensation is a potential problem.

The Nafion™ based dryers from Perma Pure are able to remove the water without removing the majority of the hydrocarbons. In the sample conditioning unit, the humidity of the sample gas after passing the Nafion™ dryer is monitored continuously. If the humidity is higher than the chosen upper limit, an alarm will generate to the gas chromatograph. With double GC-systems such as the GC955-611/811, optionally only one stream can be dried. This dryer is combined with a switch between sample, span and zero.

SYNSPEC SAMPLE CONDITIONING UNIT

ROOM CONDITIONS	Temperature 5 to 45 °C, humidity 5%– 90% (non condensing). If Perma Pure dryer is used max temperature 30 °C.
GAS PRESSURES AND FLOWS	Inlet pressure zero air : 2,5 bar, flow for zero at calibration 150 ml/min, flow for Perma Pure 250 ml/min Inlet pressure span gas : either at ambient pressure, then overflow outlet, flow at 150 ml/min. Or at 1 bar, without overflow, maximum flow 50 ml/min. Optionally Tedlar bag can be connected to span inlet.
MODULE 1: DRYER	24” Perma Pure dryer, lifetime 1–2 years
MODULE 2: PERMEATION OVEN	Oven at 40 °C, connect to zero air or optional connect with internal carbon scrubber. 1 permeation tube can be installed, with a maximum length of 5 cm
GAS CONNECTIONS	Swagelock SS 1/8 “connectors, connect with FEP or SS tubing
HUMIDITY SENSOR	Range 5% to 95%
ELECTRICAL CONNECTIONS	110 up to 240 VA, <100 W
COMMUNICATION	USB connection, alarm signals for pressure of zero air, Relative Humidity at outlet of Perma Pure dryer, temperature of Permeation oven.
DIMENSIONS	19” rack, (W 48,3 cm) 3 standard Height Units, (high 13,9 cm), 37 cm deep Weight 6 kg

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