

# HAGUE 7000 - Carbone 14 sampler

*Gas and Organic Carbon 14 monitoring, in compliance with NF M60-812-1 standard*

The HAGUE 7000 14C sampler is the perfect instrument for measuring low levels of Carbon 14 in air in its gas and organic forms. Particular applications include sampling of air from stacks, hoods, rooms and the environment.



## Operating Principle

The HAGUE 7000 is widely used and recognised within the international nuclear industry, and in particular; nuclear power plants, nuclear research centres, radioactive waste treatment facilities and isotope laboratories.

The bubbler has been specifically designed with efficient 14C capture in mind, using a series of four vials, a cooling system and a catalytic furnace to collect carbon in both gaseous (CO<sub>2</sub> and CO) and organic (C) forms.

The 14C activity in the collected sample can be measured with a liquid scintillation counter on a daily, weekly or monthly basis, and can then be used in combination with the sampled air volume to calculate the 14C-in-air concentration. This gives an efficient way to monitor tritium levels with a much higher sensitivity than even the most sophisticated real-time 14C monitor.

## Features

- Reduced evaporation due to the cooling system, allowing weekly collection.
- Flowrate regulated.
- Membran air pump (long life time).
- Particulates filtration at inlet.
- Aeraulic circuit in stainless steel.
- Easy to use, with instant opening cabinet for sample retrieval.
- Display of flow rate and sampled air volume in real time.

- Alarms report.
- Faults memorisation.
- Low required space.
- Full options and accessories.

## Trapping yield

- CO<sub>2</sub> : 100%
- Furnace efficiency : 94 % (CH<sub>4</sub> > CO<sub>2</sub> conversion)

*Tests report GEA 12-2005*



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## Airflow process

A pre-filter paper in the inlet ( $\varnothing$  45 mm) prevents dust intake and the electronic flow meter is protected by Goretex® filters. The airflow passes into the vials (250 ml capacity) through stainless steel air tubing. The air flow can be set from 10 to 50 litres per hour, regulated by a certified airflow meter.

## Oxidation furnace

Stainless steel tubular furnace equipped with Pt alumina catalyst pellets. The oven temperature can be set between +200°C to +500°C.

## Cooling system of the collecting vials

The sampler is fitted with a condenser cooling block, which allows the vials to be cooled to between +7°C and +15°C (depending on the ambient temperature). A pump ensures flow of the cooling liquid and a level gauge allows the direct control of the liquid level in the circuit. All tubing is made of stainless steel.

## LCD Display featuring

- Furnace temperature
- Cooling liquid temperature
- Instant air flow and total volume
- Duration of sampling
- Alarms

## Technical Specifications

- Dimensions: W x H x D = 700 x 356 x 270 mm.
- Required space: W x H x D = 1000 x 600 x 530 mm.
- Weight : 29 kg.
- Power : 700 Watts max.
- Power supply : 230 V / 50 Hz IEC plug (or 120 V / 60 Hz IEC plug).
- Inlet and outlet :  $\varnothing$  6,4 mm.
- Temp (Operating) : +2°C to +45°C.
- Temp (Storage) : -5°C to +70°C.
- Electrical protection : Differential circuit breaker (sensivity = 30mA) .
- Frame : monocoque in aluminium alloy.
- Decontamination compliant housing paint.
- Glass vials.
- Delivered with power supply cable , four vials with caps, calibration certificates and user guide in english.



**MARC 7000** tritium and **HAGUE 7000** carbone 14 samplers installed on a stainless steel shelf, with atmospheric sampling probes.



For a fast activity measurement on place see our portable liquid scintillation counter:

**DPM 7001** with dual photomultiplier



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