

MARC 5000 - TRITIUM SAMPLER

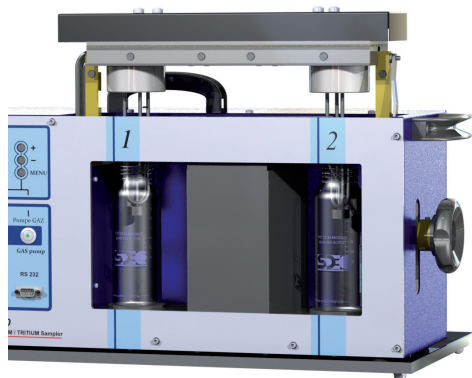
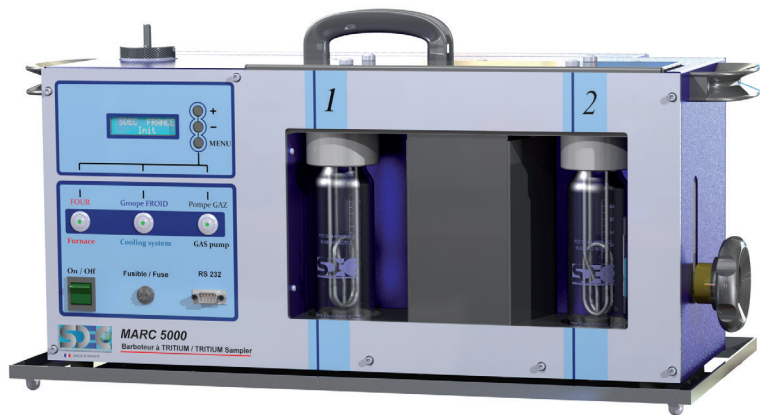
Atmospheric tritium monitoring / water vapor form
in compliance with NF M60-312-1 & NF M60-822-1 standards

The MARC 5000 tritium sampler is designed to monitor the concentration levels of Tritium in the form of water vapor (HTO) on stacks, hoods or in the environment.

Thanks to its innovative cooling system (optional), it allows continuous monitoring of installations over long periods of activity, guaranteeing optimal trapping efficiency.

OPTIMIZED ERGONOMICS

HIGH TRAPPING EFFICIENCY



Easy opening / closing system

OPERATING PRINCIPLE

The MARC series tritium samplers are widely used and recognised within the international nuclear industry, and in particular, nuclear power plants, nuclear research centers, radioactive waste treatment facilities and isotope laboratories.

The bubbler has been specifically designed to collect the water vapour form of atmospheric tritium, using a series of bubbling vials fitting with cooling system.

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

MAIN FEATURES

- Flow rate regulated.
- Reduced evaporation thanks to the cooling system, allowing weekly collection.
- Membran air pump adjustable from 10 to 50 l/h (long life time).
- Inlet particle filter
- Aeraulic circuit made of stainless steel.
- Display of flow rate and sampled air volume in real time.
- Alarms report (optional)
- Faults memorisation.
- Low required space.

TRAPPING YIELD

- HTO : 99 % \pm 7%

Test report from CEA Marcoule - June 2006

NUCLEAR DEPARTMENT
Tritium Sampling

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ADVANTAGES

- Automatic regulation of the air flow according to the pressure drop
- Diaphragm pump (long life)
- Particle filtration at admission
- Aeraulic circuit in stainless steel 316L
- Simultaneous dynamic sealing device for 2 bottles
- Display of the air flow and the volume of air taken in real time
- Report alarms on screen and remotely
- Defect reporting function
- Small footprint, fixed installation, chimney connector or mobile trolley



MARC 5000 on frame

AIRFLOW PROCESS

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

COOLING SYSTEM OF THE COLLECTING VIALS

The sampler is fitted with cooling system, which allows the vials to be cooled to between +7°C and +15°C (at room temperature). A pump ensures the flow of the coolant and a level gauge allows the direct control of the liquid level in the circuit. Tubing is made of stainless steel.

TECHNICAL SPECIFICATIONS WITH COOLING SYSTEM

- 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 : 260 Watts
- Power supply : 230 Volts 50 Hz IEC plug (or 110 Volts 60 Hz)
- Inlet and Outlet : Ø 6,4 mm
- Temp operating : +2°C à +45°C
- Temp storage : -5°C à +70°C
- Electrical protection : 6A time delay fuse
- Mass flowmeter
- Backlit blue LCD screen
- RS 232 output on the front
- Frame : monocoque in aluminum alloy
- Housing paint compliant with decontamination
- Sampling vials : Glass made
- Report alarms by relay output, type T.O.R (optional)
- Air flow calibrated to 30 L / h with air flow calibrator certified COFRAC

LCD DISPLAY

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

TECHNICAL SPECIFICATIONS WITHOUT COOLING SYSTEM

Without cooling unit, the technical characteristics differ on the following points:

- Weight: 15 kg
- Consumption: 15 Watts

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