

## AIR ACTIVATION MONITORING SYSTEM

# MISTRAL XM

### MAIN FEATURES

- **Extremely high sensitivity**
- **Rooms and stack monitoring**
- **Fully configurable work cycle**
- Lead shield for 3 liters Marinelli geometry
- NaI(Tl) detector coupled to MCA
- Typical MDA: <1 Bq/l of F-18 for 300 s measurements
- Pump to sample and expel the air
- Interception electrovalves for the multiplexed automatic sampling of up to 8 rooms
- Acquisition and processing software with display of the energy spectra
- Relays for remote devices control



### DESCRIPTION

The **MISTRAL XM** air activation monitoring system is designed to sample and monitor the gamma activity concentration resulting from air activation, in Marinelli geometry. The **MISTRAL XM Rooms** is designed for free air monitoring (up to 8 sampling points), whereas the **MISTRAL XM Stack** is used to monitor the air expelled from a chimney or a stack.

In both cases, **MISTRAL XM** (where “X” stands for the number of sampling points) is composed of two main parts:

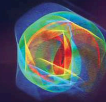
- Acquisition and processing unit: APU
- Sampling and detection unit: SDU-XM

The APU consists in a cabinet with a 19” rack, and includes the PC, the monitor, and the electronics components.

The SDU-XM consists in a NaI(Tl) detector coupled to a MCA, a lead shielding, a pump to sample the air, a flow switch to control the pump functioning, and an array of electro-valves for automatic air sampling. The system also manages the expulsion of the monitored air.

As an accessory of the **Stack** version, a flow rate meter (STACK-DFM) can be installed into the stack, allowing the system to calculate the specific activity of the expelled air volume.

The software installed on the PC displays in real time the measurement, controls the system status, and allows to set the operative parameters, such as the alarm thresholds. The user can define specific regions of interest (ROIs) and thus determine the specific activity (Bq/g) of the sampled air.



## TECHNICAL SPECIFICATION

### Sampling and detection unit

- Detector: 2"x2" NaI(Tl)
- MDA <1 Bq/l of F-18 (5 min measurement)
- Energy range: 30 keV ÷ 2 MeV
- Temperature range: 0 - 40 °C
- Geometry: 3 liters Marinelli Beaker
- Shielding: lead, 100 mm thick
- Dimensions (WxHxD) = 100x150x60 cm
- Total weight = approx. 700 kg

### Acquisition and processing unit

- Holder: cabinet - 19" Rack
- Dimensions (WxHxD) = 72x160x70 cm
- Total weight = approx. 75 kg

### I/O management board

- Type of relay outputs: N.C. / N.O.
- 16 input/output available

### Acquisition, processing and display software

- Data acquisition every second
- Data archiving
- Operative and calibration parameters set-up
- Good functioning and alarm signals management
- Data display in alphanumeric and graphic form
- Display of the gamma spectrum

### Air sampling pump (typical)

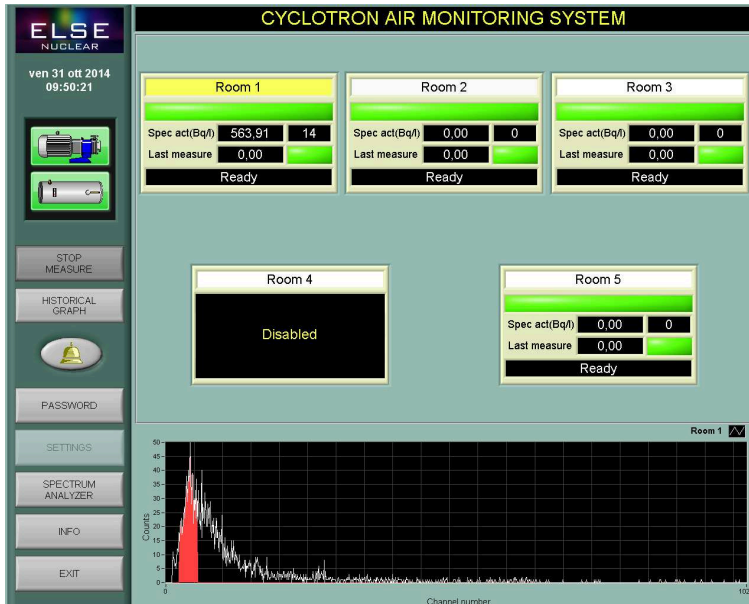
- Flow rate: 16 m<sup>3</sup>/h
- Protection grade: IP 54
- Power supply: 380 V or 220 V

## OPTIONS

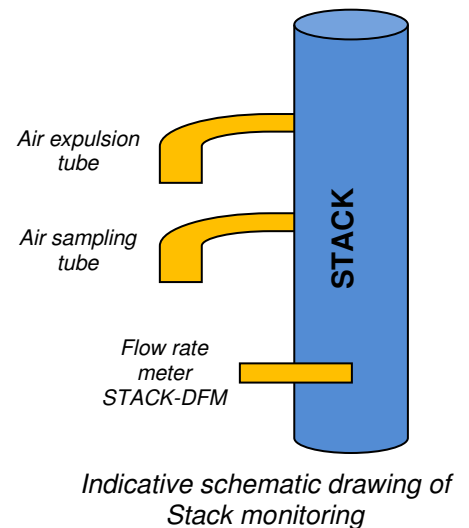
- LaBr<sub>3</sub>(Ce<sup>3+</sup>) scintillator instead of NaI(Tl), for higher sensitivity and higher gamma spectrum resolution

## ACCESSORIES AVAILABLE UPON REQUEST

1. Stack flow rate meter for released activity calculation: STACK-DFM
2. Warranty extension from 12 months to 24 months



*MISTRAL XM Rooms software main panel*



*Indicative schematic drawing of Stack monitoring*