CONTINUOUS FINE DUST MEASURING SYSTEM

PM_{10} - $PM_{2,5}$ - PM_1
Inhalable - Thoracic - Respirable
Particle count distribution

DustMonit

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DustMonit

The dust monitoring unit DustMonit is a complete system for continuous monitoring of particulate concentration in the air.

The system consists of the following elements:

1. Inox housing (IP65)
2. Heated probe
3. Dust spectrometer
4. Local PC for management and storage of the measured values
5. Software for unit control

This measuring system has been designed for making reliable continuous measurements without the presence of operators.
This unit can be used in air pollution monitoring networks, in mobile laboratories, in places you need in a particular time a particulate concentration measurement.
The methodology used by DustMonit for detecting particles in the air and for classifying them depending on their dimensions is “Laser Scattering”.

This instrument give you the following possibilities:

- Measuring in real time and simultaneously the dust concentrations expressed as
  PM10 - PM2.5 - PM1 without utilizing external impactors.

- Measuring in real time and simultaneously the dust concentrations expressed as Inhalable - Thoracic - Respirable (as described in EN 481) without utilizing external impactors.

- Measuring in real time and simultaneously the numbers and distribution of particles
  in 8 dimensional classes.

MAIN FEATURES

- Very reliable
- Low maintenance
- Long term calibration stability
- Insensitiveness to vibrations
- No radioactive source
- No need for shelter

SPECIFICATIONS

Measurement method : Laser-scattering

Measurements : PM_{10} - $PM_{2.5}$ - PM_1
Inhalable - Thoracic - Respirable
Particle count distribution in 8 dimensional classes
>0,3µm >0,5µm >0,7µm >1µm >2µm >3µm >5µm >10µm

Measuring range : 1 ÷ 10,000µg/m^3

Sample flow : 1l/min

Output : RS232

Power supply : 220V 50Hz 40W

Temperature range : -10 ÷ 40°C

Size : 50 x 40 x 20 cm

Weight : 15Kg

CONTROL SYSTEM CHARACTERISTICS

The control system of the unit is made with an incorporated PC menaging the instrument, storing the measurements and displaing the measurements.

SOFTWARE CHARACTERISTICS

A simple program allows you to set manually all measuring parameters.

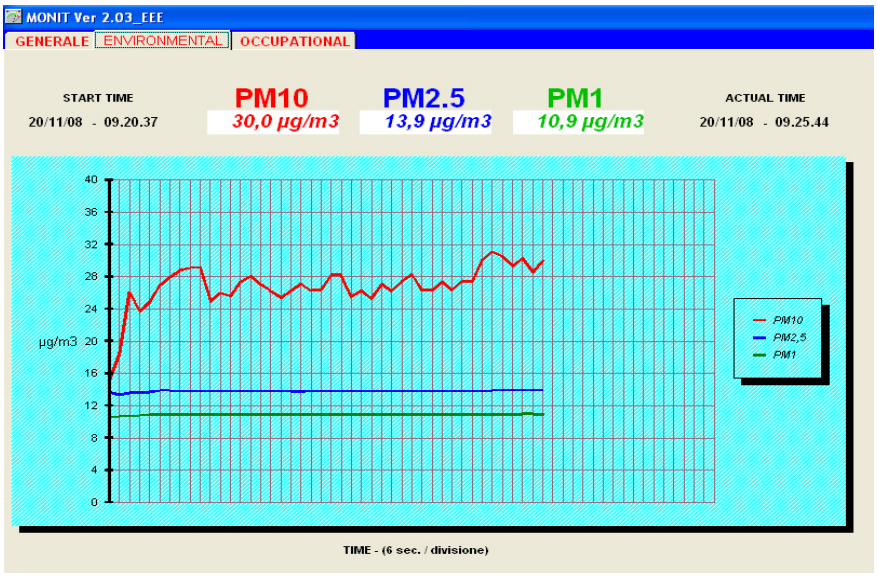
Dust monitor controls : Analisys Start/Stop
Measurement time set
Heating probe set
Average On/Off
COM port setting

Data presentation : Real time PM_{10} measurement
Real time $PM_{2.5}$ measurement
Real time PM_1 measurement
Real time “Inhalable” measurement
Real time “ Thoracic” measurement
Real time “Respirable” measurement
Real time particles count and classification in 8 dimensional classes
Service data (sample flow, sample temperature and humidity and optional alarm indication)

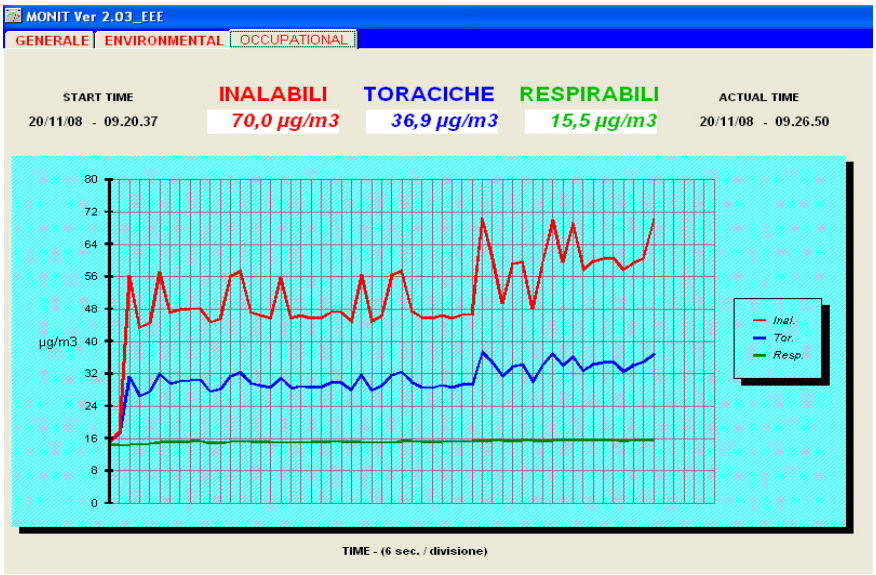
All results are stored in a SDHC card (supplied with the PC) in “txt” format, ready to be imported in the most common data processing software.

If there is a voltage drop the instrument continues to work for two hours powered by internal rechargeable battery.

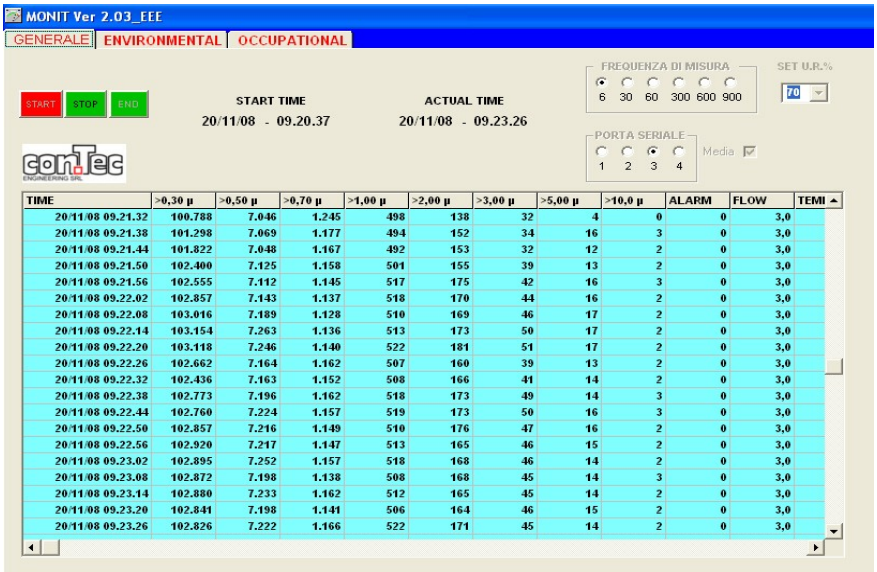
EXAMPLE OF THE PRESENTATION OF THE RESULTS



Air pollution expressed as "PM_{10}" "$PM_{2,5}$" "PM_{1}"

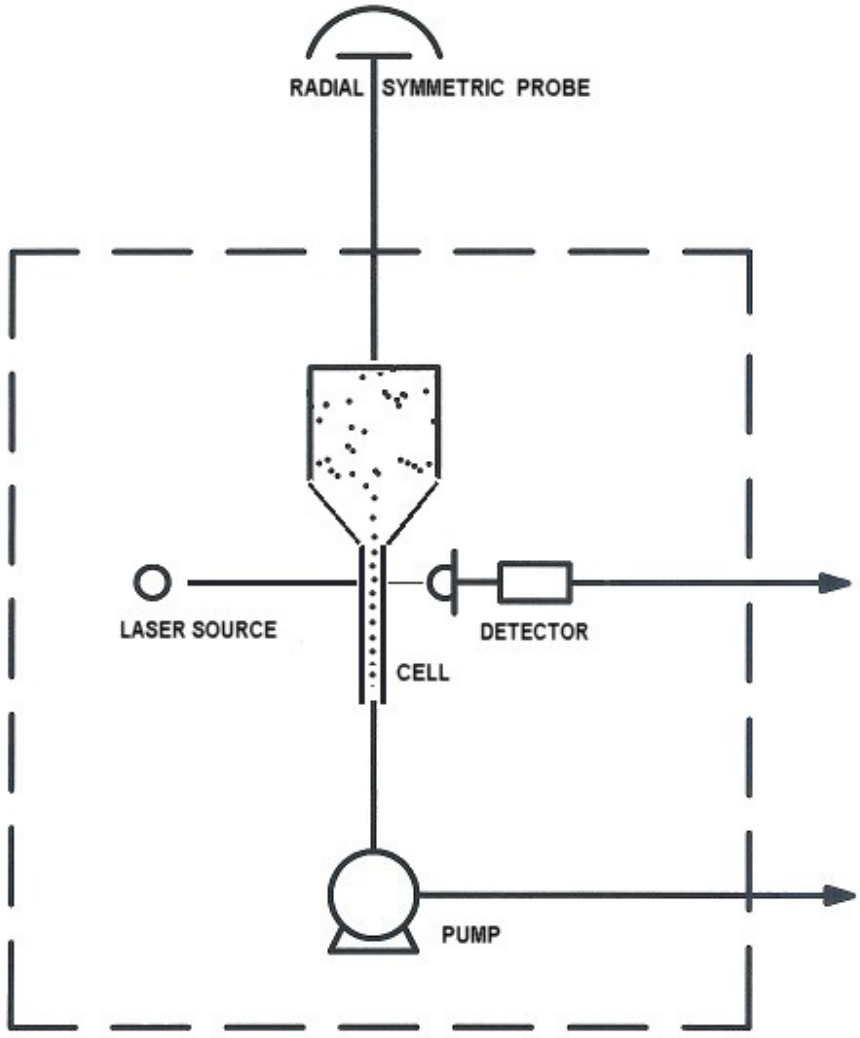


Air pollution expressed as Inhalable - Thoracic - Respirable



Granulometric classification of atmospheric dust

“LASER SCATTERING” MEASUREMENT METHOD



A constant flow pump draws air in through a radial symmetric probe and pushes fit into a cell where each particle is hit with a laser.

The energy reflected by each particle, proportional to its dimension, is measured by a high-velocity photodiode which generates counting signals as well as dimensional ones.

The system software equates these values with volume unit and sends the final results via a serial RS232 to the standard engineering unit.