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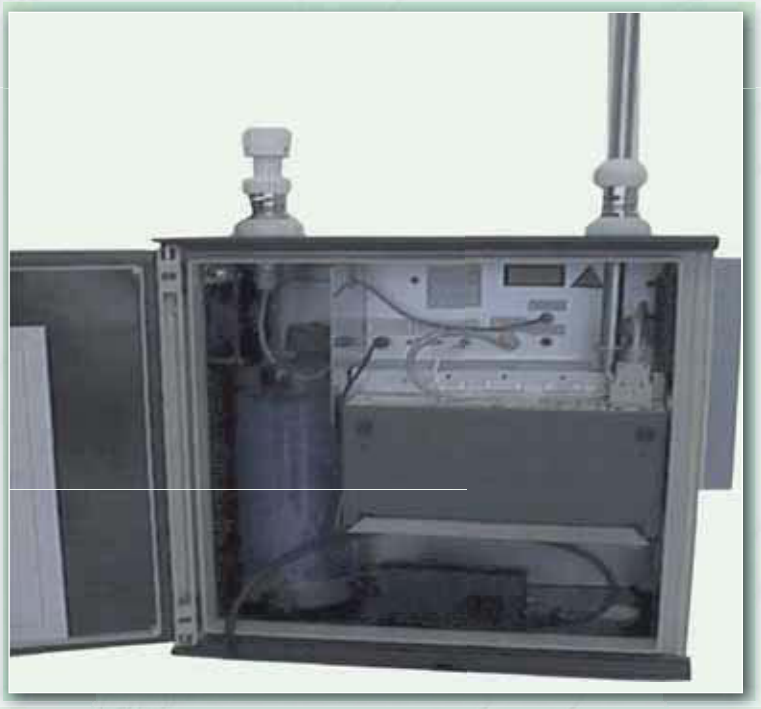
Hot-Spot Environmental Dust Monitor

GRIMM EDM 107

Portable Fine Dust Monitor for
simultaneous measurement of PM_{10}, $PM_{2.5}$ and PM_1



Advantages

- Fully Automatic
- Portable
- 3 different PM's
- Dehumidification (in #165)
- Particle Size (optional)
- Relative Humidity (optional)
- Air Temperature (optional)
- Air Pressure (optional)
- Data Logger Card
- RS-232
- Battery operated

Applications

- Mobile monitoring
- Hot spot monitoring
- Tunnel tester
- Public site monitor
- Source identification

Handling Benefits of EDM 107

- Hand held unit
- Fits in outdoor housing
- Not critical to vibration
- No radioactive source
- No loss of SVC
- with 47mm Filter holder
- Low maintenance
- Only 2,5 kg

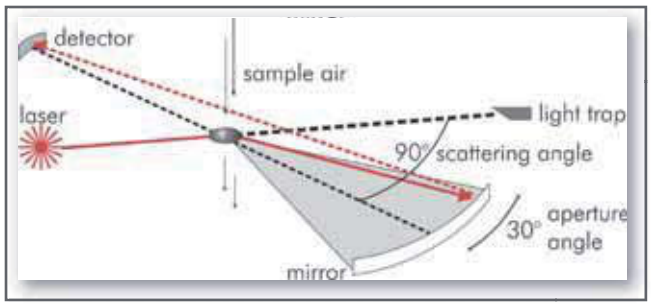
The Grimm EDM 107 is designed both for mobile and stationary use to measure PM_{10}, $PM_{2.5}$ and PM_1 simultaneously as a stand-alone measuring system. It is a small and light device for a multitude of applications.

Picture shows above the green EDM 107 and below in the outdoor housing #165.

Measurement Principle

The Grimm EDM107 dust monitor takes a continuous air sample with a flow controlled pump. The particles are measured by the physical principle of orthogonal light scattering.

Here particles are illuminated by a laser light and the scattered signal from the particle passing through the laser beam is collected at approx. 90° by a mirror and transferred to a recipient diode. Each signal of the diode is fed, after a corresponding reinforcement, to a pulse height analyser then classified to size and transmitted in each size channel. These counts are converted each 6 seconds to a mass distribution from which the different PM values derive.



Results of the measurementare shown on the front panel. The data is also stored and retrieved for PC display with our software for mass distribution in $\mu g/m^3$ for PM_{10}, $PM_{2.5}$ and PM_1. Remote data access is also possible.

Further advantages

- Sample air needs no heating, the volatile fraction is accounted for,
- Sample air can be collected on a PTFE filter (optional) for chemical analysis.
- Integrated data logger and removable memory card for data access
- Remote data access via RS 232 (or opt. wireless)
- Weather proof housing with ventilation, heater and floor/wall support (model #165)
- Optional software upgrade to Count mode
- TÜV Certified quality
- Low maintenance costs

SOURCE APPORTIONMENT

The GRIMM environmental particle analysers are **unique** in their ability to provide real time information on source apportionment of particulates.

The capability to measure in **real time** the PM_{10}, $PM_{2.5}$ and PM_1 values, combined with meteorological data, permits an accurate source indentification.

The ability to see aerosol particle size changes in the PM values will help our understanding in determining the type of contamination.

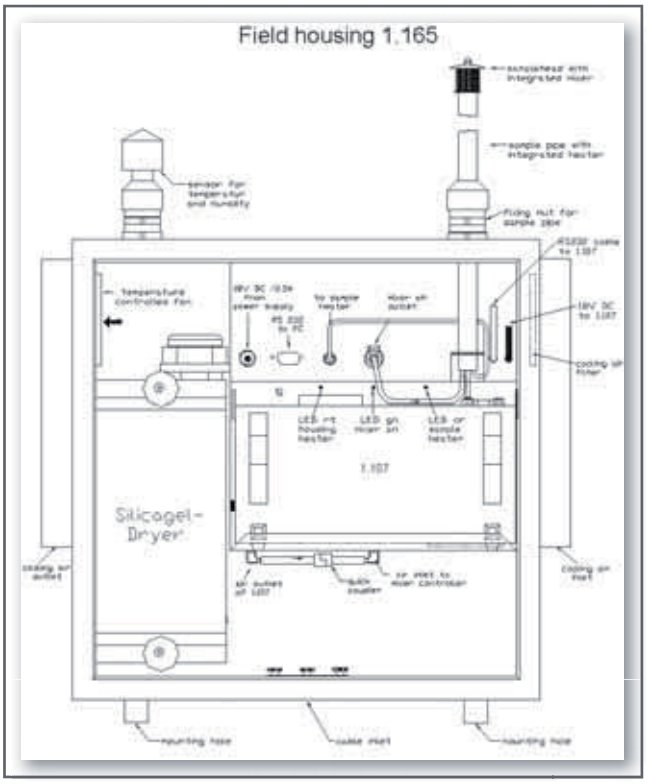
For example particle concentrations may be rising due to a local factory emission or maybe a nearby airport or other pollution source.

This is a **signiψcant advance** in the environmental monitoring philosophy.

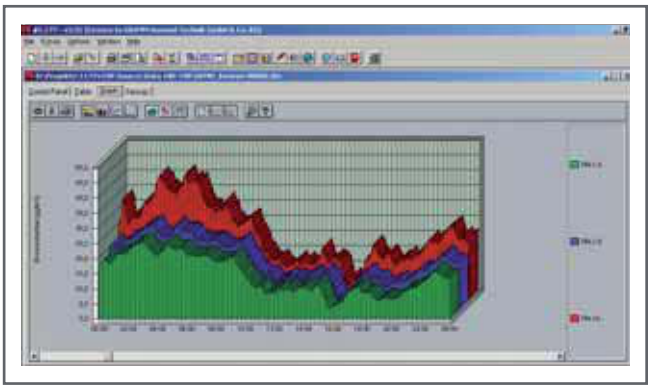
System Configuration

In combination with the #165outdoor housing and inside, the #107adds up to a completely mobile or stationary dust monitoring systemwith dehumidification, included temperature, air pressure and humidity sensors and a sampling tube with TSP head. The instrument can be used in temperatures of -20° to +40°C.

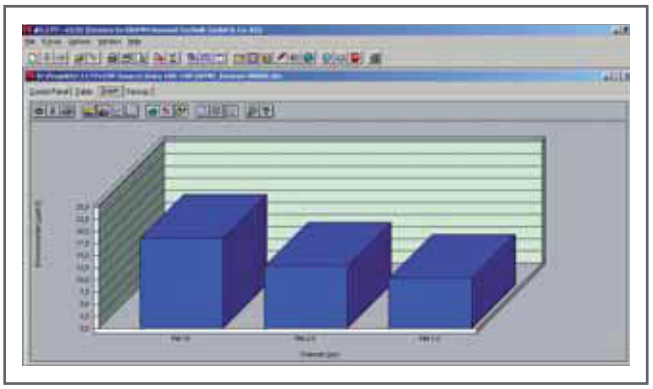
A schematic is shown here on the right.



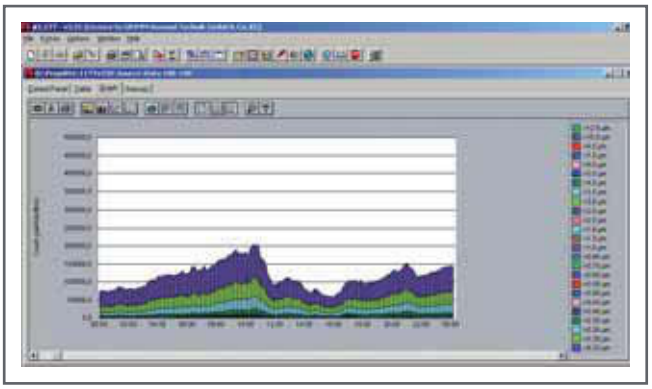
Environmental Data Presentation



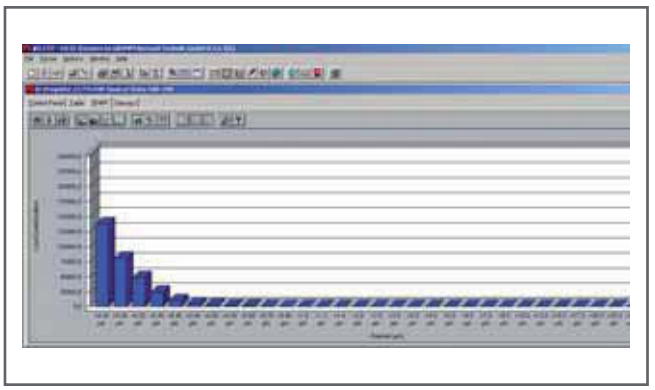
Graph shows the presentation of PM_{10}, $PM_{2.5}$ and PM_1 mass obtained in **real time data over one day.**



Graph shows the of the PM_{10}, $PM_{2.5}$ and PM_1 **mean time mass over one day** *(for gravimetric comparisons).*



Graph shows the real time data presentation in counts of all **31 different size channels.**



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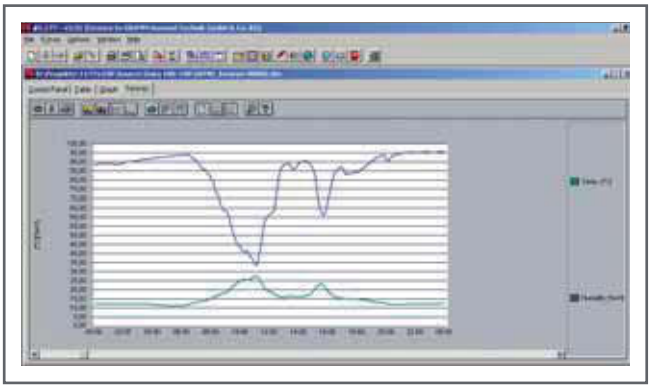
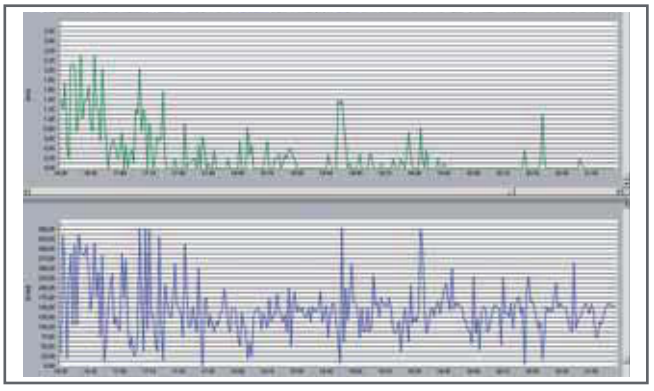


Graph shows the meteorological data presentation of **temperature and humidity.**



Graph shows the **wind & rain presentation.**

Most of our units work in different **national networks** and they have our unit attached to their own presentation system (but not our Grimm #177software)

It is also possible to show the **service data in real time:**

- The instrument performance
- Possible warning signals
- Error messages.

Specifications

Grimm EDM 107 Monitor

Measurement principle:	Light Scattering
Light Source:	Laser Diode
Measurement range:	from 0.25 to 32 microns
Concentration range:	from 1 to 2,000,000 Particles/litre
Size channels:	31 different ranges
Mass ranges:	PM_{10} and $PM_{2.5}$ and PM_1
Reproducibility:	3% in max. range
Mass results:	simultaneous and in real time
Data Presentation:	from 6 sec. to 1h
Sample flow:	1,2 litre/min.
Volume control:	automatic
Power supply:	18VDC, but for 220V/110V
Temp. Range:	+4°C to +40°C
Size	24 x 12 x 6cm
Total weight:	2,5 kg with lead battery (8h of use)

Grimm #165 Outdoor Housing

Housing:	Glass Fibre Material, grey
Spectrometer:	Space for 107 Monitor
Sampling System:	Connenction for the 1,5m pipe
Dryer System:	Silica Gel Container
Humidity control:	External Sensor
Heating:	auto-heating system
Heater control:	External Sensor
Ventilation:	Proportional fan for cooling
Meteorology:	1-Wire connection
Protection:	two lock system
Fixation:	Wall support screws
Power supply:	220V/110V
Temp. Range	-20°C to +40°C
Size:	40 x 40 x 20 cm
System weight:	18kg

Spanish Port.

Salzburg City Centre

Austrian Hilltop

The European Leader in Particle Measurement Technology

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D-E-107-08