



**AIR QUALITY MONITORING**  
**EN approved**



a short  
introduction for  
AQUILA Group  
Nov. 2009  
June 2010



## what is the innovation realized in the airpointer?

- **The Size**, compared to traditional instruments/shelters: it is basically the same hardware inside but the packaging is tight, so the instruments/shelters shrunk to the size of a travel suitcase, built in air condition. Excellent thermal management.
- **Data handling**: one single PC with automatic restart on a Linux platform and a powerful software handles all signals, controls all analysing modules and computes the measurement results and even graphics and communicates in the modern TCP/IP protocol also via internet. This data handling module is built in but also available in a separate housing to control traditional stations (airhopper)
- **Ecological footprint** 400W to 600 W instead 4-6 KW
- Optional traffic and people counter





*developed and  
made in Austria*



## The Modular Design

Air Inlet  
Meteorology Sensor  
Size Selective Inlet for  
Particulate Matter Monitor

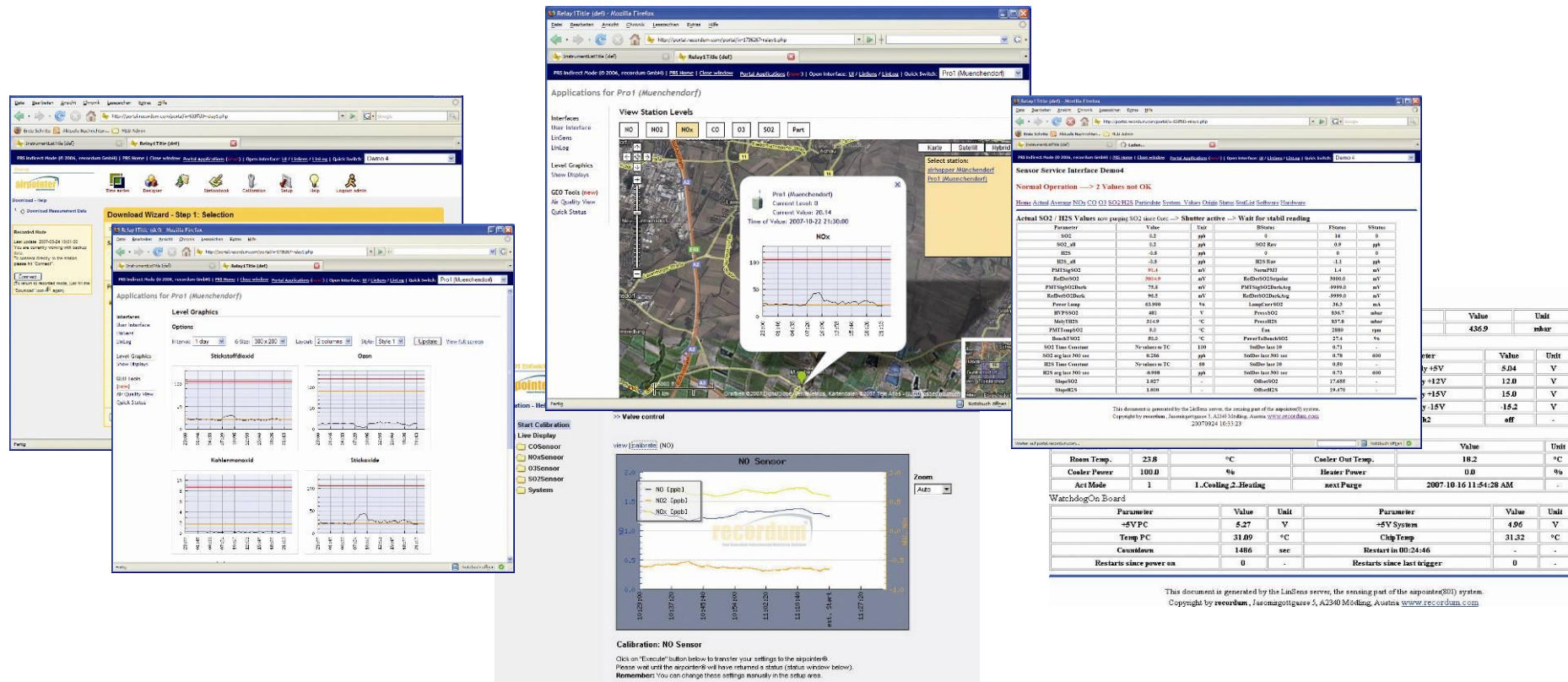
Zero Air Supply  
Air Condition  
Pump  
Power Supply

O <sub>3</sub>	Ozone Analyzing Module
CO	Carbon Monoxide Analyzing Module
SO <sub>2</sub> H <sub>2</sub> S	Sulfur Dioxide/ Hydrogen Sulfide Analyzing Module
NO <sub>x</sub>	Nitrogen Oxides Analyzing Module
VOC	Volatile Organic Compounds Analyzing Module
PM10 PM2,5	Particulate Matter Analyzing Module
IAQ	Sensors for indoor Air Quality





- Access the monitoring and raw data without special software - standard internet connection and web browser will do.
- Reduce maintenance effort based on remote diagnostics and update capability as well as automatic data back-up services, easy on-site maintenance access while still offering a burglar proof design.





# CONFIRMATION

## German Federal Environmental Agency (UBA)

**Announcement about the uniform practice in  
monitoring emissions and ambient air,  
circular from the Federal Environment Ministry (BMU) of 2009-08-03,  
publication BAnz. 2009-08-25, no. 125, page 2934**

### II. Suitability of measuring equipment for the continuous monitoring of ambient air

With reference to number 3.2 of the announcement of the Bodies, which are responsible for the implementation of the Council Directive 96/62/EG from 27<sup>th</sup> September 1996 on ambient air quality assessment and management from 1<sup>st</sup> October 1998 (BAnz. page 15126) the suitability of the following measuring system is announced on behalf of BMU:

#### 2 Multi component measuring equipment

##### 2.2 airpointer for NO, NO<sub>2</sub>, NO<sub>x</sub>, SO<sub>2</sub>, O<sub>3</sub> and CO

Manufacturer:

recordum Messtechnik GmbH, Mödling

Suitability:

For stationary, continuous measurement of nitrogen oxide, sulphur dioxide, ozone and carbon monoxide in ambient air.

Measuring ranges during the suitability test:

Measurement ranges according to VDI 4202		
Component	MR	Unit
NO <sub>2</sub>	0 - 400	µg/m <sup>3</sup>
SO <sub>2</sub>	0 - 700	µg/m <sup>3</sup>
O <sub>3</sub>	0 - 360	µg/m <sup>3</sup>
CO	0 - 60	mg/m <sup>3</sup>

Measurement ranges according to EN standards		
Component	MR	Unit
NO	0 - 1200	µg/m <sup>3</sup>
NO <sub>2</sub>	0 - 500	µg/m <sup>3</sup>
SO <sub>2</sub>	0 - 1000	µg/m <sup>3</sup>
O <sub>3</sub>	0 - 500	µg/m <sup>3</sup>
CO	0 - 100	mg/m <sup>3</sup>

Software version:

1.001 (analytical module)

Restriction:

-

Remark:

see page 2

Test Report:

TÜV Rheinland Immissionsschutz und Energiesysteme GmbH, Köln,  
Report No. 936/21209700/A 2009-01-15

Köln, 2009-09-17

Dr. P. Wilbring

Dipl.-Ing. K. Pletscher

- The testing during 2008/09 was performed in accordance with the following guidelines and requirements:
- VDI 4202 Part 1: Minimum requirements for suitability tests of automated ambient air quality measuring systems; Point-related measurement methods of gaseous and particulate pollutants, from June 2002
- VDI 4203 Part 3: Testing of automated measuring systems; Test procedures for point-related ambient air quality measuring systems of gaseous and particulate pollutants, from August 2004
- DIN EN 14211 Ambient air quality – Standard method for the measurement of the concentration of nitrogen dioxide and nitrogen monoxide by chemiluminescence, from June 2005
- DIN EN 14212 Ambient air quality – Standard method for the measurement of the concentration of sulphur dioxide by ultraviolet fluorescence, from June 2005
- DIN EN 14625 Ambient air quality – Standard method for the measurement of the concentration of ozone by ultraviolet photometry, from July 2005
- DIN EN 14626 Ambient air quality – Standard method for the measurement of the concentration of carbon monoxide by nondispersive infrared spectroscopy, from July 2005



## **Methods for PM 10 and PM 2,5 today**

- Built in Nephelometer, good comparison with reference Method documented, no equivalency report, indicative measurement
- PM monitor with documented EN equivalency is in planning
- Existing EN approved PM Monitors can be connected into the airpointer data system

## **Reference methods for SO<sub>2</sub>, NO/NO<sub>2</sub>/NO<sub>x</sub>, CO and O<sub>3</sub> built in Zero and Span sources for above gases**

- Zero air filter
- Permeation oven for SO<sub>2</sub> and NO<sub>2</sub>
- Small gas cylinder for CO
- Ozone Generator



## *airpointer<sup>®</sup> vs traditional Station*

Round Robin test in Upper Austria Oct. 2007

[www.ooe.gv.at/cps/rde/xbcr/SID.../Feldringversuch2007.pdf](http://www.ooe.gv.at/cps/rde/xbcr/SID.../Feldringversuch2007.pdf)



Mittal Steel, South Africa



Highway, Croatia



Archive, Korea



Ottawa, Canada







## *airpointer® vs traditional Station*

- Up to 90% smaller
- No need of floor area
- Transportation and mobility costs up to -90%
- Energy costs up to -90%
- Maintenance costs up to -50%
- Data access costs up to -50%
- No buiding permit required
- Costs of ownership up to -50%
- Influence on global warming reduced up to 90%
- Smallest possible ecological footprint





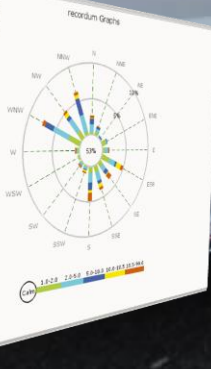
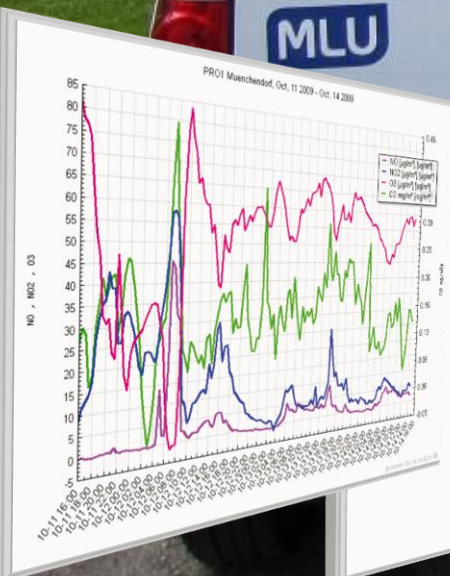
# airpointer®

Compact Monitoring System

## Live Public Information



Time	CO	NO2	NO	O3
13.10.2009 16:00	0.17	6.32	5.32	26.57
13.10.2009 16:01	0.17	6.27	4.84	27.01
13.10.2009 16:02	0.14	6.15	4.37	26.29
13.10.2009 16:03	0.17	5.92	4.2	26.75
13.10.2009 16:04	0.17	6.04	4.31	25.17
13.10.2009 16:05	0.16	6.02	4.35	27.37
13.10.2009 16:06	0.18	6.12	4.09	29.47
13.10.2009 16:07	0.15	5.52	3.88	28.21
13.10.2009 16:08	0.15	5.68	3.81	28.84
13.10.2009 16:09	0.15	5.38	3.81	27.39
13.10.2009 16:10	0.15	6.59	3.89	24.03
13.10.2009 16:11	0.17	6.54	3.39	24.51
13.10.2009 16:12	0.16	6.8	3.85	24.51
13.10.2009 16:13	0.17	6.79	3.75	27.41





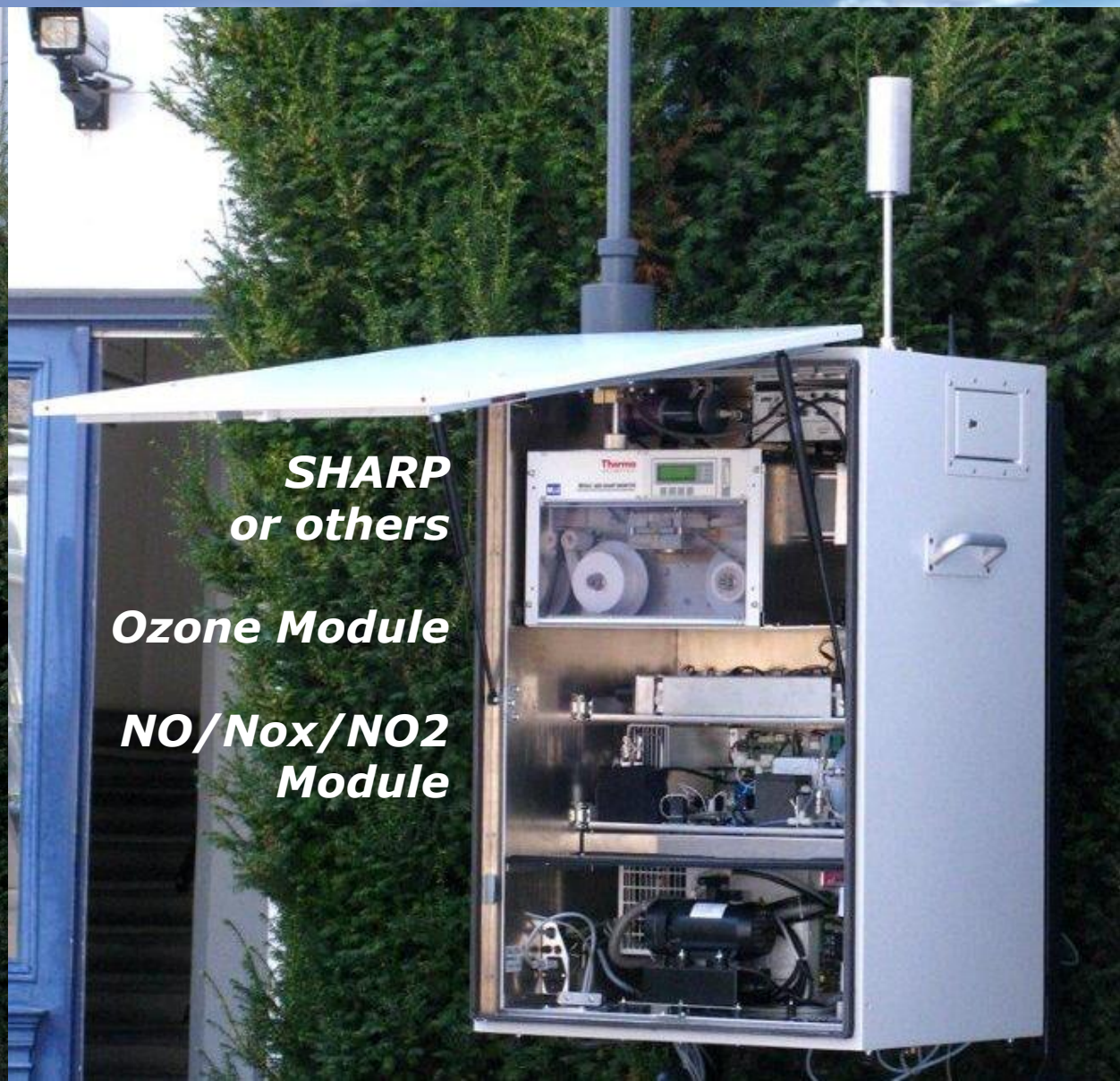
# airpointer®

Compact Monitoring System

## mobile applications







***SHARP  
or others***

***Ozone Module***

***NO/Nox/NO2  
Module***



- Air Quality management must use suitable monitoring methods and tools in the framework of extensive legislation
- In situations where space and other resources are at a premium traditional stations/shelter systems are disadvantageous, also if they need to be used in temporary fashion
- The airpointer<sup>®</sup> is a solution that offers compact, out-of-the-box plug-and-play functionality with reference type sensors, thus providing
- Excellent measurement quality in the most compact package on the market  
EN approved for SO<sub>2</sub>, NO/NO<sub>2</sub>/NO<sub>x</sub>, O<sub>3</sub>, CO
- Built in data system , communication via internet and web browser
- Built in calibration control system for criteria gases
- Simple connection to existing AQM networks
- Extended housing for EN equivalent PM Monitors
- Such e.g. 2 out of 4 EN criteria gases and equivalency tested PM equipment makes a fully approved airpointer system