

European Network on New Sensing Technologies for Air Pollution Control and Environmental Sustainability - *EuNetAir*

COST Action TD1105

WGs and MC Meeting at LINKÖPING, 3 - 5 June 2015

Action Start date: 01/07/2012 - Action End date: 30/06/2016

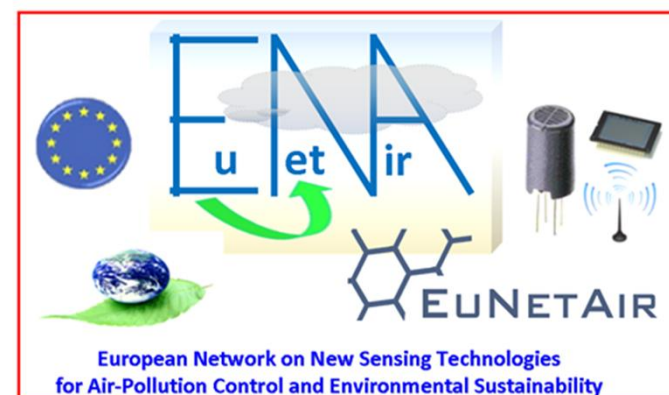
Year 3: 1 July 2014 - 30 June 2015 (*Ongoing Action*)

Summary activities in WG-4



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 **cost**
EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY



Challenges in Air Quality Control

WG4 has strong focus on the following target analytes:

Bad odours

H₂S and organic thiols (mercaptans)

PM, Particulate Matter

- **PM₁₀, PM_{2.5}, ultrafine PM and BC**
- **A state-of-the-art summary of PM sensors / analyzers was written by Anita Lloyd Spetz and John Saffell. Grisa Mosnik is adding facts concerning BC.**

VOC in In-door air

- **CH₂O methanal (formaldehyde)**

Inorganic gases

- **NO₂ nitrogen dioxide & O₃ trioxygen (ozone)**
- **CO₂ carbon dioxide**



WG-4 Testing in Aveiro, Portugal

Oct 2014, in ambient air outside a bus

- **SenseAir: CH₄, humidity, temp and CO₂**
- **SGX Sensortech: CO, O₃, NO₂**
- **Alphasense: CO, NO, NO₂, O₃, VOC (PID), SO₂
(in a “Heathrow box”)**

Results are analysed by a special group



SenseAir HPP-CO2 will be tested at indoor lab at University of Cambridge UK, by former STSM Paul Smith

- **Pressure**
- **Temperature**
- **CO2 conc**

For further investigation of CO2 conc in upper atmosphere by using balloon sondes



Subgroup 4.2

- prEN 16 641 and 16642: Air quality - Determination of odour exposure in ambient air by using field inspection (final step)
28 and 29 July 2015 at VDI in Düsseldorf
- EN/TC 264/WG 2: Improvement of the EN13725: Determination of odour concentration by dynamic olfactometry (working group meeting)
 - Sampling: area sources
 - Uncertainties determination
 - Methodologies



Subgroup 4.2

- New proposal from CEN/TC 264 for an European working group on “prEN xxxxx Air quality – Continuous instrumental odorant monitoring in air to assess risks of odour (nuisance) and safety”
- New CEN proposal for sensors - Air quality – Performance evaluation of sensors for the determination of concentrations of gaseous pollutants and particulate matter in ambient air



Subgroup 4.2

Belgian National Health Council

- Working group on Indoor air pollution (chemical agents)
- Multidisciplinary group (toxicologist, medicine doctors, chemists, monitoring sciences, biologists)

Belgian Royal decree (18/08/2014)

- Ceiling values of building materials emissions for IAQ



Scientific context and objectives in the Action

Public Wallonia laboratory:

- Monitoring of odour pollution and annoyance from Wallonia landfills in order to harmonise the methodology and to determine realistic standards
- At this time, no regulation (only recommendations in « pemitis »)
- The trend is: percentile 98, 1 uo/m³
- Comparison low cost sensors array versus analysers for real time monitoring of key odorants (terpenes, H₂S, ...)
around landfills



Scientific context and objectives in the Action

- Interreg IVA “Grande Region” project “Ecobiogaz” : optimization of biomethanation’ (<http://www.ecobiogaz.eu/>)
- IAQ : MVOC characterisation emitted by several moulds growing on material building (lab and field tests) to develop MVOC devices
- Sampling techniques development to determine odour flow rate from area sources
- Comparison of field odour measurement devices



Scientific context and objectives in the Action

- Challenge: Volatile organic acids detection with MOx/EC sensor array?
- Progress in the citizens participation for odour management
- Belgian project proposal “EcocityTools”: 3D GIS-Building Energy Efficiency-Environmental efficiency tool for helping local authorities to develop green smart cities



WG-4 Innovations in Air Quality Control

- New sensors, analysers, electronic noses, etc developed in Europe should be further developed and released as **products** on the market
- **Efficient** production / calibration facilities for high-volumes are necessary, if we want to compete with low-cost manufacturers outside Europe
- Calibration and **recalibration** routines are both of interest
- European citizen Air Quality information about gases / pollution should be based on cheap sensors and their position - **trends** more important than accuracy
- **Low power & wireless** systems and **multisensors**
- **Size** matters!
- **Sharing** laboratories for testing is important for SME:s and universities
- New “**Aveiro** type” testing useful: preferably a longer period and why not both **indoor** and **outdoor ...**