

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

COST Action TD1105

WGs and MC Meeting at ISTANBUL, 3-5 December 2014

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

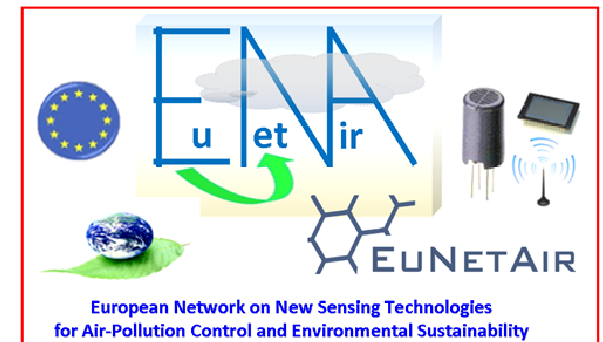
Year 3: 1 July 2014 - 30 June 2015 (*Ongoing Action*)

Summary activities in WG-4



Ingrid Bryntse
WG4 Leader,
SenseAir AB / Sweden

 **cost**
EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY





WG-4 Testing in Aveiro, Portugal
14 days in Oct 2014, outside a bus

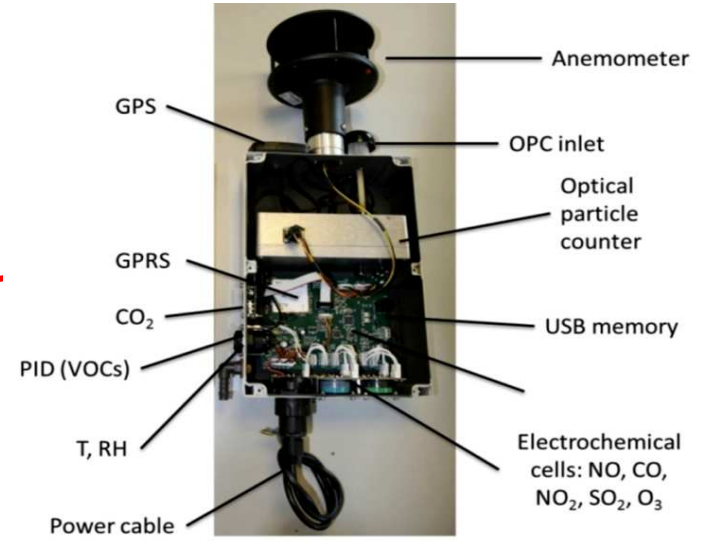
SenseAir: CH₄, humidity, temp and CO₂

SGXSensortech: CO, O₃, NO₂

Alphasense: CO, NO, NO₂, O₃, VOC (PID), SO₂
(Heathrow box)



Heathrow box



3 SenseAir S8

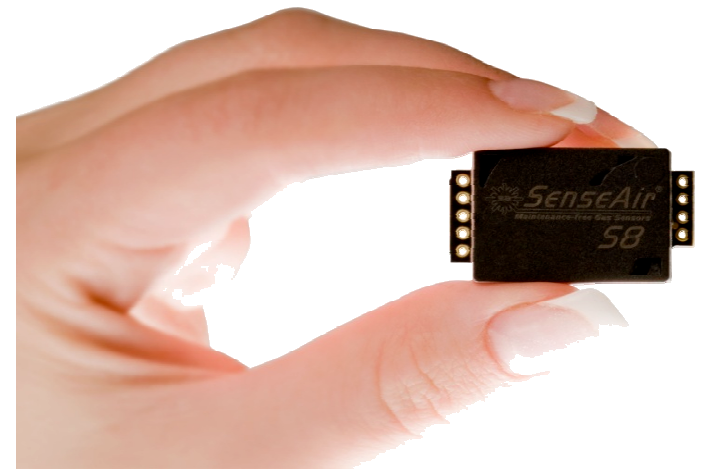


SenseAir tSENSE



Ingrid Bryntse at SenseAir, WG4 leader

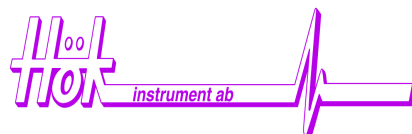
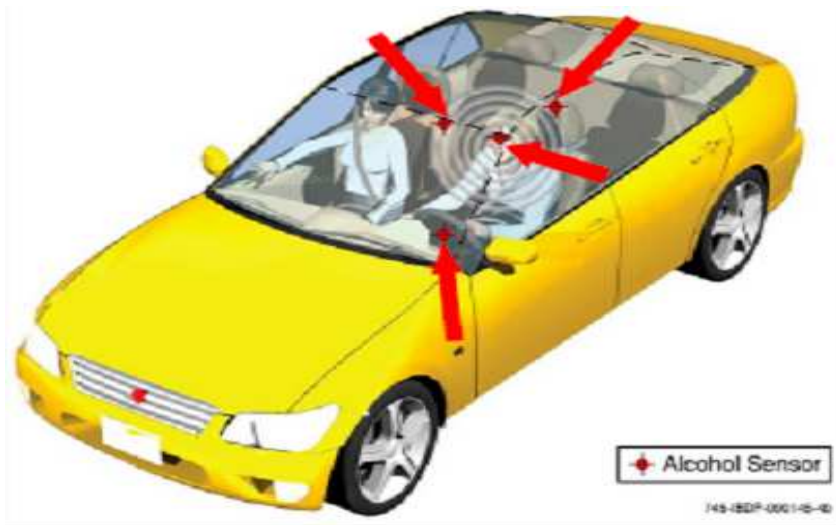
- we have many reference sites, but the sensors are mostly hidden



Hong Kong international airport, 1997

Alcolock projects for
handheld device and
future EtOH sniffer:

Long Path Length



PEAN COOPERATION IN SCIENCE A



EDF Methane challenge for Fracking Industry in USA

Severe testing in open competition for a methane alarm device

One of five left:

SenseAir in co-operation with Honeywell Analytics RAE Systems





Nicolas Moser, SGX, WG-4 Vice leader
Field testing at Oporto and Lisbon airports

STSM with IDAD with monitoring of CO, NO₂ and O₃ in Oporto and Lisbon

Data treatment by Joao Ginja from Idad at SGX

Same sensors have been reused during the joined monitoring session in Aveiro testing



Anne-Claude Romain, Liege University, Subgroup leader

EN/TC 264/WG 27: Air quality - Determination of odour exposure in ambient air by using field inspection (finished)

EN/TC 264/WG 41: Air quality- electronic sensors for odorant monitoring (John Saffell is also on the committee)

EN/TC 264/WG 2: Improvement of the EN13725: Determination of odour concentration by dynamic olfactometry (ongoing)

Sampling : area sources

Uncertainties determination

Methodologies

Belgian National Health Council

Working group on Indoor air pollution (chemical agents)

Multidisciplinary group (toxicologist, doctors, chemists, monitoring sciences, biologists)

John Saffell, Alphasense, subgroup leader

Air Quality Sensor Validation

MACPoll test results and test protocols now available, Ispra recent test report

EMPA validation testing of Heathrow boxes (2014), University of Manchester validation of PM_{2.5}, PM₁₀ OPCs (2014)

US EPA and Environment Defense Fund (EDF) have set up Air Standards Workgroup (ASW) with Data Standards and Sensor Characterisation as the goal. Next meeting: October 25, New York City

TC 264/ WG 42: validation of low cost AQ networks: second meeting this month, expecting first draft in 12 months (?)

UNEP and World Bank (PMEH) establishing standards for Asia and Africa

Regulations, Protocols and Standards

ASTM member: 22.2 (Ambient air)

- Very engaged with rewrite of ASHRAE 62 ventilation rates, correcting for type of citizen and usage (Hal Levin and Andy Persily): D6245
- D7297-06 Standard practice for evaluating residential IAQ concerns: revised

British Standards Institute member: EH2/3 and EH2/5

- EN14662 benzene testing standard in draft stage, to be approved
- CEN/PC 421 emission safety of combustible air fresheners in draft stage
- ISO 16000-30 Sensory testing of indoor air published (?)
- ISO 16000-32 Investigation of buildings for the presence of pollutants- published
- prEN15251 Guideline for using indoor environmental parameters for the design...of buildings- draft for discussion

Challenges in Air Quality Control

WG4 has focused 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. Will be slightly upgraded concerning BC.

VOCs in Indoor air

CH₂O (formaldehyde)

Inorganic gases

NO₂ & O₃, CO₂

Priority Innovation Requirements in Air Quality Control



New sensors developed in Europe should be further developed into real products / systems.

In order to manufacture well-performing sensors or analysers one needs automatic calibration facilities that can handle high-volumes. If we want to compete with low-cost manufacturers outside Europe we need as smart and efficient calibration processes as possible.

We must be able to validate in the field