COST Action TD1105: The European Network on New Sensing Technologies for Air-Pollution Control and Environmental Sustainability - *EuNetAir*

Michele Penza
Chairman of ESSC & Chair of COST Action TD1105
ENEA, Brindisi, Italy
European Network on New Sensing Technologies for Air Pollution Control and Environmental Sustainability - EuNetAir

COST Action TD1105: Overview

COST WORKSHOP at EuroNanoForum 2015
COST Highlights on Nanotechnology and Advanced Materials
RADISSON BLU HOTEL LATVIJA, 12 June 2015 - Session Time: 10:30 - 12:00
Riga/Latvia, 12 June 2015

Michele Penza
Function in the Action: Action Chair
ENEA - Brindisi, Italy

Action Start date: 01/07/2012 - Action End date: 30/06/2016
Year 3: 1 July 2014 - 30 June 2015
Nitrogen Pollution and the European Environment Implications for Air Quality Policy
EC In-Depth Report, September 2013

Excess reactive nitrogen represents a major environmental threat that is only now beginning to be fully appreciated. At a global level, humans have more than doubled the production and cycling of reactive nitrogen, leading to a plethora of impacts that interact across all global spheres: atmosphere, biosphere, hydrosphere and geosphere.

Sutton et al., 2009

Nitrogen Pollution:
NO$_x$, N$_2$O, NH$_3$, NH$_4$, NO$_2^-$, NO$_3^-$, etc.
Challenges addressed by Action TD1105

- Nanomaterials for AQC sensors
- Low-cost Gas Sensors
- Low-power Sensor-Systems
- Wireless Technology (*Environmental Sensors Network*)
- Air Quality Modelling
- Environmental Measurements
- Standards and Protocols
MoU Main Objectives of COST Action TD1105:

• To establish a Pan-European multidisciplinary R&D platform on new sensing paradigm for Air Quality Control (AQC) contributing to sustainable development, green-economy and social welfare.

• To create collaborative research teams in the ERA on the new sensing technologies for AQC in an integrated approach to avoid fragmentation of the research efforts.

• To train Early Stage Researchers (ESRs) and new young scientists in the field for supporting competitiveness of European industry by qualified human potential.

• To promote gender balance and involvement of ESRs in AQC.

• To disseminate R&D results on AQC towards industry community and policy makers as well as general public and high schools.
COST Action TD1105 EuNetAir: Working Groups (1/5)

**WG1:** Sensor Materials & Nanotechnologies

**WG2:** Sensors, Devices & Systems for AQC

**WG3:** Env. Measurements & Air Pollution Modelling

**WG4:** Protocols & Standardisation Methods

**INTERDISCIPLINARY SPECIAL INTEREST GROUPS**

**MANAGEMENT COMMITTEE:**

**CORE-GROUP & STEERING COMMITTEE**
- Editorial Board
- Dissemination
- Training Schools
- Gender Balance
- Early Stage Researchers (ESR)
- Short-Term Scientific Mission (STSM)
- Intellectual Property Rights (IPR)
- Local Organizing Committee (LOC)

**SIG 1:** Network of Spin-offs

**SIG 2:** Smart Sensors for Urban Air Monitoring in Cities

**SIG 3:** Guidelines for Best Coupling Air Pollutant-Transducer

**SIG 4:** Expert comments for the Revision of the Air Quality EU Directive

**Action Size (2012-2016):**
200 Experts from 120 Teams - 31 Countries

www.cost.eunetair.it
WG1 PRIORITIES: Sensor Materials and Nanotechnology

| WG1-Leader: | • Prof. Juan Ramon Morante, IREC, Barcelona, Spain  
|            | • Prof. Jyrki Lappalainen, Oulu University, Finland  
|            | *(Rome Meeting WG1 Chair)* |
| WG1 Composition: | 3 Sub-WG Leaders and 25 Members |
| PRIORITY #1: | **Metal Oxides (MOX):** Thin Films, Nanoparticles, Nanowires, Nanotubes, Nanoneedles, Nanoporous Forms of Materials (ZnO, SnO₂, WO₃, TiO₂, InOₓ, NiO, and magnetic materials Fe₃O₄, doped dielectrics BaSrTiO₃, etc.) |
| PRIORITY #2: | **Carbon Nano MATerials (CNMAT):** Nanotubes, Nanoparticles, Graphene, 1D and 2D-nanostructures and their functionalization and doping |
| PRIORITY #3: | **Molecular, Organic/Inorganic Materials:** Heterostructures (semiconductors, polymers) and Schottky junctions |
| PRIORITY #4: | **Processing of low-cost sensors on flexible substrates:**  
|            | • Printing techniques, inkjet printing, spin coating, droplet casting, etc.  
|            | • Template assisted growth of nanostructures |
| PRIORITY #5: | **Other sensitive materials:** biomaterials, enzymes, antibodies, etc. |
| PRIORITY #6: | **Chemical modifications** of the sensor materials with tuned properties to address selectivity and specific applications |
| PRIORITY #7: | **Combination of different approaches** and defining the state-of-art of the best available technologies, for example, to realize smart sensor structures |
**TD1105 EuNetAir WG1**: Sensor Materials & Nanotechnologies (2/5)

**WG1 Chair: Prof. Juan Ramon Morante, IREC, Spain**

- **Sub-Working Group 1.1**: Metal oxides nanostructures for AQC gas sensors.
- **Sub-Working Group 1.2**: Carbon nanomaterials for AQC gas sensors.
- **Sub-Working Group 1.3**: Emerging sensor materials (organic/inorganic, hybrid, nanocomposites, polymers, functional, etc.).

New molecular materials of **polymer-macrocyrcles** as transducers for polluting gas sensing by University of Bourgogne.

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- **Self-heating SnO$_2$ Nanowires** by Univ. of Barcelona
- **Mesoporous In$_2$O$_3** by Univ. of Paderborn, DE
- **Carbon Nanotube Forest** by ENEA
- **Carbon Nanotube ropes** by CSIRO
- **TiO$_2$ Nanotube** by Univ. Rovira I Virgili and SICCAS
- **Clean bucky-Paper exposure to NO$_2$** by ELETTRA, IT

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**C 1s**

- **Binding Energy (eV)**
  - 286.0
  - 285.5
  - 285.0
  - 284.5
  - 284.0
  - 283.5
Sub-Working Group 2.1:
Gas sensors and new transducers.

Sub-Working Group 2.2:
Portable gas sensor-systems.

Sub-Working Group 2.3:
Wireless technology and AQC sensors network.

Sub-Working Group 2.4:
Intelligence algorithms and distributed computing for networked AQC gas sensors.

Direct status measurement of automotive catalysts by radio-frequency technique by University of Bayreuth, DE.

Low-ppb sensitivity for NO₂ GaN-based sensor concept

Environmental Sensor demo by IMEC, NL

IT PATENT ENEA
Carbon Nanotube Gas Sensors

Engine exhaust
λ-probe downstream
λ-probe upstream
thermocouples
RF antennas

AUTONOMOUS GAS SENSOR SYSTEM
IREC and Univ. of Barcelona

Autonomous Gas Sensor System
by IREC and Univ. of Barcelona

Warwick University in collaboration with Cambridge University, EPFL, PennState.

Using pattern matching algorithms, the data is converted into a unique response pattern

A versatile platform for the efficient development of gas detection systems based on automatic device adaptation by University of Saarland.

Environmental Sensor demo by IMEC, NL

Low-ppb sensitivity for NO₂ GaN-based sensor concept

AUTONOMOUS GAS SENSOR SYSTEM
IREC and Univ. of Barcelona

Engine exhaust
λ-probe downstream
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RF antennas
TD1105 **WG3**: Environmental Measurements and Air-Pollution Modelling (4/5)

*WG3 Chair: Prof. Ole Hertel, Aarhus University, Denmark*

- **Sub-Working Group 3.1**: Environmental measurements at laboratory and in field air-quality stations.
- **Sub-Working Group 3.2**: Air-quality modelling and chemical weather forecasting.
- **Sub-Working Group 3.3**: Harmonisation of environmental measurements.

- Environmental measurements of PM and air pollution by CSIC, ES
- AQ monitoring station by ARPA-PUGLIA, IT
- AQ monitoring station by Aarhus University, DK
- AQ monitoring station by Lithuanian EPA
- AirMerge system for Chemical Weather Models by Aristotle University, EL
- Mobile and static sensor network configurations by University of Cambridge.
TD1105 EuNetAir **WG4**: Protocols and Standardisation Methods (5/5)

**WG4 Chair: Prof. Ingrid Bryntse, SenseAir AB, Sweden**

- **Sub-Working Group 4.1**: Protocols, standards and methods for AQC by analyzers/instruments (no-sensors) technologies.
- **Sub-Working Group 4.2**: Protocols, standards and methods for AQC by sensors (no-analyzers) technologies.
- **Sub-Working Group 4.3**: Benchmarking of new products and market of commercial AQC sensors.

European Directive 2008/50/EC: Ambient Air Quality

EU standard EN 13725/2003: Dynamic Olfactometry

Protocols and Standardised Methods for Gas Sensors

Guidelines of Best Transducers applied to specific gases

Dynamic olfactometry EN13725 by Univ. of Liege, Odometric SA, Univ. of Bari, Lenviros srl.

Packaged Sensors by E2V, CH

Battery-Powered Sensors by Alphasense Ltd, UK

CO₂ IR sensor for alarm System by SenseAir AB, Sweden

New precision multi-parametric analytical tool

Clean-Air Catalysis by Becker Gruppe, DE
COST Action TD1105 EuNetAir: **Action Parties (31)**

**Grant Holder:**
Eurice GmbH, Saarbrucken, Germany

**GH Scientific Representatives:**
Corinna Hahn, MC Member
Juliane Rossbach, MC Substitute

**Non-COST Countries:** NNC + IPC

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**Parties**

<table>
<thead>
<tr>
<th>Year</th>
<th>Parties</th>
<th>Non-COST Countries</th>
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<tbody>
<tr>
<td>YR 1</td>
<td>27</td>
<td>5</td>
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<td>YR 2</td>
<td>28</td>
<td>7</td>
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<td>YR 3</td>
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</tr>
<tr>
<td>YR 4</td>
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**Action COST Parties**

- 7th MC Meeting: 5 June 2015: 31
- 6th MC Meeting: 5 Dec. 2014: 29
- 5th MC Meeting: 30 May 2014: 28
- 4th MC Meeting: 20 Dec. 2013: 28
- 3rd MC Meeting: 21 June 2013: 27
- Kick-off Meeting: 16 May 2012: 21
- CSO Approval: 1 Dec. 2011: 17

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**Notes:**
- Parties and Non-COST Countries are represented in the bar chart.
- The chart shows the distribution of parties and non-COST countries across different years (YR 1 to YR 4).
- The action parties are identified at specific meetings and events.
COST Action TD1105 EuNetAir

31 COST Countries (Parties) have already signed Memorandum of Understanding (MoU)

PARTIES: 31
already accepted MoU

Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Luxembourg, The Former Yugoslav Republic of Macedonia, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom
COST Action TD1105 EuNetAir:
7 Non-COST Countries and 8 Non-COST Institutions

Non-COST Countries:
Australia, Canada, China, Morocco, Russia, Ukraine, USA

Non-COST Institutions:
CSIRO (Australia); University of Waterloo (Canada); Chinese Academy of Sciences, Shanghai Institute of Ceramics (China); University of Agadir IBN Zohr (Morocco); National Research Center Kurchatov Institute (Russia); O.M. Marzeiev Institute for Hygiene and Medical Ecology of Academy of Science of Ukraine (Ukraine); Southern Illinois University Carbondale, NASA Ames Research Center (USA).
Action Participation Statistics

EuNetAir COST PARTNERSHIP  June 2015

- COST Parties: 31
- COST Organizations: 123
- UNIVERSITIES: 55
- RESEARCH CENTERS: 39
- SMEs: 16
- SPIN-OFFs: 9
- AGENCIES: 4

Pie chart showing:
- UNIVERSITIES: 44%
- RESEARCH CENTERS: 32%
- SMEs: 13%
- SPIN-OFFs: 8%
- AGENCIES: 3%
<table>
<thead>
<tr>
<th>International Organization</th>
<th>External Expert</th>
<th>Action Event</th>
</tr>
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| JRC - IES, Ispra                           | Michele Gerboles                                     | • Rome, 3-5 Dec. 2012  
|                                            |                                                      | • Barcelona, 20 June 2013  
|                                            |                                                      | • Brescia, 10 Sept. 2014  
|                                            |                                                      | • Linkoping, 3-5 June 2015 |
| AQUILA Network                             | Annette Borowiak                                     | • Duisburg, 4-6 March 2013                        |
| European Environment Agency (EEA)          | Valentin Foltescu Cristina Guerreiro (NILU)          | • Copenhagen, 3-4 Oct. 2013                       |
| UNECE                                      | Wenche Aas (NILU)                                    | • Copenhagen, 3-4 Oct. 2013                       |
| WHO Europe                                 | Michal Krzyzanowski (Former Head WHO Europe Office) | • Riga, 26-27 March 2015                          |
| MIT                                        | Marguerite Nyhan                                      | • Istanbul, 3-5 Dec. 2014                          |
| NASA Ames Research Center                  | Meyya Meyyappan Jing Li                              | • Rome, 3-5 Dec. 2012  
<p>|                                            |                                                      | • Lille, 26-30 May 2014                                 |
| CSIRO                                      | Philip J. Martin                                      | • Barcelona, 20 June 2013                          |</p>
<table>
<thead>
<tr>
<th>Country</th>
<th>MC Members (58): Male (69%) - Female (31%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>Dr. Anton KOCK; Dr Jan THEUNIS; Dr Anne-Claude ROMAIN</td>
</tr>
<tr>
<td>Belgium</td>
<td>Dr Dimiter SYRAKOV; Dr Ivan NEDKOV</td>
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<tr>
<td>Bulgaria</td>
<td>Dr. Irena CIGLENECKI-JUSIC; Prof. Vedran BILAS</td>
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<tr>
<td>Croatia</td>
<td>Dr. Vera KURKOVA; Dr. Zdenek ZELINGER</td>
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<tr>
<td>Czech Republic</td>
<td>Prof. Ole HERTEL</td>
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<tr>
<td>Denmark</td>
<td>Prof. Raaijaaniso</td>
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<tr>
<td>Estonia</td>
<td>Prof. Kaarle HAMERI; Prof. Jyrki LAPPALAINEN</td>
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<tr>
<td>Finland</td>
<td>Prof. Marcel BOUVET; Prof. Jerome BRUNET</td>
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<tr>
<td>France</td>
<td>Prof. Andreas SCHUETZE; Dr Corinna HAHN</td>
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<tr>
<td>Germany</td>
<td>Prof. George PAPADOPOULOS; Prof. Kostas KARATZAS</td>
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<tr>
<td>Greece</td>
<td>Ms Krisztina LABANCZ; Dr Zita FERENCZI</td>
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<tr>
<td>Hungary</td>
<td>Dr Arngrimur THORLACIUS</td>
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<tr>
<td>Iceland</td>
<td>Dr. Francesco PILLA; Prof. John WENGER</td>
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<tr>
<td>Ireland</td>
<td>Dr. Liad ORTAR; Prof. Hossam HAICK</td>
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<tr>
<td>Italy</td>
<td>Dr. Michele PENZA; Prof. G. SERVEGLIERI; Dr. G. DE GENNARO</td>
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<tr>
<td>Latvia</td>
<td>Dr. Iveta STEINBERGA; Dr. Gita SAKALE</td>
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<tr>
<td>Luxembourg</td>
<td>Dr. Arno GUTLEB</td>
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<tr>
<td>Macedonia Rep.</td>
<td>Dr. Igor ATASANOV; Dr Ljupcho GROZDANOVSKI</td>
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<tr>
<td>Netherlands</td>
<td>Dr Sywert BRONGERSMA; Dr. Ernie WEIJERS</td>
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<tr>
<td>Norway</td>
<td>Dr Nuria CASTELL BALAGUER; Dr. Philippe SCHENEIDER</td>
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<tr>
<td>Poland</td>
<td>Dr Monika KWOKA; Prof. Janislaw GAWRONSKI</td>
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<tr>
<td>Portugal</td>
<td>Prof. Bernadete RIBEIRO; Prof. Carlos BORREGO</td>
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<tr>
<td>Romania</td>
<td>Dr Marcel IONICA; Dr Roxana Mioara PITICESCU</td>
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<tr>
<td>Serbia</td>
<td>Dr. Anka CVETKOVIC; Dr. Milena JOVAVEVIC-STOJANOVIC</td>
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<tr>
<td>Slovenia</td>
<td>Dr Grisa MOCNIK; Dr Rahela ZABKAR</td>
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<tr>
<td>Spain</td>
<td>Prof. Juan Ramon MORANTE; Prof. Eduard LLOBET VALERO</td>
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<tr>
<td>Sweden</td>
<td>Prof. Anita LLOYD SPETZ; Prof. Ingrid BRYNTSE</td>
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<tr>
<td>Switzerland</td>
<td>Dr Danick BRIAND; Dr. Nicolas MOSER</td>
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<tr>
<td>United Kingdom</td>
<td>Dr John SAFELL; Prof. Roderic JONES</td>
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<tr>
<td>Turkey</td>
<td>Prof. Zafer ZIYA OZTURK; Prof. Mehmet Fatih DANisman</td>
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**Kick-off Meeting Brussels 16 May 2012**

<table>
<thead>
<tr>
<th>Country</th>
<th>MC Substitutes (33)</th>
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<tbody>
<tr>
<td>Austria</td>
<td>Dr Stefan DEFREGGER</td>
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<tr>
<td>Belgium</td>
<td>Dr Julien DELVA</td>
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<tr>
<td>Czech Republic</td>
<td>Dr. Roman NERUDA</td>
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<tr>
<td>Denmark</td>
<td>Dr. Lise Lotte SORENSEN</td>
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<tr>
<td>Finland</td>
<td>Prof. Jorma KESKINEN</td>
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<tr>
<td>France</td>
<td>Dr Jean SUISSE; Prof. Alain PAULY</td>
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<tr>
<td>Germany</td>
<td>Dr. Thomas KUHLBUSCH</td>
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<td>Dr. Juliane ROSSBACH</td>
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<td>Hungary</td>
<td>Dr. Christos KOUIMAS</td>
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<td>Prof. Zoltan HORBATH</td>
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<tr>
<td>Ireland</td>
<td>Dr. Roberto SIMMARANO</td>
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<tr>
<td>Dr. Marco ALVISI; Dr. Saverio DE VITO</td>
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<tr>
<td>Israel</td>
<td>Dr. Beti ANGELEVSKA</td>
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<td>Netherlands</td>
<td>Prof. Rene OTJES</td>
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<td>Dr. Jacek SZUBER</td>
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<td>Poland</td>
<td>Dr. Joao Paulo TEIXEIRA</td>
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<td>Dr. Ana Margarida COSTA</td>
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<td>Dr. Cristina RUSTI; Dr. Marcel Adrian IONICA</td>
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<td>Prof. Andrej DOBNIKAR</td>
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<td>Dr. Jordi LLOSA</td>
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<td>Dr Ulf THOLE; Dr. Marina VOINOVA</td>
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<td>Prof. Necmettin KILINC</td>
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<td>Dr Robin NORTH; Prof. Florin UDREA</td>
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**Management Committee**

**MC Chair:** Michele Penza, ENEA, IT

**MC Vice Chair:** Anita Lloyd Spetz, Linkoping University, SE

**Grant Holder:** Eurice GmbH, Saarbrucken, DE
Aveiro Joint-Exercise Intercomparison & WG Meeting

13 - 27 October 2014: Starting Joint-Exercise (2 weeks duration)
14 - 15 October 2014: EuNetAir WG1-WG4 Meeting

EuNetAir Air Quality Joint-Exercise Intercomparison 2014

Local Organizers: Prof. Carlos Borrego and Dr. Ana Margarida Costa (IDAD)

Air Quality Monitoring campaign at Aveiro (Portugal) city centre 2014

Continuous measurements: CO, benzene, NOx, SO2, PM10, VOC
Temperature, humidity, wind velocity, wind direction, solar radiation, precipitation

COST partners (15 teams joined from 12 COST Countries) installed their microsensors side-by-side to compare performance with referenced equipment in the Air-Quality Mobile Laboratory
THIRD SCIENTIFIC MEETING: WG & 6th MC Meeting

New Sensing Technologies for Indoor Air-Pollution

Bahcesehir University, Istanbul (Turkey), 3 - 5 December 2014

Multidisciplinary Meeting:
International Experts and Coordinators of FP7 and H2020 research projects related to the IEQ Cluster

Local Organizers:
Prof. Zafer Ziya Ozturk, GEBZE, Istanbul (Turkey)
Prof. Ali Gungor, Bahcesehir University, Istanbul (Turkey)

Participation:
• 60+ Participants
• 21 COST Countries
3rd International WORKSHOP EuNetAir
New Trends and Challenges for Air Quality Control
hosted by University of Latvia, Riga (Latvia), 26 - 27 March 2015

Local Organizer:
Dr. Iveta Steinberga
University of Latvia
Riga (Latvia)

Local Co-Organizer:
Dr. Gita Sakale
Riga Technical University
Riga (Latvia)

Participation:
• 50+ Participants
• 18 COST Countries
Focus Group Meeting *EuNetAir*  
*Innovation on Environmental Sensor Technologies*  
hosted by Siemens, *Munich* (Germany), 29 April 2015

**SIEMENS**

Local Organizer:
Dr. Olivier von Sicard  
Siemens AG  
Munich (Germany)

**Participation:**
• 15 Participants  
• 10 COST Countries

**Output:**
Planned Report on  
Innovation on Environmental Sensor Technologies
3rd TRAINING SCHOOL EuNetAir at Hyytiala Forestry Field Station
Atmospheric Aerosol Physics, Measurements and Sampling
hosted by University of Helsinki, Hyytiala (Helsinki), 2 - 8 May 2015

Local Organizer:
Prof. Kaarle Hameri,
University of Helsinki,
Helsinki (Finland)

Participation:
• 13 COST Trainees
• 3 Trainers

COST
EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY
FOURTH SCIENTIFIC MEETING: WG & 7th MC Meeting
hosted by Linkoping University, Linkoping (Sweden), 3 - 5 June 2015

Local Organizer:
Prof. Anita Lloyd Spetz,
Linkoping University,
Linkoping (Sweden)

FOCUS ON:
Outdoor Applications

- **4 June 2015**: Roundtable on the European Sensor-Systems Cluster (ESSC)
- **5 June 2015**: World Environment Day 2015, 5 June - Global Day by UNEP
- **22 June 2015**: AMA Science Proceedings (max 4 pages Templated) with DOI
- **31 October 2015**: Special Issue JSSS (Copernicus) - Peer Review Process
OUTREACH ACTIVITIES from Action TD1105

COST Action TD1105 - EuNetAir
European Network on New Sensing Technologies for Air-Pollution Control and Environmental Sustainability - EuNetAir

www.cost.eunetair.it
hosted by ENEA

Dr. Marco Alvisi, Webmaster Coordinator
Sebastiano Dipinto, Valerio Pfister, Gianfranco Zingarelli, Webmaster Team

Prof. Ralf Moos, Editor-in-Chief
Dr. Daniela Schonauer-Kamin, Editorial Board Manager

Social Scientific ESRs Network (SSEN) by LinkedIn
Members: >50 - Moderators: M. Viana, M. Minguillon

3° CALL for Short Exchange Visits launched on June 2014
Short Term Scientific Mission: 13 FUNDED by 30 June 2015
Dr. Jan Theunis, STSM Coordinator EuNetAir

Issue 2: published on June 2013
Issue 3: published on Dec. 2013
Issue 4: published on June 2014
Issue 5: published on Dec. 2014
Issue 6: published on June 2015
Symposium planned at EMRS Spring Meeting 2016
Lille (France), 2-6 May 2016

Advanced Functional Materials for Environmental Monitoring Sensors and Energy Systems Applications

Proceedings of Symposium EMRS Spring Meeting 2016 to be published under peer-review process in Beilstein Journal of Nanotechnologies (IF 2014: 2.3)

• Peer-review process
Open Access journal without publication fee
(http://www.beilstein-journals.org/bjnano).

• Symposium Organizers:
✓ Michele Penza, ENEA, Italy
✓ Anita Lloyd Spetz, Linkoping University, Sweden
✓ Albert Romano-Rodriguez, Barcelona University, Spain
✓ Meyya Meyyappan, NASA Ames Research Center, USA

• Deadline for abstract submission: **11 January 2016**

http://www.emrs-strasbourg.com
Expected Impact by Action TD1105

- European Leadership on AQC Science & Technology
- Development of Green-Economy
- Support to Sustainable Development
- Support to Monitoring System of Clean Air for Europe
- Fostering Research & Innovation on New Sensing Technologies for Environmental Monitoring
Some Spin-Out Activities from COST Action TD1105

- **FP7 Projects funded:**
  - SENSIndoor (FP7-NMP): *Indoor Air Quality Sensors*
  - MSP (FP7-ICT): *Building Management Nanotech-based Sensors*

- **H2020 Proposals submitted:**
  - Graphene Flagship ERA-Net: *Graphene Bio-chemical Sensing*
  - Social Challenge 5: *Sensors for Urban Air Quality Monitoring*

- **H2020 Proposals in preparation:**
  - MSCA Innovative Training Networks
  - Erasmus Mundus Masters Programme
The COST Action TD1105 EuNetAir is proposed to solve problems in the area of:

• Air Quality Control
• Environmental Sustainability
• Indoor/Outdoor Energy Efficiency
• Climate Change Monitoring
• Health Effects of Air-Pollution
## Contact Details

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- **CSO Approval:** 01 Dec. 2011
- **Kick-off Meeting:** 16 May 2012
- **Start of Grant:** 01 July 2012
- **End of Grant:** 30 June 2016

[www.cost.eunetair.it](http://www.cost.eunetair.it)

[http://www.cost.eu/domains_actions/essem/Actions/TD1105](http://www.cost.eu/domains_actions/essem/Actions/TD1105)
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Riga, Latvia, 10 - 12 June 2015

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