



 **cost**
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COST Action TD1105

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

WORKING GROUPS MEETING

***New Sensing Technologies and Modelling for Air Pollution Monitoring:
EuNetAir Air Quality Joint-Exercise Intercomparison***

Aveiro (Portugal), 13 - 15 October 2014

Joint-Exercise Kick-off, 13 October 2014: IDAD - Institute of Environment & Development

WG Meeting, 14-15 October 2014: Environment & Planning Department Auditorium

University of Aveiro, Campus Universitário, 3810-193 Aveiro, Portugal



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Background and goals

About COST Action TD1105 *EuNetAir*

COST Action TD 1105 *EuNetAir*, a Concerted Action on New Sensing Technologies for Air-Pollution Control and Environmental Sustainability, is a running Networking funded in the framework *European Cooperation in the field of Scientific and Technical Research (COST)* during 2012-2016.

The main objective of the Concerted Action is to develop new sensing technologies for Air Quality Control at integrated and multidisciplinary scale by coordinated research on nanomaterials, sensor-systems, air-quality modelling and standardised methods for supporting environmental sustainability with a special focus on Small and Medium Enterprises.

This international Networking, coordinated by ENEA (Italy), includes over 80 big institutions from 28 COST Countries (EU-zone: *Austria, Belgium, Bulgaria, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, The Former Yugoslav Republic of Macedonia, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom*) and 7 International Partners Countries (extra-Europe: *Australia, Canada, China, Morocco, Russia, Ukraine, USA*) to create a S&T critical mass in the environmental issues.

About the **WG1-WG4 Meeting at IDAD, Aveiro, Portugal, 13 - 15 October 2014**

The WG1-WG4 Meeting (WGM) will be held on 14-15 October 2014 at IDAD - Institute for Environment and Development, University of Aveiro, Aveiro (Portugal) under chairing of Prof. Carlos Borrego (MC Member). The core-issues of the COST Action TD1105 will be surveyed and presented as current results and scientific and technological breakthrough. WG1-WG4 Meeting will discuss on ***New Sensing Technologies and Models for Air-Pollution Monitoring*** in an interdisciplinary approach aiming to provide **intercomparison sensors-versus-analyzers**, harmonization of the environmental measurements and experimental campaigns, exchange of best practices, quality assurance, quality control, data quality, methods and protocols, development of new sensing technologies, modelling of air pollution, experimental campaigns.

High quality output such as joint-publications of the achieved results of the environmental campaign and discussion of the AQ results to be shared in the Action partnership by future meetings are highly expected. Several teams of the COST Action TD1105 are largely interested and involved by their expression of interest to join on the experimental campaign in Aveiro for Joint-Exercise Intercomparison including the contribution in expertise to the multidisciplinary inter-WGs meeting. At the open **WGs Meeting** of the COST Action TD1105 *EuNetAir*, a strong impact on focus of critical environmental issues would be mutual benefit.

More Information

Dr. Michele Penza

*MC Chair/Proposer of COST Action TD1105 *EuNetAir**

ENEA - Italian National Agency for New Technologies, Energy and Sustainable Economic Development

Technical Unit for Materials Technologies - Brindisi Research Centre

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Prof. Carlos Borrego

Local Organizing Team Chair

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Dr. Ana Margarida Costa

Local Organizing Team Co-Chair

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WORKING GROUPS MEETING

New Sensing Technologies and Modelling for Air Pollution Monitoring: EuNetAir Air Quality Joint-Exercise Intercomparison

Aveiro (Portugal), 13 - 15 October 2014

**Joint-Exercise Kick-off, 13 October 2014: IDAD - Institute of Environment & Development
WG Meeting, 14-15 October 2014: Environment & Planning Department Auditorium
University of Aveiro, Campus Universitário, 3810-193 Aveiro, Portugal**



Action Meeting Programme Committee

Michele Penza, ENEA, Brindisi, Italy
Carlos Borrego, IDAD, University of Aveiro, Portugal
Ole Hertel, Aarhus University, Denmark
Kaarle Hameri, University of Helsinki, Finland
Nuria Castell, NILU, Kjeller, Norway
Anita Lloyd Spetz, Linköping University, Sweden
Andreas Schuetze, Saarland University, Germany
Ingrid Bryntse, SenseAir AB, Sweden
Juan Ramon Morante, IREC, Spain
Marco Alvisi, ENEA, Italy
Corinna Hahn, Eurice GmbH, Saarbrücken, Germany
Juliane Roszbach, Eurice GmbH, Saarbrücken, Germany
Annamaria Demarinis Loiotile, University of Bari, Italy
Ana Margarida Costa, IDAD, Aveiro, Portugal
Miguel Coutinho, IDAD, Aveiro, Portugal
Joao Ginja, IDAD, Aveiro, Portugal

COST Action TD1105 EuNetAir Steering Committee

Michele Penza, ENEA, Brindisi, Italy - *Action Chair*
Anita Lloyd Spetz, Linköping University, Sweden - *Action Vice-Chair*
Juan Ramon Morante, IREC, Spain
Andreas Schuetze, Saarland University, Germany
Ole Hertel, Aarhus University, Denmark
Ingrid Bryntse, SenseAir AB, Sweden
Jan Theunis, VITO, Belgium
Marco Alvisi, ENEA, Brindisi, Italy
Gianluigi De Gennaro, University of Bari, Italy
Fabio Galatioto, Newcastle University, UK
Ralf Moos, University of Bayreuth, Germany
Mar Viana, CSIC-IDAEA, Barcelona, Spain
Iveta Steinberga, University of Latvia, Riga, Latvia
Corinna Hahn, Eurice GmbH, Saarbrücken, Germany - *Grant Holder*
Julian Gardner, University of Warwick, UK
Rod Jones, University of Cambridge, UK
Giorgio Sberveglieri, University of Brescia, Italy
Eduard Llobet, Universitat Roviri i Virgili, Tarragona, Spain
Thomas Kuhlbusch, IUTA eV, Duisburg, Germany
Albert Romano-Rodriguez, Universitat de Barcelona (UB), Spain
Carlos Borrego, IDAD, University of Aveiro, Portugal
Annamaria Demarinis Loiotile, University of Bari, Italy - *Secretary*

URL: www.cost.eunetair.it



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Tuesday, 14 October 2014

COST Action TD1105 EuNetAir

organized by IDAD - Institute of Environment and Development

WG Meeting at Environment and Planning Department Auditorium
University of Aveiro, Campus Universitário, 3810-193 Aveiro, Portugal

09:00 - 18:00 COST Meeting Registration (only for COST members)

Sessions open to members of the University of Aveiro

09:00 - 09:30 Session 1: Welcome Address

Chairperson: Carlos Borrego, Local Chair and Action MC Member, IDAD, Aveiro, Portugal

09:00 - 09:10 *Michele Penza, COST Action TD1105 Chair, ENEA, Brindisi, Italy*

09:10 - 09:20 *Raquel Madureira, City Councilor for Environment, Aveiro, Portugal*

09:20 - 09:30 *Manuel Assuncao, Rector, University of Aveiro, Portugal*

09:30 - 11:00 Session 2: Plenary Session

Chairperson: Michele Penza, Action Chair - ENEA, Brindisi, Italy

09:30 - 10:00 **COST Action TD1105: European Network on New Sensing Technologies for Air-Pollution Control and Environmental Sustainability. Overview and Plans of COST Action TD1105**
Michele Penza, Action Chair, ENEA, Brindisi, Italy

10:00 - 10:30 **Human and Environmental Sensing for Hazardous Professions**
Joao Paulo Cunha, Faculty of Engineering, University of Porto, Portugal

10:30 - 11:00 **Air Quality Monitoring and Modelling: Turning Research into Products and Services**
Carlos Borrego, Institute of Environment and Development, Aveiro, Portugal

11:00 - 11:30 Coffee Break (only for COST members)

11:30 - 13:00 Session 3: Sensor-Systems for Air Quality Monitoring

Chairperson: Michele Penza, Action Chair - ENEA, Brindisi, Italy

11:30 - 12:00 **Nanotech Sensors for Gas Sensing Applications**
Giorgio Sberveglieri, Action MC Member, University of Brescia, Brescia, Italy

12:00 - 12:30 **FP7 Project MSP (ICT-2013-10): Multi-Sensor Platform for Smart Building Management - Progress and Aspects of Nanowire Integration**
Anton Köck, Project Leader, Materials Center Leoben Forschung GmbH (MCL), Leoben, Austria

12:30 - 13:00 **Air Quality Sensor Performance: Laboratory and Field Observations**
Nuria Castell, MC Member, NILU - Norwegian Institute for Air Research, Kjeller, Norway

13:00 - 14:00 Lunch offered by COST Action organization (only for COST members)

14:00 - 15:00 **Session 4: Posters on Air Quality Monitoring**

Chairperson: Ana Margarida Costa, Local Co-Chair, IDAD, Aveiro, Portugal

Posters (max sizes: 90 cm width x 120 cm height) will be exhibited on Board Panels by Presenters, preferably Early Stage Researchers and Teams from Joint-Exercise including WG Meeting attendees

- P01 A Portable Low-Cost High Density Sensor Network for Air Quality at London Heathrow Airport**
Paul Smith, University of Cambridge, Centre for Atmospheric Science, UK
- P02 Air-Sensor Box: A Compact Solution for Air Quality Control**
Domenico Suriano, ENEA, Brindisi, Italy
- P03 A Silicon-On-Insulator (SOI) Platform Functionalized by Atomic Layer Deposition (ALD) for Humidity Sensing**
Nicolas André, Université Catholique de Louvain, Louvain, Belgium
- P04 Gas Sensing Characterization of CMOS Integrated Nanocrystalline SnO₂-Au Thin Films**
Robert Wimmer-Teubenbacher, Materials Center Leoben Forschung GmbH (MCL), Leoben, Austria
- P05 Outdoor Test Platform for MOX Sensors**
Wolfhard Reimringer, 3S GmbH, Saarbrücken, Germany
- P06 Indoor Air Quality Assessment in Elderly Care Centers in Porto, Portugal**
Livia Aguiar, National Institute of Health, Porto, Portugal
- P07 Source Apportionment of Urban PM_{2.5} in Denmark**
J.K. Nøjgaard, A. Massling and T. Ellermann, Aarhus University, Roskilde, Denmark
- P08 New Particle Formation Events at the Lille Valby Semi-Rural Background Site in Denmark**
F. Wang, M. Ketzel, A. Massling and A. Kristensson, Aarhus University, Roskilde, Denmark
- P09 Trends of Particle Number and Mass Concentrations in and Around Copenhagen**
A. Massling, T. Ellermann, M. Ketzel and J.K. Nøjgaard, Aarhus University, Roskilde, Denmark
- P10 Agricultural Airborne N-Pollution, Particle Pollution, Public Health Effects: A GIS based Study**
R.G. Peel, T. Sigsgaard, C.B. Pedersen, S. Gyldenkerne, O. Hertel, Aarhus University, Denmark
- P11 Assessment of Potential for CoExposure to Allergenic Pollen and Air Pollution in Copenhagen**
P. Viuf Ørby, R. Peel, C.A. Skjøth, V. Schlünssen, J. Bønløkke, T. Ellermann, A. Brændholt, T. Sigsgaard, O. Hertel, Aarhus University, Roskilde, Denmark

15:00 - 16:30 **Session 5: Air Quality Sensor Measurements**

Chairperson: Giorgio Sberveglieri, Action MC Member, University of Brescia, Italy

- 15:00 - 15:30 Indoor Air Quality Sensing - An Industry Perspective**
Oliver von Sicard, Siemens AG, Munich, Germany
- 15:30 - 15:50 New Sensing Technologies for Air Quality Control: Field Evaluation of Micro-Sensors against Standard Methods**
Joao Ginja, Institute of Environment and Development, Aveiro, Portugal
- 15:50 - 16:10 Development of AirBox (NO₂, PM₁₀, PM_{2.5}) and its Application as Network in City of Eindhoven**
René Otjes and Ernie Wijers, Action WG Member, ECN, Petten, The Netherlands
- 16:10 - 16:30 Towards Ultra-Low-Power Environmental Air Monitoring with Power HEMTs**
Peter Offermans, Action WG2 Member, IMEC Holst-Centre, Eindhoven, The Netherlands

16:30 - 17:00

Coffee Break (only for COST members)



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- 17:00 - 18:30** **Session 6: Air Quality Sensor Applications**
Chairperson: Anton Kock, Action MC Member, MCL Forschung GmbH, Leoben, Austria
- 17:00 - 17:30** **CMOS Sensor-System for Air Quality Monitoring**
Foysol Chowdhury, Action WG Member, CCMOSS Ltd, Cambridge, UK
- 17:30 - 17:50** **Towards Real-time Data Fusion of Low-Cost Sensor Observations with Model Output for Mapping Urban-Scale Air Quality**
Philipp Schneider, Action WG Member, NILU, Kjeller, Norway
- 17:50 - 18:10** **Air Sensor-Box for Air Quality Control Measurements**
Michele Penza and Domenico Suriano, Action WG Member, ENEA, Brindisi, Italy
- 18:10 - 18:30** **Does the Evolution of Sensor Technology and Computational Methods Lead to a Revolution in AQ-Environmental Monitoring and to a New Generation of Quality of Life Information Services?**
Kostas Karatzas, Aristotle University of Thessaloniki, Greece

20:30 - 23:00 **Social Dinner (only for COST members)**



Wednesday, 15 October 2014

COST Action TD1105 EuNetAir

organized by IDAD - Institute of Environment and Development

WG Meeting at Environment and Planning Department Auditorium
University of Aveiro, Campus Universitário, 3810-193 Aveiro, Portugal

09:00 - 13:00 COST Meeting Registration (only for COST members)

Sessions open to members of the University of Aveiro

- 09:00 - 11:00** ***Session 7: Environmental Measurements and Modelling***
Chairperson: Carlos Borrego, Local Chair and Action MC Member, IDAD, Aveiro, Portugal
- 09:00 - 09:30** **Distribution of Pollen and Particulate Matter within the Urban Agglomeration of Berlin**
Hans-Guido Muecke, WHO Collaborating Centre for Air Quality Management and Air Pollution Control - Federal Environment Agency, Berlin, Germany
- 09:30 - 10:00** **Air Quality Modelling in Slovenia: Studying Sensitivity of Operational WRF/Chem Forecast**
Rahela Zabkar, University of Ljubljana, Ljubljana, Slovenia
- 10:00 - 10:20** **Air Quality Measurements and Modelling in Hungary**
Krisztina Labancz, Hungarian Meteorological Service, Budapest, Hungary
- 10:20 - 10:40** **Air Quality Modelling in Latvia: Challenges and Failures**
Iveta Steinberga, University of Latvia, Riga, Latvia
- 10:40 - 11:00** **Emergency Response and Chemical Weather Forecast Systems in Bulgarian NIMH**
Kiril Slavov, Bulgarian Academy of Sciences, Sofia, Bulgaria

11:00 - 11:30 Coffee Break (only for COST members)

- 11:30 - 13:00** ***Session 8: Health Assessment of Human Exposure to Air Pollution***
Chairperson: Miguel Coutinho, IDAD, Aveiro, Portugal
- 11:30 - 12:00** **Assessing Human Exposure to Air Pollution in Health Assessment Studies in Europe**
Ole Hertel, Action WG3 Chair, Aarhus University, Roskilde, Denmark
- 12:00 - 12:20** **Health and Indoor Environment in Elderly Care Centers**
Ana Sofia Mendes, National Institute of Health, Porto, Portugal
- 12:20 - 12:40** **Indoor and Outdoor Levels and Content of Selected Toxic Species in PM₁₀ and PM_{2.5} of Urban Kindergarten Located in Residential-Commercial Area**
Milena Jovasevic-Stojanovic, Action WG3 Member, Institute Vinca, Belgrade, Serbia
- 12:40 - 13:00** **Spatial Distribution and Origin of Pollutants in Lichens for Fingerprinting of Air-Pollution**
Cristina Maguas, University of Lisbon, Lisbon, Portugal

13:00 - 14:00 Lunch offered by COST Action organization (only for COST members)

14:00 - 16:00 **Session 9: Market-Oriented and Commercial Sensors for Air-Pollution Control**
Chairperson: Oliver von Sicard, Siemens AG, Munich, Germany

14:00 - 14:20 **Chemical Sondes using Low Cost Sensors: Project Aims and Outlines**
Paul Smith, University of Cambridge, Centre for Atmospheric Science, UK

14:20 - 14:40 **NDIR Sensors: Trends and Applications**
Joakim Enerud, SenseAir SA, Delsbo, Sweden

14:40 - 15:00 **A Versatile Outdoor Platform for MOX Sensor Field Tests**
Wolfhard Reimringer, 3S GmbH, Saarbrücken, Germany

15:00 - 15:20 **A Silicon-On-Insulator (SOI) Platform Functionalized by Atomic Layer Deposition (ALD) for Humidity Sensing**
Nicolas André, Université Catholique de Louvain, Louvain, Belgium

15:20 - 15:40 **Volatile Organic Compound Detection by Polymer-Nanostructured Carbon Composite**
G.Sakale, M.Knite, S.Stepina, E.Liepa, S.Sergejeva, Riga Technical University, Latvia

15:40 - 16:00 **Towards Zero-Power Gas Detection Systems Based on Single Nanowires**
Albert Romano-Rodriguez, Universitat de Barcelona, Department of Electronics, Barcelona, Spain

16:00 - 16:30 **Session 10: Discussion and Future Plans of Action**
Chairperson: Michele Penza, Action Chair - ENEA, Brindisi, Italy

16:00 - 16:10 **Future Plans of COST Action TD1105 EuNetAir**
Michele Penza, Action Chair, ENEA, Italy

16:10 - 16:20 **Research & Innovation Needs Completion of COST Action TD1105**
Marco Alvisi, Action SIG1 Leader, ENEA, Italy

16:20 - 16:30 **Inputs and Advices from Action Workshop Advisory Board:**

- *Carlos Borrego, IDAD, Institute for Environment and Development, Aveiro, Portugal*
- *Anton Kock, MCL Forschung GmbH, Leoben, Austria*
- *Iveta Steinberga, University of Latvia, Riga, Latvia*
- *Hans-Guido Muecke, WHO CC for Air Quality Management and Air Pollution Control - Federal Environment Agency, Berlin, Germany*
- *Oliver von Sicard, Siemens AG, Munich, Germany*

16:30 **End of the WG1-WG4 Meeting and Farewell**