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

COST Action TD1105

1ST TRAINING SCHOOL

Universitat de Barcelona, Spain, 13 - 15 June 2013

organized by UB, MIND-IN2UB - Dept. of Electronics and CSIC-IDAEA

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Year 1: 2012 - 2013 (COST Action TD1105)

Domenico Suriano

WG2-WG3 Member, domenico.suriano@enea.it

ENEA, Brindisi Research Center - Brindisi, Italy

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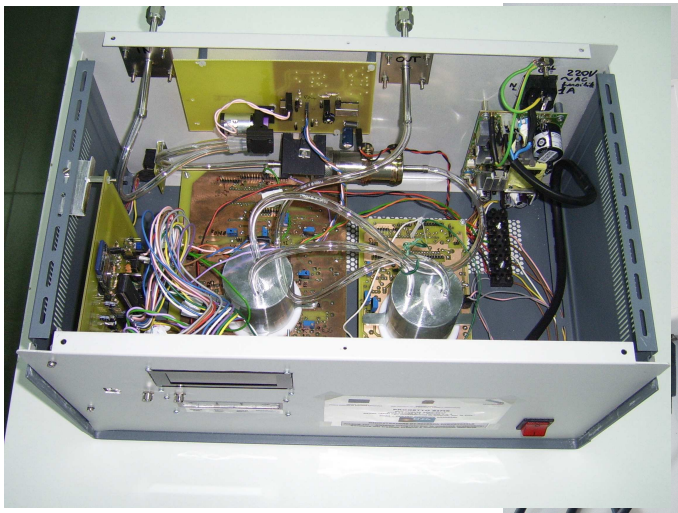
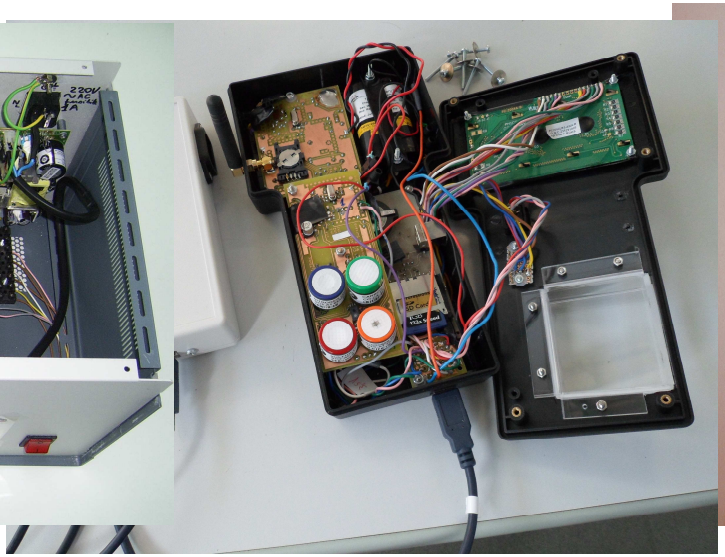
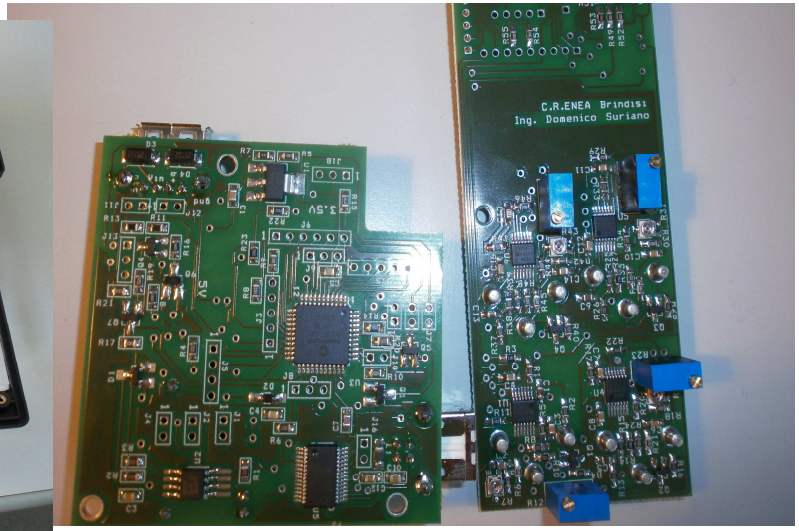
Expertise of ENEA Brindisi Research Center, Italy

- **Electronic systems and PCB devices design and development, tests and fault detection methodologies**
- **Firmware design, microprocessors programming and debugging**
- **Software design and development for PC applications (C++, JAVA, Visual Basic programming in Windows)**



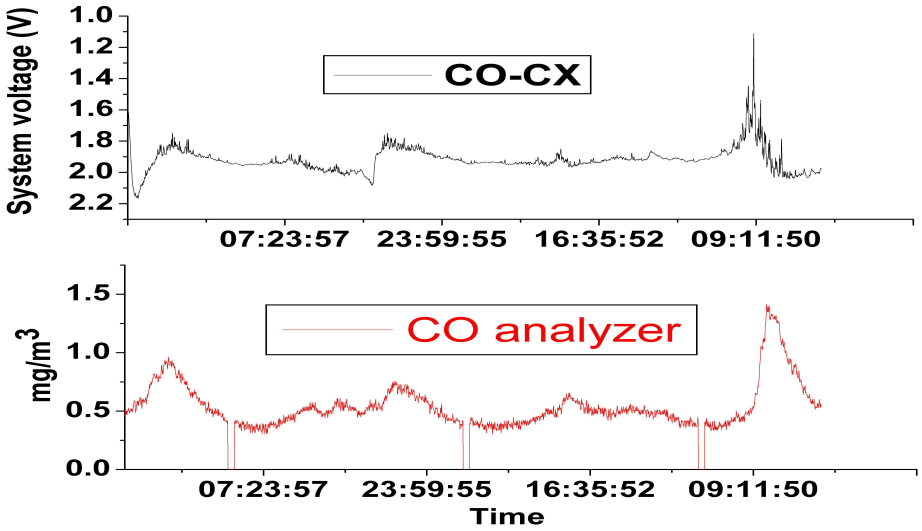


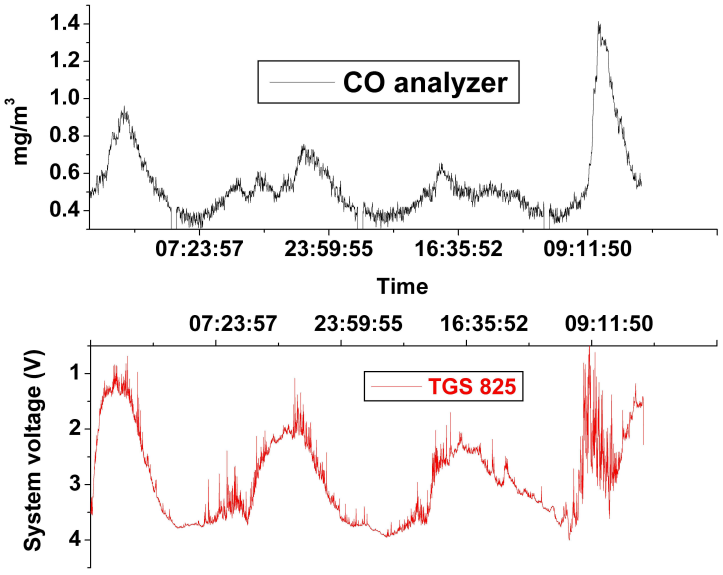


Current research activities in ENEA Research Center, Brindisi, Italy (1/2)

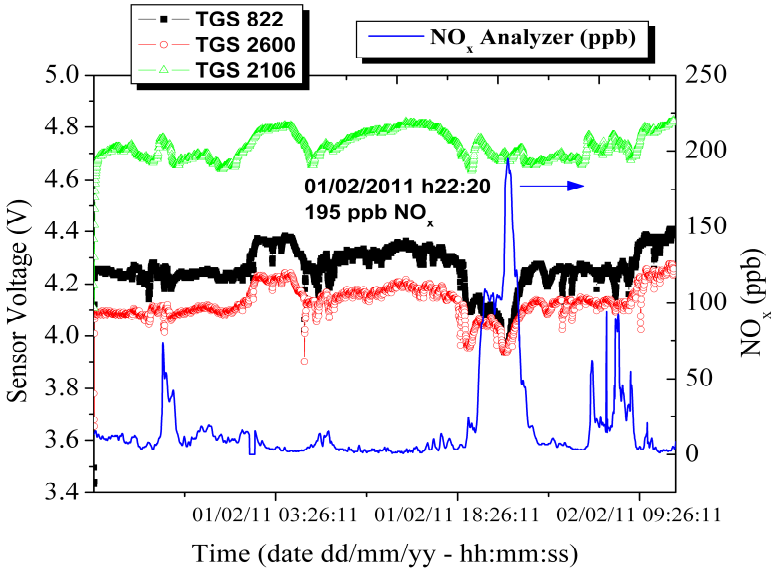
- **Commercial and experimental miniaturized solid state gas sensors performances in the area of air quality monitoring**
- **Feasibility, development and applicability of portable/handheld systems for air quality monitoring and benchmarking of solid state gas sensors**
- **Strategies and methodologies in order to mitigate solid state gas sensors drawbacks (e.g., lack of selectivity, drift, baseline instability, temperature and humidity influence etc.)**

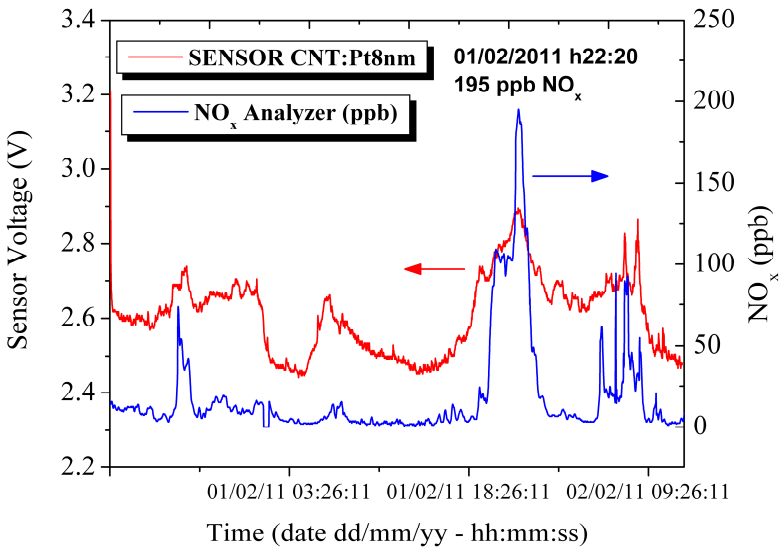
Current research activities (2/2)





Experimental campaign in Mesagne town by the Mobile Air Quality Laboratory *(University of Bari, Italy)*

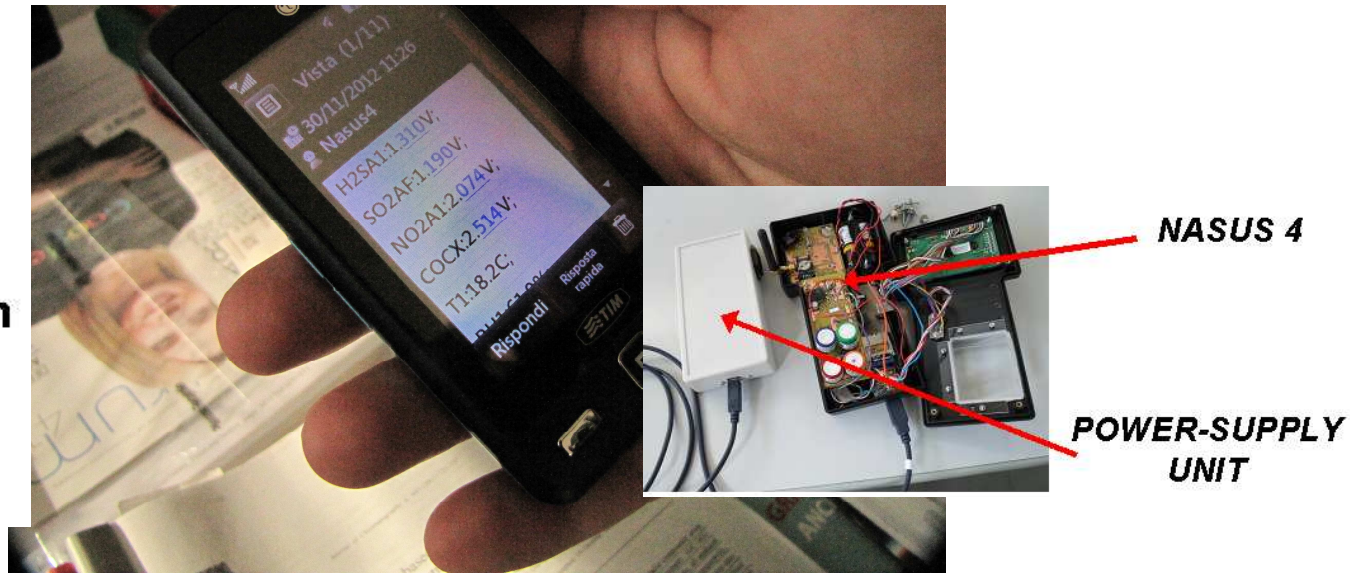




EXPERIMENTAL CAMPAIGN IN AN OFFICIAL LOCAL-NODE OF THE NETWORK <u>ARPA-PUGLIA</u>, *Regional Agency for Environmental Protection*

Selected achieved RESULTS

- **Development of an handheld system in order to carry on the field different kinds of solid state gas sensors (commercial/experimental) for their quick evaluation**
- **average power consumption: 0.15W**
- **average battery autonomy: 46hrs**
- **fully remote operated by GPRS-GSM networks including smartphone or cellphone**
- **real time monitoring**
- **solar-cells automatic power switching (smart power management)**



Future activities

- **Various technical improvement on the handheld system already developed (GPS, quick data graphic visualization on the onboard display, multiple node network development for mobile and/or fixed sensing)**
- **Experimental campaign in order to test system reliability, unknown drawbacks and bugs, in-field calibration, validation**

CONCLUSIONS

- **The feasibility and applicability of handheld system in order to pull out of the laboratory various kind of sensors for their on-field evaluation as air quality indicators**
- **New sensor materials**
- **New performing transducers**
- **Optimal sensing performance for best practices in environmental monitoring at field tests**