

DESIGN AND DEVELOPMENT OF MULTI-SENSOR WIRELESS NODES

Innovations and Benefits - Innovative and real-time approach for measurements and pervasive monitoring (IoT) of chemical and physical variables in different applicative scenarios (air and water pollution, sewage, manufacturing). Development of new low-cost equipment for chemical gas mixture analysis (electronic noses) for quality checks. Development of autonomous and intelligent devices for different application scenarios ranging from environmental and biomedical to critical infrastructure monitoring by on board machine learning. Predictive models for complex systems. Crowdsensing and citizen science systems.

Uses :

- Distributed and mobile monitoring of urban air pollution.
- Sensing of odour emissions.
- Non-destructive controls in the manufacturing and construction industry.
- Advanced maintenance in aeronautics.
- Biomedical equipment.
- Anomaly detection of and stochastic prediction on production and consumptions of distributed and in the environmental sector.
- Optimal management of wastewater and drinking water networks.

Past and Present Activities - MONICA™ Prototype development: a device for cooperative mobile monitoring of urban air pollution and pollutant personal exposure assessment.

Prototype creation of a georeferencing and spatialization system of data from fleets of mobile devices for air quality control.

(SNIFFI) Prototype development for sensing, display and recording of odour emissions in collaboration with STMicroelectronics.

Equipment for aeronautic engine emissions control in collaboration with Atitech.

Prototype development for early diagnostics of Parkinson’s and neurodegenerative diseases (CogSmellAnalyzer) in collaboration with Innosensors.

Development and qualification of equipment for non-destructive control in manufacturing composite aircrafts in collaboration with AIRBUS.

Development of @LISEE prototype (ENEA patent), equipment and system for energy efficiency in buildings, residential complexes and datacenters.

Development of a smart sewer cover for sewerage networks monitoring in collaboration with ACEA.



Prototypes of MONICA and an example of exposure to pollutants

SNIFFI electronic nose

