

## COMPANY PROFILE OF EXA



## Description of the organisation

EXA is an Innovative SME from Padova (Padua, Italy). The company was founded in 2016 to complete a technology transfer path that started in the laboratories of the Department of Information Engineering of the University of Padova in the field of sensitive and reliable detection of explosive substances in air using an advanced optoelectronic nose.

In the years, thanks to industrial shareholders and SME Instruments European funds, EXA designed and developed a complete sampling system for the early detection of chemical threats by the multiplexed analysis of different target volatile molecules (e.g., explosives, taggants and drugs) in the same air sample. This security application was tested in real world at the Marco Polo airport of Venice (Italy), where the prototype was installed to enhance the screening capabilities of the X-rays checkpoints for contactless hand luggage security inspections.

The EXA sensing prototype is focused on airport security application, but its features can be applied with similar performance to those situations where the non-contact, non-destructive in-line scanning of goods or foods is necessary to ensure quality or safety controls, e.g., raw meat packing plants and industrial furniture painting lines: in fact, EXA prototype can sample with high accuracy the surfaces to be analysed, while the modular design of the sensing apparatus can be adjusted to the specific targets of interests, e.g., explosives molecules, harmful gases or volatile biological compounds

## Company activities

- Know-how of checkpoints regulation in the field of airport security and threats early detection.
- Mechanical development and CFD simulation of efficient air sampling.
- Techniques of low volumes gas handling.
- Development of electromechanical system for hand luggage computer-controlled handling.
- Algorithms for machine vision and interface with state-of-the-art electronic microscopes.

## Experience

## Partner profile

According to know-how and experiences developed in previous projects and research activities, EXA's experiences can be summarized as:

- Optimization of an air sampler technology to the specific security application;
- System integration: the main sensing equipment is made up of EXA air sampler, the sensing platform, the electrodes readout and the electromechanical movements components;
- Definition and integration of different optoelectronic sensors for parallel detection of more target molecules in the same sample;
- Development and optimization of measurement protocol for specific application and sample collection;
- Design, development and optimization of detection system based on optoelectronic sensors.

### Relevant previous projects

- INTERVENTO AGEVOLATIVO IN FAVORE DELLE MICRO, PICCOLE E MEDIE IMPRESE PER LA VALORIZZAZIONE DEI DISEGNI E DEI MODELLI (DISEGNI+4)- DS41
- POR FESR 2014-2020- Axis/Pillar 1-. Action 1.1.4- Call 2019- VOLPE Project
- POR FESR 2014-2020- Axis/Pillar 1-. Action 1.1.2- Call 2017- SPICE Project

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