



UNIVERSITÀ
DEGLI STUDI
DI PADOVA

- ✓ **SENSOR CALIBRATION**
- ✓ **FLEXIBILITY**
- ✓ **COST AND SPACE SAVING**

A SOLID BUSINESS CASE IN COLLABORATION WITH **UNIVERSITA' DEGLI STUDI DI PADOVA**

GENERAL INFORMATION ABOUT THE PROJECT



TARGET OF THE PROJECT:

Dilution of gasses for optical gas sensors



DEPARTMENT:

Department of Industrial Engineering



HEAD OF PROJECT MANAGEMENT:

Prof. Alessandro Martucci



ROLE OF MCQ INSTRUMENTS:

To dilute specific gases with stability

MORE INFORMATION ABOUT THE COMPANY

The University of Padua is one of Europe's oldest and most prestigious seats of learning; it is a multi-disciplinary university that aims to provide its students with both professional training and a solid cultural background. A qualification from the University of Padua is a symbol of having achieved an ambitious objective, one that is recognised and coveted by both students and employers alike.

DESCRIPTION OF THE APPLICATION AND THE TARGET

Gas sensing has a great influence in many areas across a wide range of applications, including ensure safety via detection of dangerous or flammable gases in environments, ranging from domestic atmosphere to process and petrochemical industries, monitor feedstocks and air pollutants, measuring quality of gases mixture or quantity of key species. Metal oxides is an emerging class of sensing materials that cover the entire range from metals to semiconductors and isolators which sensitivity proprieties in the field of chemical sensing are known for more than five decades. Considering electrochemical devices, initial drawbacks like low selectivity, signal drift, low response and sensitivity to humidity have push researchers to

improve strategic characteristics of sensors deeply studying the sensing mechanisms and optimizing crystal structure, morphology, and composition, but operational limits like inability to operate in harsh environments, for instance, high temperature, high pressure, or corrosive ambient is still a challenge. To overcome these operational limits, using materials able to change optical proprieties (i.e. absorbance, transmittance, reflectance, refractive index, etc.), called optical gas sensors, instead of electronical proprieties; will offer higher thermal stability, good poison resistance, no electrical or magnetic fields dependence, in addition to fast response, high flexibility and low-cost devices.

BENEFITS AND SAVINGS

The optimization of the space in the lab reducing the bottles requirement with only one concentration used and diluted in-line with the gas carrier, plus the Automation of the sensor's analysis are great time-saving. Various bottles collection with certified concentration and valve-cascade system should be used instead of the MCQ Gas Blender 3000 Series with an important loss of money, time and space.



GAS MIXER VS GAS CYLINDER

The ability to mix gases on-demand is an incredibly powerful tool in the development of innovative gas sensor. And provides a level of flexibility that gas cylinders cannot provide.



COSTS AND SPACE SAVINGS:

Optimization of the space in the lab reducing the bottles requirement with only one at certified concentration, instead of many and diluted in-line with the gas carrier.



FLEXIBILITY:

By using the MCQ gas blender it is possible to dial up a simulation of different concentration of gas mixture at any time, and to a certain degree.



SOFTWARE AUTOMATION:

Thanks to our Software PRO Version and its option "Automatic Program", now The University of Padova can bring forward experiments in automation.



FLOW STABILITY:

Thanks to our revolutionary method every gas flow has a great stability making possible to have a stable flow also for lower flow-range.



SUCCESSFUL ACHIEVEMENT:

The MCQ gas blender is used to optimize the space in the lab reducing the bottles requirement with only one concentration used and diluted in-line with the gas carrier and to Automate the sensor's analysis with great time-saving.

READY TO TALK ABOUT YOUR SOLUTION?

info@mcqinst.com - www.mcqinst.com