UNIVERSITY OF GEORGIA

- SENSOR CALIBRATION
- FAST RESPONSE
- COMPACTNESS
- EASY TO USE AND TO INSTALL

A SOLID BUSINESS CASE IN COLLABORATION WITH
UNIVERSITY OF GEORGIA

GENERAL INFORMATION ABOUT THE PROJECT

TARGET OF THE PROJECT:
H2 Gas Dilution and Sensor Calibration

DEPARTMENT:
Physics and Astronomy Department

HEAD OF PROJECT MANAGEMENT:
Tho Nguyen

ROLE OF MCQ INSTRUMENTS:
To dilute the hydrogen gas in nitrogen to achieve several concentrations

MORE INFORMATION ABOUT THE UNIVERSITY

The university is classified among "R1: Doctoral Universities – Very high research activity," and as having "more selective" undergraduate admissions, the most selective admissions category, while the ACT Assessment Student Report places UGA admissions in the "Highly Selective" category, the highest classification. Among public universities, the University of Georgia is one of the nation's top three producers of Rhodes Scholars over the past two decades.

DESCRIPTION OF THE APPLICATION AND THE TARGET

Hydrogen (H2) gas has the potential to be a dominant future energy carrier, due to its high gravimetric energy density, sustainability, and lack of carbon emissions upon consumption. As hydrogen generation and hydrogen fuel cell technology continue to develop, the demand for hydrogen sensors for safely handling hydrogen gas in all stages of production, distribution, storage, and utilization will also continue to rise. For hydrogen leakage detection and concentration controls, it is essential that hydrogen sensors have good stability, high sensitivity, good sensor accuracy, wide detection range, and fast response time.

For this application, we need to dilute the hydrogen gas in nitrogen to achieve several concentrations (from 100% hydrogen down to several hundred ppb of hydrogen in nitrogen). In addition, we would like to demonstrate that our sensor can achieve sub-second response time, in the detection range of 1000 mbar down to 1 mbar. Therefore, the total response time of the gas blending system should be fast enough (ideally < 100 ms). For an ultra-low concentration of hydrogen, the flow rate and gas mixing process should be stable enough to achieve a reasonable signal to noise ratio.

Scientific Paper
https://www.sciencedirect.com/science/article/abs/pii/S2211285520301154

BENEFITS AND SAVINGS

BENEFITS - A huge time-saving (for installation), money-saving (for all listed hardware above), space saving (a single box does not occupy much). Everything is compacted in a single box and you can control it easily with a USB-connected computer.
TIME SAVINGS - "The dilution process is very stable and we can achieve a stable sensor response in less than 1 minute. Without MCQ, we never achieve that signal to noise ratio."

FAST RESPONSE: 50ms

Thanks to a response in 50 ms to a change of Set-point, the dilution process is very stable and University of Georgia can achieve a stable sensor response in less than 1 minute.

MICRO FLOW RATES: NO CUT-OFF

Our GB100 Series allows the Univ. of Georgia to control the flow in all the calibration range, from 0,1 ml/min to 500 ml/min with NO cut-off.

COSTS & SPACE SAVINGS:

Thanks to a single box Univ. of Georgia can save money and space in its lab. Everything is compacted in a single box and you can control it easily with a USB-connected computer.

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.

TIME SAVINGS: -70%

Easier setup management of the hardware.
Easier setup management of the software.

SUCCESSFUL ACHIEVEMENT:

We helped the University of Georgia to get highly precise and stable micro flows of gas to calibrate sensors in a easy way thanks to our instrument and software.

READY TO TALK ABOUT YOUR SOLUTION?

info@mcqinst.com - www.mcqinst.com