

ETH zürich

- ✓ CONTROLLED ATMOSPHERES
- ✓ SOLAR TECHNOLOGY
- ✓ CO₂ CONVERSION

A SOLID BUSINESS CASE IN COLLABORATION WITH
ETH ZÜRICH

GENERAL INFORMATION ABOUT THE PROJECT



TARGET OF THE PROJECT:
CO₂ reduction



DEPARTMENT:
Materials department



HEAD OF PROJECT MANAGEMENT:
Markus Niederbeuge



ROLE OF MCQ INSTRUMENTS:
To control and modify specific atmospheres.

MORE INFORMATION ABOUT THE HEAD OF THE PROJECT

Markus Niederberger was Assistant Professor (tenure-track) from 2007-2011,

Associate Professor from 2012-2016 and Full Professor for Multifunctional Materials since 2017 in the Department of Materials.

He is Chair of the Laboratory for Multifunctional Materials.

DESCRIPTION OF THE APPLICATION AND THE TARGET

Conversion of CO₂ into solar fuels is a key technology for developing a sustainable energy economy while global warming issues are simultaneously addressed. So far, CO₂ can be reduced either with solar-derived H₂ or directly with water, in the near- or long-term respectively.

In both cases, a gas-phase reaction is desirable for scaling the process since it is more practical and economically

feasible. Our project aims to use nano materials as photocatalyst for achieve a high CO₂ conversion.

Currently, we are exploring the hydrogenation -CO₂ reaction. for such experiments we need to have a mix of the reagent gases that is the reason that we acquired GB100 Series. We carry out the reaction in a continuous mode, consequently we need low gas flow 5 mL/min.

BENEFITS AND SAVINGS

The gas blender GB100 Series turned out to be a reliable and compact device for diluting the gas sample and generate a controlled low gas flow. With this configuration the sensor is able to operate in a comfortable range, even when traditional Mass Flow Controllers could not achieve it.



GAS MIXER VS MASS FLOW:

The GAS MIXER channels it's more compact than typical flow controller meters and can be specifically calibrated on the mixture to be used.



WITHOUT MCQ? (HARD)

3 Mass Flow Controllers with Power control Unit, tubes, NO-Software or different Gas Mixture Cylinders.



TIME SAVINGS:

Instead of changing a calibration cylinder for each point, our Gas Mixer uses pure gas allowing the ETH to set all the desired calibration points in just a few steps.



SOFTWARE AUTOMATION:

Thanks to our Software PRO version and its option "Automatic Program", now ETH can bring forward experiments in automation, painlessly.



MICRO FLOWS - NO CUT OFF:

OUR GB100 Series allows you to control the flow in all the calibration range, from 0.1 mL/min to 500 mL/min with NO cut-off



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.

READY TO TALK ABOUT YOUR SOLUTION?

info@mcqinst.com - www.mcqinst.com