Manchester Metropolitan University

- DYNAMIC GAS MIXTURES
- HYPOXIA & HIGH CO2
- COST & SPACE SAVINGS

A SOLID BUSINESS CASE IN COLLABORATION WITH
MANCHESTER METROPOLITAN UNIVERSITY

GENERAL INFORMATION ABOUT THE PROJECT

TARGET OF THE PROJECT:
Central nervous system cell responses to high CO2 & Hypoxia

DEPARTMENT:
Department of Life Sciences

HEAD OF PROJECT MANAGEMENT:
Virginia Hawkins

ROLE OF MCQ INSTRUMENTS:
To provide precise gas mixtures.

MORE INFORMATION ABOUT THE COMPANY

The university Manchester Metropolitan University is organised into five faculties: Arts and Humanities - Business and Law - Education - Health, Psychology and Social Care - Science and Engineering
In the session 2019/20, the University had 33,420 students, making it the 10th largest university in the UK (out of 169).[5] The University employs 4,810 staff, comprising 1,610 full-time and 1,115 part-time academic staff and 2,090 support staff.

DESCRIPTION OF THE APPLICATION AND THE TARGET

Respiratory brainstem neurons and glial cells are sensitive to changes in extracellular CO2 and O2 (hypoxia). Manchester Metropolitan University is interested in determining the cellular and molecular mechanisms involved in this process and how it adapts with age.
The activity of mouse cells cultured in vitro or from brain slices is monitored using real-time electrophysiological recordings or fluorescent readouts of changes in intracellular Ca2+, in response to a reduction in available O2, or an increase in CO2. For example, cells are superfused with solutions pre-equilibrated to 5% CO2 and subsequently exposed to solutions pre-euibrilated with 15% CO2 (equivalent to a change in pH from 7.3 to 6.9 in bicarbonate buffered solutions).
Manchester Metropolitan required a method of generating gas mixtures containing a wide variety of physiologically relevant carbon dioxide and oxygen concentrations, with which superfusing solutions can be bubbled to equilibrate. This is traditionally achieved using specialist mixed compressed gas cylinders, though this requires substantial infrastructure and space, and also limited flexibility in terms of available gas mixtures.
We have centrally supplied O2, CO2, N2 and compressed Air piped into our newly renovated laboratory and the gas mixer will provide a readily available, simple solution for us to use custom physiological gas mixtures.

BENEFITS AND SAVINGS

The Gas Blender GB100 turned out to be a reliable and compact device for generating controlled flows, and so controlled gas mixtures, that will reduce long-term running costs and negate the need for custom mixed gas orders.

Moreover the Gas Blender 100 helped to save time without the need to order numerous devices and pre-mixed cylinders, because any gas mixture required is immediately available.

GAS MIXER VS GAS CYLINDER

The ability to blend O2 and CO2 simulations on-demand is an incredibly powerful tool in the development and provides a level of flexibility that gas cylinders cannot provide.

MICRO FLOW RATES: NO CUT-OFF

Our GB100 Series allows Manchester Metropolitan University 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:

Our GB100 Series allows to generate gas mixtures with a wide variety of concentrations. This is traditionally achieved using pre-mixed compressed gas cylinders with limited flexibility

EASY TO USE SOFTWARE:

Thanks to our Software PRO Version and its easy-to use user interface, now the Manchester Metropolitan University can easy set all the experiment through our software.

TIME SAVINGS:

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

SUCCESSFUL ACHIEVEMENT:

GB100 Series offers a more flexible and user-friendly option to deliver custom gas mixtures to an oxygen regulated microscope perfusion system.

READY TO TALK ABOUT YOUR SOLUTION?

info@mcqinst.com - www.mcqinst.com