



- ✓ CELL CULTURE INCUBATOR
- ✓ ACCURATE LOW FLOW CONTROL
- ✓ CELL METABOLISM ANALYZER

A SOLID BUSINESS CASE IN COLLABORATION WITH DK INNOTECH KOREA

GENERAL INFORMATION ABOUT THE PROJECT



TARGET OF THE PROJECT:

Measurement of Biological/Medical cell metabolism



DEPARTMENT:

Biology Analysis Part



HEAD OF PROJECT MANAGEMENT:

Yongho Kwak



ROLE OF MCQ INSTRUMENTS:

Control the environment of Cell Culture in a Automatic Cell metabolism analyzer

MORE INFORMATION ABOUT THE COMPANY

DK Innotech Inc. aims to be a technology company contributing to improve human life based on the bioanalysis and smart sensing technologies. Fields of App: Cell Metabolism Analyzer using highly sensitive sensor technology. As a product enabling the safe and fast research into cellular level that can replace human or animal clinical trial, it has been successfully commercialized, for the first time in Korea, based on the technology transferred from Korea Electronics Technology Institute.

DESCRIPTION OF THE APPLICATION AND THE TARGET

Measurements of glycolysis and mitochondrial function are required to quantify energy metabolism in a wide variety of cellular contexts. In human pluripotent stem cells (hPSCs) and their differentiated progeny, this analysis can be challenging because of the unique cell properties, growth conditions and expense required to maintain these cell types.

Metabolic measurement of humans and model animals is an important aspect of biomedicine. Particularly, in the case of model animals, the limitations of currently widely used metabolic measurement methods are not widely understood. In this mini-review, I explain the theoretical underpinnings of flow-through respirometry as a linear time-invariant

system, and the (usually serious) distortions of metabolic data caused by the interaction of chamber volume and flow rate. These can be ameliorated by increasing the flow rate through the chamber, though this is at the expense of the magnitude of the O₂ depletion and CO₂ enhancement signals from which metabolic rates are calculated. If achieved, however, the improvement in temporal response that follows higher flow rates can be marked, and allows confident and accurate measurement of resting and active energy expenditure.

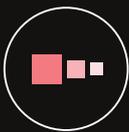
Applications of this approach in multiplexing gas signals from multiple cages, and in human room calorimetry, are also discussed.

BENEFITS AND SAVINGS

DK Innotech is a venture Company who develops analysis instruments related with biology and medical field. In particular they currently focus to upgrade their Cell metabolite measuring instrument. This cell metabolite measuring is a big issue in the Biology and Medical research area.

They need to control the environment of the cell culture incubator with changing the oxygen level. There are several companies who are selling gas mixer but most of them were oriented food-related industry. That means their machines are too big for their use. They need a small size mixer for small flow-rate scale research.

Our Gas Blender 100 is compact and specifically designed for low-flow application and it suits their needs. The Gas mixer was used to control the air environment inside the cell culture incubator and monitoring the state. Recent studies have shown that air controlled environments are important to develop new drugs for cancer or other diseases.



SUCCESSFUL ACHIEVEMENT:

We helped the DK Innotech to control the environment of Cell Culture in a Automatic Cell metabolism analyzer.



WITHOUT MCQ? (HARD)

A standard calibration method using gas cylinders containing a mixture of gases at the desired concentration would have been used for the Cell Culture Incubator Setting. The use of standard Mass Flow Controller in order to feed the bench scale plant is required to create the desired mixture.



TIME SAVINGS:

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



SOFTWARE AUTOMATION:

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



FLOW RATES: NO CUT-OFF

MCQ 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 a lower flow-range.

READY TO TALK ABOUT YOUR SOLUTION?

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