

# APPLICATION NOTE A086-GP05 - MONITORING OF INDOOR AIR QUALITY

## APPLICATION NOTE

### Air Flow Controller for indoor air analysis device

Our [Bronkhorst office in France](#) supported a customer with [air flow controllers](#) which play a crucial role in their mobile pollutant analysers used for on-site monitoring of air quality. The air analysers are used for detection of small amounts of benzene, toluene, ethylbenzene and xylene – **BTEX analysis** – and volatile organic compounds analysis - **VOC analysis** - in indoor air.



#### Application requirements

As the air analysers are **mobile** and **compact** devices, the mass flow controllers and pressure controllers to which they rely on also have to be compact. Furthermore, they have to accurately control flows of air that contain volatile compounds in the ppb range (from 1 to 400 ppb). Besides the analysers are **mobile** and **accurate** devices, they have to perform their duty **continuously**, in nearly **real-time**.

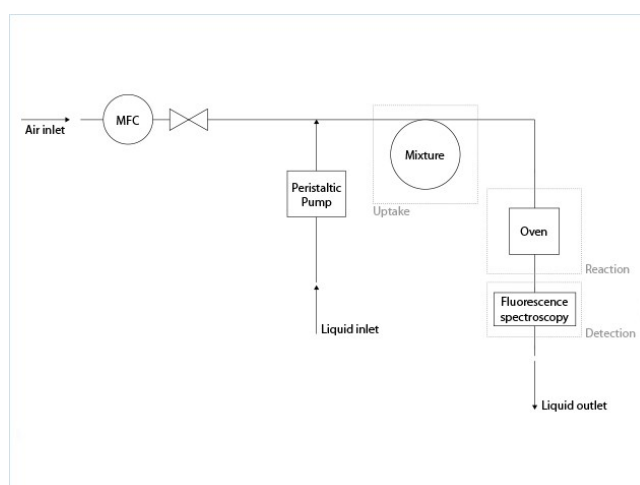
#### Important topics

- High accuracy air flow controllers for low pressure difference applications
- Compact solution
- Indoor air quality
- Reproducibility

#### Process solution

The air quality measurement method consists of a gas-into-liquid take up step in a microfluidic cell combined with a chemical reaction, followed by a detection step using spectroscopy of fluorescence. Here the Bronkhorst chip-sensor based mass flow controllers for gases (series [IQ<sup>±</sup>FLOW](#)) - play a key role. Especially in the customer's equipment for volatile organic compounds (VOC) analysis, the low differential pressure version of this [mass flow controller](#) is used.

The compact [IQ<sup>±</sup>FLOW](#) air flow controllers allow for the **accurate** handling of very small gas flows, so that very small quantities of liquid reagents in the microfluidic cell will be necessary, saving on chemicals' consumption allowing **low running cost**. These small (gas and liquid) mass flows also facilitate the **short response time** of the analysers, which could be down to the second range. All these features are eminent for compact devices.



Flow scheme

As the French government recommends a threshold for formaldehyde concentrations in the indoor air of public buildings, **accurate** and **continuous measuring** methods are required. The **accuracy**, **sensitivity** and **reproducibility** of the Bronkhorst IQ+FLOW devices participate in meeting these demands.

The customer is really satisfied with the quality of the Bronkhorst products. In addition to the products themselves, the good support is also emphasised.

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## Recommended Products



### IQ+FLOW IQF-200C MFC

Min. flow 0...10 mln/min  
Max. flow 0...5 lIn/min  
Pressure rating 10 bar  
Ultra compact  
MEMS technology



### IQ+FLOW IQFD-200C DOWNPORTED MFC

Min. flow 0...10 mln/min  
Max. flow 0...5 lIn/min  
Pressure rating 10 bar  
Ultra compact (MEMS technology)  
Top-mount construction



### LOW-ΔP-FLOW F-200DV

Min. flow 0,2...10 mln/min  
Max. flow 0,4...20 mln/min  
Pressure rating up to 10 bar  
Low ΔP, easy to purge  
Compact design

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BRONKHORST USA LLC  
57 South Commerce Way  
Suite 120  
USA - Bethlehem, PA 18017  
Tel. [+1-610-866-6750](tel:+1-610-866-6750)  
[sales@bronkhorstusa.com](mailto:sales@bronkhorstusa.com)

