AERATIE IN WATERBEHANDELING

APPLICATION NOTE

Aeration Control in Water Treatment

Effluent treatment is the process of removing contaminants from waste water, primarily from household sewage. It includes physical, chemical, and biological processes to remove these contaminants and produce environmentally safe treated wastewater.



An important stage of most treatment processes is the use of microbes to break down and consume pollutants rendering the water sufficiently clean for discharge to rivers and lakes.

These microbes require oxygen for effective growth. Traditionally this oxygen is supplied from the air in the environment and is pumped in to form air bubbles or introduced by agitation. Both of these processes are expensive from an energy perspective and wasteful as only a small proportion of the air is used by the microbes.

Membrane Aerated Biofilm Reactors (MABR)

A recent innovation is the use of **Membrane Aerated Biofilm Reactors** (MABR) to control the biological treatment through an attached growth system made of an array of hollow fibre gas permeable membranes. The MABR habitat creates an ideal environment to support a robust biofilm which absorbs and consumes carbon and nitrogen based pollutants.

Air from the environment is supplied at low pressure and oxygen required by the microbes is supplied directly by diffusion across the membranes.

The MABR is deployed in a modular cage design which is supplied as a packaged plant or retrofitted directly into an existing aeration tank. The successful operation of these systems depends on the careful monitoring of air supplied and estimation of the oxygen consumed by the microbes.

Thermal mass flow meters using the CTA (Constant Temperature Anemometry) principle

A leading manufacturer of these systems has turned to Flowcon, distributor of Bronkhorst in Ireland, to provide Mass Flow metering technology for their control systems.

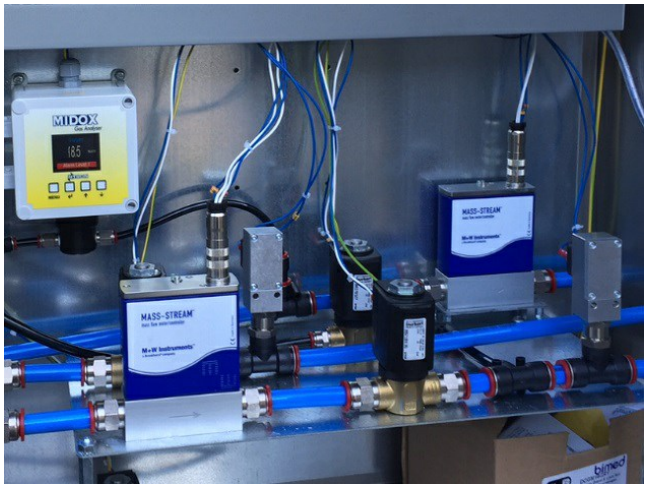
The MASS-STREAM™ thermal mass flow meter offered the ideal solution where the air from the environment was sometimes dusty and damp and where reliable, accurate and repeatable measurements were required. A minimal pressure drop across the instrument was vital to optimise air supply costs and insure the membranes received air within a tight operating pressure range. Air flow entering and exiting the bank of membranes is metered and together with pressure and oxygen sensors the mass of oxygen diffusing trough the membranes be calculated and carefully controlled.

These thermal mass flow meters utilise the CTA (Constant Temperature Anemometry) sensing technique and benefit from a relatively low pressure drop and IP65 ingress protection.

Process solution

Flow meters from the MASS-STREAM™ series are modern digital instruments offering RS232 and Analog signals as standard. PROFIBUS DP, DeviceNet™ and Modbus are available as options. Air and Gas flows from 10 mln/min up to 5000 ln/min can be monitored using one of the six models in the MASS-STREAM™ range. All instruments have an integrated PID control system that can be utilised to offer flow control features in combination with an appropriate proportional flow control valve. An optional integral TFT display can offer local readout and control of important parameters such as Set point (flow control applications). Instantaneous flow rate reading, low or high flow alarms and totalised flows.

Furthermore, these flow meters and flow controllers offer a robust and economic solution to gas metering and control requirements.



Recommended Products



MASS-STREAM D-6310 MFM

Min. flow 0,01…0,2 ln/min
Max. flow 0,1…2 ln/min

Drukklasse tot 20 bar

Robuuste sensor en behuizing (IP65)

Optioneel geïntegreerd TFT display



MASS-STREAM D-6370 MFM

Min. flow 2…100 ln/min
Max. flow 10…1000 ln/min

Drukklasse tot 20 bar

Robuuste sensor en behuizing (IP65)

Optioneel geïntegreerd TFT display



MASS-STREAM D-6390 MFM

Min. flow 40…2000 ln/min
Max. 100…10000 ln/min

Drukklasse tot 20 bar

Robuuste sensor en behuizing (IP65)

Optioneel geïntegreerd TFT display



MASS-STREAM D-6361/002BI MFC

Min. flow 0,4…20 ln/min
Max. flow 4…200 ln/min

Drukklasse tot 20 bar

Robuuste sensor en behuizing (IP65)

Optioneel geïntegreerd TFT display

Wil je meer informatie over flowmeters of -regelaars?

Wil je het laatste nieuws ontvangen over trends in flow control? Schrijf je dan in voor onze maandelijkse nieuwsbrief.

BRONKHORST NEDERLAND

Lunet 10c

3905 NW Veenendaal

Tel. +31 (0)318 55 12 80

info@bronkhorst.nl