

ALFAMETER®

A New Age in Aeration Process Control and Monitoring

Traditionally, aeration system control and monitoring has always been based on liquid phase measurement of parameters related to aeration system performance. Many of these parameters have been used as indicators of process and aeration performance, but none have been able to provide accurate, real time control of aeration equipment performance AND AIR BLOWERS AS WELL.

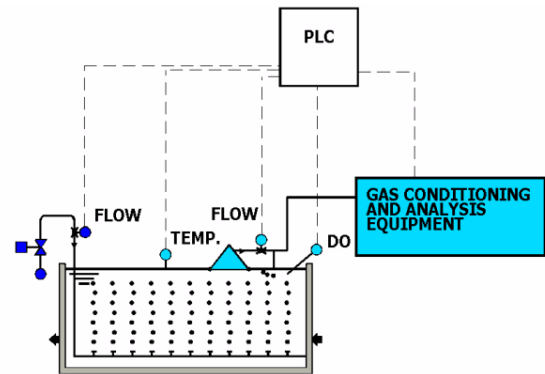
The ALFAMETER® combines CONTROL AND MONITORING OF liquid phase and gas phase to produce real time measurement of key parameters for process and aeration control including:

- Aeration System Oxygen Transfer Efficiency (OTE)
- Process Oxygen Uptake Rate (OUR)
- Mixed Liquor α Value

Accurate knowledge values of these parameters allows a new approach to understanding and control process and aeration system performance. THE ALFAMETER opens the door to a new world in aeration system control and achieves substantial energy saving.

PRINCIPLE

The ALFAMETER® combines: liquid phase measurement of parameters (such as mixed liquor DO and temperature) with gas phase measurement of the composition of the gas leaving the aeration basin surface (off-gas). The relative difference in oxygen content of the gas entering the tank and the "Off-Gas" FROM LIQUID SURFACE allows measurement of the oxygen transfer performance of the system. This DATA, ARE PROCESSED IN THE PLC TO MONITOR performance data, system operating conditions (air-flow, DIFFUSERS), determination of process Oxygen Uptake Rates and mixed liquor oxygen transfer characteristics (α value).



ALFAMETER FUNCTION SCHEME

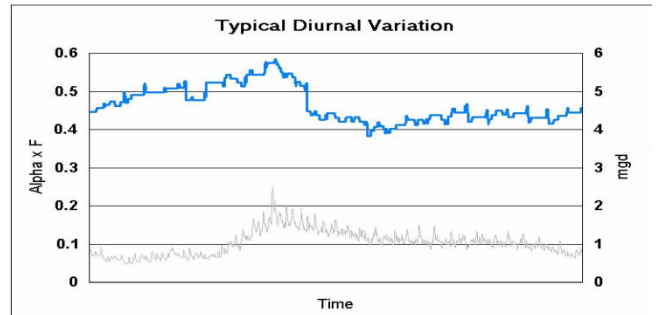


MONITORING & CONTROL

The ALFAMETER[®] is a useful tool for the monitoring of both biological process and aeration system performance. The ability to develop real time values of OUR allows quantifying diurnal/seasonal variations in process loadings and demands, identifying process inhibitors and reports process unbalances and bottlenecks.

CONTROL

Real time measurement of aeration system performance parameters such as Oxygen Transfer Efficiency and α provides valuable information on diurnal/seasonal changes in aeration system oxygen transfer capacity, aeration system long term performance, maintenance and service requirements and oxygen transfer inhibition episodes.

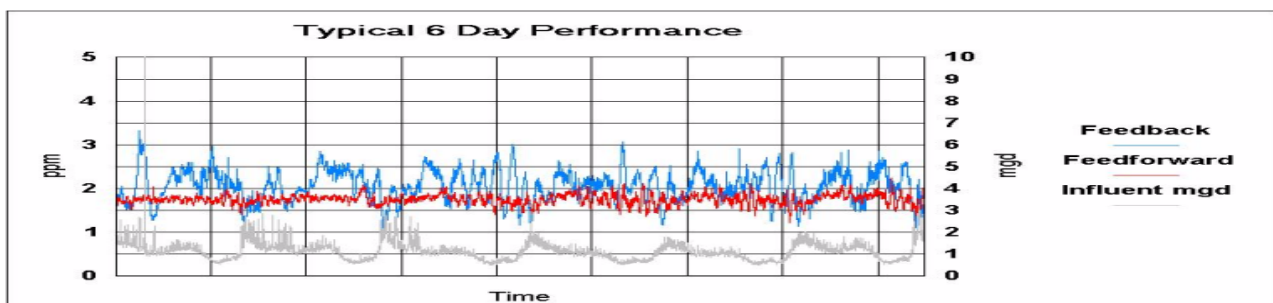


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Thanks to real time measurement of process demand (OUR) and parameters affecting oxygen transfer (α), the ALFAMETER[®] allows a quantitative approach to aeration system control eliminating all trial & error, iterative (PI, PID, etc.) and tuning based control algorithms. The ALFAMETER[®] provides instant information on the air required to blowers to meet process and control needs.

This direct control approach greatly reduces aeration control response time allowing more accurate control **RESULTING IN STEADY** system stability and significant energy savings.



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