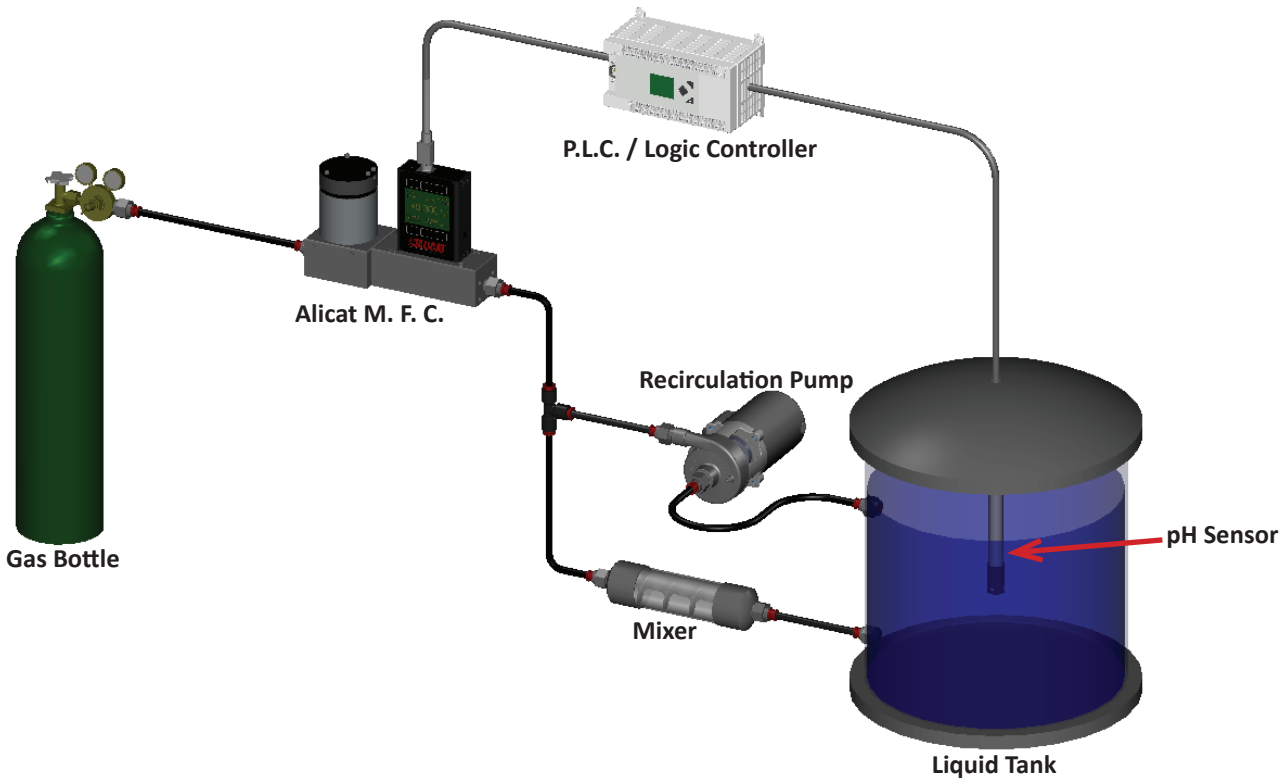
ALICAT SCIENTIFIC
A HALMA COMPANY

Controlling pH with CO2 Injection

A customer approached Alicat with a water treatment application in which CO2 would be sparged into a body of water in order to control the pH level of the water. The application involved the need to control mass flow over a wide flow range, while at the same time reducing time lag between CO2 injection and pH changes of the water.

One challenge they faced was that the bodies of water they were working with varied in volume and therefore required a wide range of CO2 flow rates in order to maintain the pH balance of the water.

Another challenge was that larger volumes of water didn't react in step with the CO2 injection process, causing a time lag between the correct amount of CO2 being injected into the water and the appropriate change of pH occurring in the water.



Alicat Application Engineers determined that the Alicat **MC Series Mass Flow Controller** would be a good solution for both of these challenges.

The **200:1 turndown ratio** of the Alicat mass flow controllers allows the instrument to be used accurately down to 1/200th of the full scale flow rate. This permits customers to cover a very wide flow range with one instrument, thereby reducing costs and increasing available space.

In order to resolve the time lag problem, the Alicat device needed to be able to interface with an automated digital control system, which would report the progress of the pH change, and allow adjustment to the set-point of the Alicat controller in real time.

Because every Alicat mass flow, liquid and pressure device is equipped with both analog and digital communications as a standard feature, the Alicat device integrated seamlessly into their system, and Alicat's **faster than 100 ms** control times allowed for a significant reduction in phase lag between CO2 delivery and pH adjustment.