

Stock Preparation & Paper Machine Wet End pH Control with Carbon Dioxide

Control of pH using carbon dioxide is a commercially proven, safe and simple application for the stock preparation and paper machine wet end (PMWE) stages in those mills making most grades of alkaline, neutral, or tissue paper. The use of carbon dioxide provides unique advantages over sulfuric acid and/or alum for wet end pH adjustment and control.

Carbon dioxide's buffering action and gentle pH response in the 6.5–9.0 pH range provides exacting straight-line pH control.

The exacting pH control delivered with carbon dioxide eliminates the concerns of pH swings in the paper making processes. Fines and additive retention are stabilized allowing for increased paper machine productivity.

Safety and maintenance are also improved, as carbon dioxide is non-corrosive.

Application

In this application, carbon dioxide (CO₂) directly replaces sulfuric acid and/or alum for pH control.

Typically, carbon dioxide is added as a gas to a low consistency pulp slurry in the stock preparation area and/or the machine whitewater approach to the headbox. Injection points that afford adequate mixing are recommended.

Even though the buffering action of carbon dioxide is quite forgiving, automatic control of the carbon dioxide flow is recommended for straight-line pH control. A pH

probe and a simple feed back control loop to the carbon dioxide flow control system is all that is needed.

Benefits

- Increased paper machine productivity
- Improved fines and additives retention and control
- Improved safety
- Reduced maintenance requirements

Typical CO₂ pH Control System for Stock Preparation and PMWE

