

Clarifiers

DAF units

OWS

Filter Presses

Siltbuster's pH Adjustment Units

Siltbuster has developed a range of pH adjustment equipment designed to automatically adjust the pH of water to ensure that it conforms with discharge consent requirements.

Prior to discharge the pH of the water will typically need to be reduced to:

- pH 6 to pH 9 for discharge to controlled water (surface water/groundwater). Subject to the requirements of a EA/SEPA Discharge Consent.
- pH 5 to pH 10 for discharge to foul sewer. Subject to the requirements of a Trade Effluent Discharge Consent, issued by the local Water Utility Company.

Siltbuster pH adjustment units can also easily be configured to increase the pH of the waste water if necessary.

Applications:

- Washing out of concrete and mortar batch plants and lorries
- Wash water produced from onsite concreting operations
- Hydro-demolition of concrete
- Lechate from slag and PFA lagoon/stockpiles
- High or low pH groundwater
- Industrial effluent

Three Stage pH Adjustment of Alkaline Groundwater 50m³/hr Flow Rate

Stage 1 Initial pH Adjustment Stage - Typically the pH of the effluent is reduced to circa pH10 to maximise the precipitation of calcium carbonate solids.

Stage 2 Removal of Suspended Solids - The flow is the passed into a clarifier stage where the solids settle out.

Stage 3 Final pH Adjustment Stage - Post settlement water psses forward into the final stage tank where the pH of the water is further adjusted using Carbon Dioxide to ensure the pH of the discharge is in compliance with the discharge consent.

Siltbuster pH Adjustment Units to meet your flow requirements



Combined pH Adjustment and Solids Removal



pH Adjustment Skid (DS4)



PMPU20

Transportable

Modular

Affordable

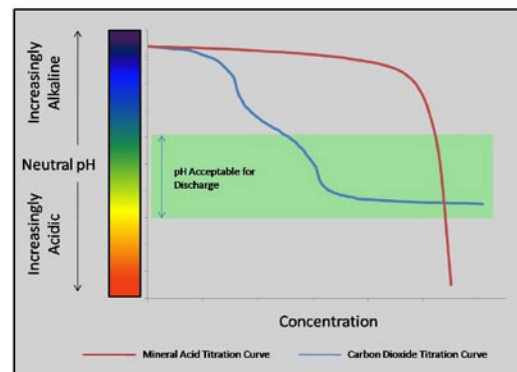
The Benefits Of Using Carbon Dioxide For pH Adjustment

Historically pH adjustment was undertaken using strong mineral acids (sulphuric acid, hydrochloric acid, nitric acid). The use of strong mineral acids gives rise to increased Health and Safety, Environmental and Waste Management concerns. As a way of managing these risks Siltbuster pH adjustment units can be operated using Carbon Dioxide which has a number of benefits, such as:

Self Limiting Effect

Theoretically, it is impossible to reduce the pH of water below 5.6 using Carbon Dioxide. In practice it is difficult to lower the pH below 6. The risk of discharging water with a pH of 6 is virtually eliminated.

The reaction is also easier to control. When adjusting the pH of an alkaline waste water using strong acid a large pH change can occur at or around the neutral point by adding only small volumes of acid. This increased sensitivity can make the neutralisation reaction difficult to control, increasing the risks of overshooting the end point. The risks of discharging acidic water is increased. Carbon Dioxide has a more uniform reaction response across a wide range of pH, the self limiting effect minimises the risks of overshooting the end point, as shown in the Titration Curves graph.

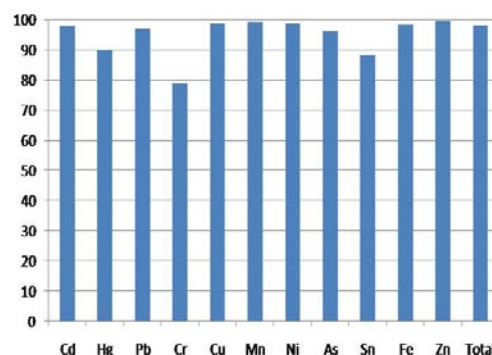


pH Titration Curves

Precipitation of Carbonates

Production of High Density Sludge - Recirculation of precipitated solids increases sites available for solids to precipitate onto. Increasing the size of the particles increases the density of the sludge and improves the sludge's dewatering characteristics. The volumes of sludge requiring off-site disposal is thereby reduced, making a saving in waste disposal costs.

Precipitation of Metals - Metals carbonate species are generally of low solubility. The active precipitation of metal carbonates can effectively remove a wide range of dissolved metal species.



Metals Removal

Health and Safety and Waste Management

Easy Handling/storage - Carbon Dioxide is delivered in high pressure cylinders weighing up to 100kg. The cylinders usually come in crates and can easily be moved using a forklift or HIAB. Cylinders are available in a variety of sizes. Storage within designated spill control bunds is therefore not required.

Reduced Health and Safety Concerns - Carbon Dioxide comes in pressure resistant cylinders. No handling of acid negates the possibility of any spills and eliminates the potential for operators to be burnt through contact with acid.

Reduced Decommissioning Costs - Unused Carbon Dioxide can be returned to the supplier at minimal cost. Unused mineral acid would require disposal as a hazardous waste.