



# Mixing lime chemical

*If you have been experiencing problems when handling lime then you'll understand the frustration felt by many engineers in the waste water industry. Lime chemical is widely used in waste water applications with water companies aiming to achieve a consistent quality of dosing, minimize downtime and increase time between planned maintenance events.*

## Process points

There are many different products transferred between sites in bulk powder, liquid or gaseous form

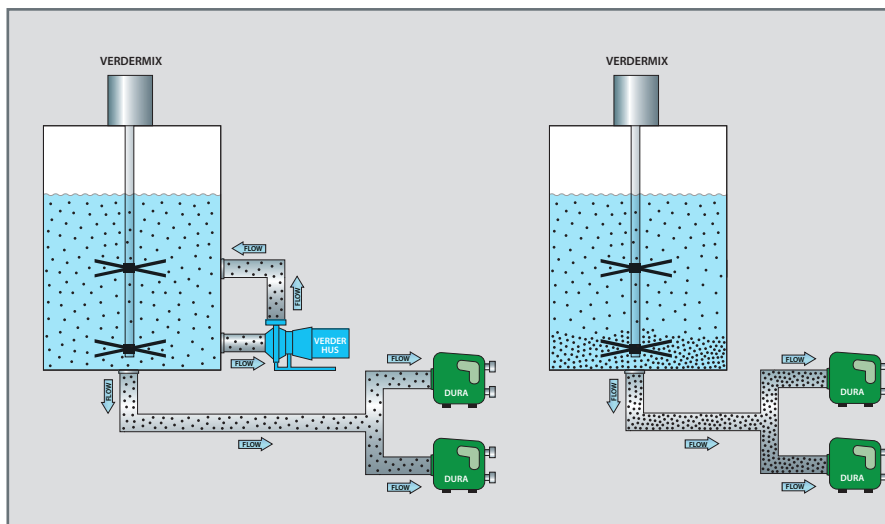
- Handling of insoluble lime chemical suspended in water
- Lime chemical falls out of suspension easily
- The chemical suspension is stored in a large tank
- Lime chemical is corrosive
- The state of the fluid must be as homogenous as possible for dosing consistency
- Downtime is to be avoided due to health and safety protocol for lone workers and minimizing human contact with hazardous substances

## Lime Chemical

Lime chemical is mixed with water to produce thin slurry. The lime chemical is not dissolved, but rather is held in suspension. In order to maintain the state of the suspension, the fluid must be kept in a constant mixing cycle where the turbulent flow provides the 'lift' so the lime particles remain evenly distributed.

## Process issues

Common problems result from the insoluble nature of the chemical such as the lime particles falling out of suspension where the turbulent flow may not be as strong. The settling of the lime particles results



in sedimentation in the tank. A layer of sediment can result in significant process issues for engineers on-site. The tank base will require cleaning/clearing to prevent lumps and clogging of the pipe work and dosing pump. A low time between tank inspection and servicing increases labour hours and risk levels of engineers coming into contact with hazardous substances. If the site is unmanned and requires an engineer the call-out, there is also the increased cost of administration and the risk of a lone-worker on the site.

The site may also see an increase in the cost of lime chemical to off-set these symptoms of a mixing process that is failing.

## Removing sedimentation

Verder UK have designed and installed a mixing solution to

reduce or eliminate the problem of sedimentation.

A Verder mixing system utilises not only agitation/stirring, but also recirculation.

Verder UK install an agitator into a tank as well as a recirculation system to eliminate problems of sedimentation, clogging and excessive cleaning of tanks.



### Verder mixing solutions

For lime mixing tanks, Verder provide a Verdermix Dynamic Mixer/Agitator to create the turbulent flow and keep the lime particles in suspension. The Verdermix is driven by an IEC motor, which features high quality, upgraded bearings for a longer service life. Most Verdermix Dynamic Mixers in lime dosing are specified with stainless steel bladed impellers. The shafts are available in up to 4 metres in length. Due to the depths of many tanks, a dynamic mixing solution may not always be optimal as lime, even with an exceptionally powerful dynamic mixer, may settle. Verder UK add a recirculation system using the Verderhus screw-channel pump.

The screw-channel pump draws out any lime which begins to settle and delivers it back into the tank. The

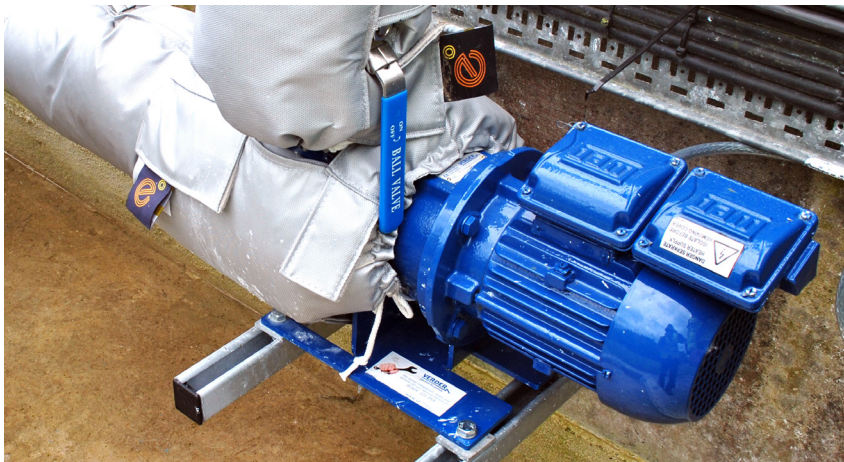
therefore increases the time between tank cleaning, reduces chemical waste, maintains the consistency of the chemical solution to be dosed and prevents clogging of pipes and pumps. The Verderhus draws from the bottom of the tank – The open screw-channel impeller allows the easy passing of the slurry even with its abrasive and corrosive properties.

### Verdermix

The Verdermix range of static and dynamic mixers suitable for the mixing of fluids, solids and gases. The range is used extensively in the waste water industry as well as the manufacturing of paints, foods and more.

### Verder UK

Verder UK are specialists in pumps and pumping systems and solutions for mixing and the handling of lime. A dedicated project team provides a



slurry is delivered it directly into the path of the mixing impeller. The end result is a homogenous mix with no sediment build-up.

### Benefits

The Verder mixing solution removes the problem of sedimentation and

full service of consultation, design, build, installation, commissioning and contract maintenance.

The Verder UK team can provide a full package plant system, the mixing and recirculation system and all pumps and peripherals for the fluid handling process.



### In-focus: Mixing lime at a sewage treatment works

A sewage treatment site in northern Derbyshire was experiencing the problems with lime dosing. The lime solution was causing the pumps to block and was coming out in a thick, milky paste. The lime was settling in the mixing tank and the highly abrasive, viscous fluid which caused an excessive load on the drive, seal and bearing assembly causing the pump to break down. Verder installed a Dynamic mixer for the suspension with a Verderhus to provide the recirculation. The cone impeller and open flow path allows the easy passage of slurry and reduces the wear on the pump. The cork-screw impeller causes minimal to zero aeration of the lime, unlike other centrifugal pumps. The engineers on site were delighted with the performance, particularly with the consistency of the lime solution that was being dosed. The lime solution was dosed with a Verderflex Dura Peristaltic Pump.

