

# Thickeners

Waterex has been designing and engineering thickeners since 1965 for a range of industrial and mining applications. Waterex's designs are backed by our own laboratory capability and pilot thickener plant allowing Waterex to continually develop state of the art technologies for specific applications.

Waterex offers conventional thickeners, Hirate thickeners, Ultra Hirate thickeners and paste thickeners. Thickener diameters up to 35 m are available with the rake mechanism supported off the bridge by structural steel at the tank walls. Waterex design thickener tanks and walls for upset conditions where the tank is filled with a density of between 15% and 45% solids above the normal underflow concentration as demanded by the application.

## Thickener Types

Conventional thickeners can be operated with or without flocculation depending on the application and are traditionally easier to operate due to their relatively slow settling rates.

Waterex Hirate thickeners are designed to disperse flocculant efficiently into the settling zone of the thickener. The feed system is carefully designed in order to achieve this efficient flocculation. Increased flocculation efficiency is employed with a higher settling rate than conventional units resulting in a reduced surface area.

Waterex Ultra Hirate thickeners operating in counterflow are capable of producing an underflow with maximum solids concentration. These units have a smaller diameter than Hirate thickeners but rely on higher side walls for maximum underflow density.

## Applications

Waterex uses thickeners to provide solutions for many applications including:

- Paste thickening
- Pregnant liquor recovery
- Process leaching
- Scrubber water from FGD plants
- Tailings treatment
- Thickening of activated sludge



## Features

Baffled feedwells enhance flocculant mixing, conditioning and driving to provide use of the entire feedwell. Our feed box design minimises feedwell short circuiting and provides flip facilities for entrained gas release plus high intensity mixing eliminating layering.

Proven autodilution systems are available at 3 times dilution with some results tested at 4.5 times. High rate autodilution is realised with the Waterex Hishear system providing a clarified central feedwell dilution stream which is augmented by a peripheral feedwell weir nozzle driven recovery which can be readily boosted by push mixing.

Waterex thickeners also utilise the following features:

- Either hydraulic or electric drives to suit rake torque up to 1,250 kNm
- Rake drives with lift mechanism, standard rake lift height of 300 to 600 mm (900 mm on request) and high and low level switches
- Rake mechanism design offering minimum resistance while raking and a rotating picket fence to further enhance settling in sludge duties
- Drive units designed to eliminate servicing of the ring gear and raceway bearings
- Torque indicator and overload protection provided by hydraulic trip backed by hydraulic pressure relief bypass
- Overflow weirs with sawtooth and scum plate baffles where float feeds and the like are used
- Trench and cone scrapers such that the rake arm passes an outlet every 2 to 4 minutes. An additional trench scraper can be fitted to reduce dead time
- Instrumentation customised to suit client requirements and specifications ranging from a basic marshalling panel to fully automatic PLC control
- Steel work completed in small sections with bridges and rake assemblies fabricated in component form for transport to site in containers

## Materials of Construction

Waterex design thickeners on an individual basis to suit the application. We can manufacture thickeners in a variety of materials including: FRP, epoxy coated mild steel, galvanised mild steel, stainless steel 304, 316, 904, super duplex stainless steels SAF2205 and SAF2507.

