



FLEXIBLE CONE AUTO DESLUDGING SYSTEM FOR USE WITH UPWARD FLOW CLARIFIERS

Introduction:

Flexible Cone Sludge Concentrators are used to efficiently remove solids from the Sludge Blanket in upward flow Clarifiers. These concentrators find particular application when existing upward flow clarifiers are to be uprated and/or when existing sludge bleeds are excessive and need to be reduced so that the hydraulic loading on down stream sludge handling equipment can be accommodated.

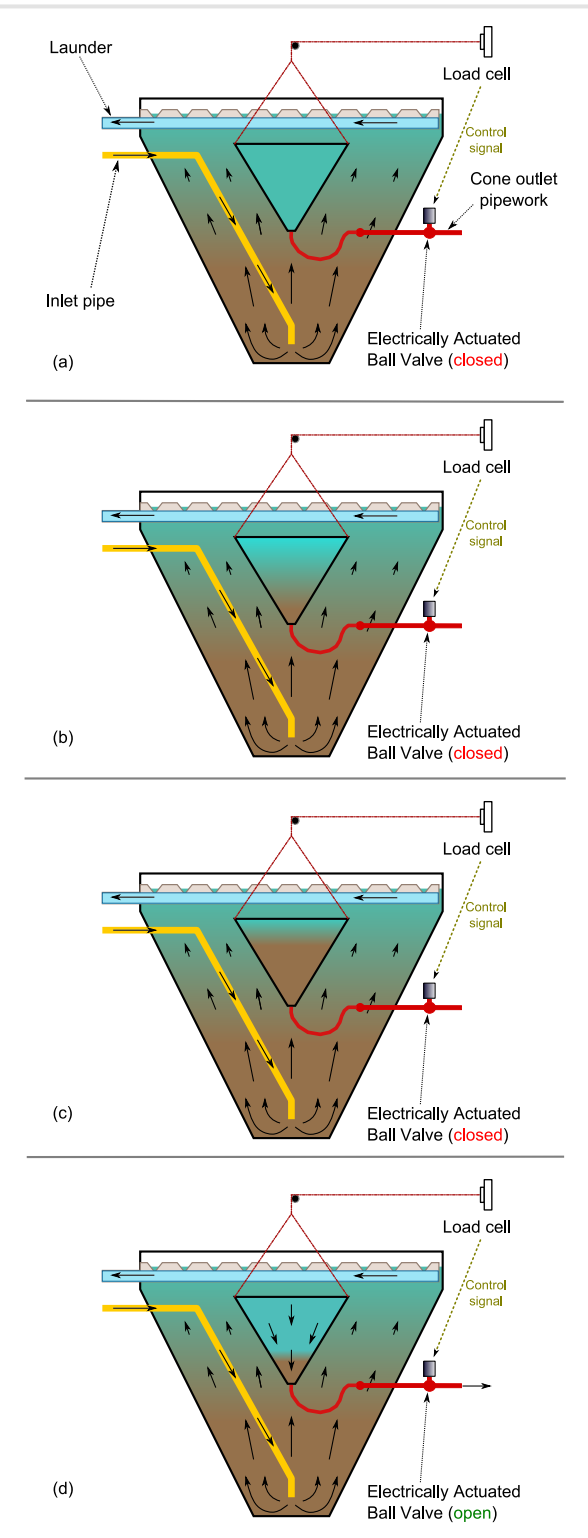
The flexible cones are normally used together with a cone weighing system. This allows automation of solids draw-off in response to solids production.

Principle of Operation:

An upward flow sludge blanket clarifier operates on the principle that flocculated solids tend to settle due to gravity but are maintained in suspension due to the force exerted by the upward flowing water. The level and depth of the sludge blanket are dependent on the upward flow rate, the mass of solids in the blanket and the cohesion of the blanket. Solids accumulate in the blanket and must be removed periodically to prevent carryover of the solids with the clarified effluent.

If a container without a lid is placed within a sludge mass maintained in an expanded state by an upward current of water (a) it will be found that the sludge collects and consolidates inside the container (b). This is quite easily explained since the water does not circulate there, and there are no forces at work to keep the sludge in a state of expansion. The container in question will act as a sludge concentrator from which the excess sludge can be removed.

As the solids build up in the sludge concentrator cone the weight of the cone increases (c). This increase in weight of the cone maybe sensed by a load cell. At a selectable increase in weight the load cell emits a signal and this can operate / open an electrically actuated ball valve on the sludge outlet line. The valve remains open until the weight of cone falls back to a lower se-



lectable value (d). The load cell then emits a signal to close the valve.

The final clarified effluent overflows the weirs on the collecting channels and gravitates to the next treatment stage.



System Design:

Each application is unique and requires careful review of the design parameters. The design parameters include:

- Water quality
- Chemical dosing
- Sludge production
- Hydraulic capacity / upward flow rate
- Blanket height/depth
- Sludge solids concentration



Many of the above factors are interrelated and also depend on the physical arrangement of the clarifier. Hence to accurately predict clarifier performance site testing is required.

Sludge production needs to be fully established and peak conditions need to be analysed with a view to determining the maximum hourly sludge withdrawal rate and the associated minimum acceptable sludge concentration.

In many cases the maximum sludge production is at a non-critical time (i.e. in Winter during heavy rain) and above average clarifier bleed rates may be of little consequence.

Equipment Description:

A typical Flexible Cone Sludge Concentrator System is supplied with a Load Cell Weighing System and comprises the following:

- Polyester Desludging Cone(s) complete with outlet hose and support.
- Desludge Valve(s) assembly.
- Load Cell Weighing System.

All materials in contact with potable water complies with requirements as stipulated in Regulation 31 of the Water Supply (Water Quality) Regulations 2000.

Materials can also be supplied to customers requirements.

If more information about Flexible Cone Auto Desludging System for use with Upward Flow Clarifiers is required please contact Treatment Systems Ltd. on sales@treatmentsystems.ie.

About Treatment Systems Ltd.

Treatment Systems Ltd. (TSL) was established in 1990 as a specialist process engineering design and installation company, with procurement, operations and maintenance capability in water and waste water treatment for both municipal and industrial applications on an international basis

TSL has worked primarily in Ireland within the Municipal and industrial Water /Wastewater market place. During the past 20 years, TSL has also been involved in numerous water / sewage project's in England, Scotland, Wales and internationally.

