Sludge thickening?

Thickening is the process used to increase the solids content of sludge by the separation and removal of a portion of the liquid phase. Gravity thickening makes use of the force of gravity as the main agent in the settling and thickening process.

The thickening of sludge plays an important role in reducing capital costs relating to the provision of sludge handling equipment and the operational costs of the handling and treatment of the sludge. What is not generally realised is that, both in terms of capital outlay and operating cost, sludge handling usually accounts for over 50% of overall treatment costs.

Methods

There are three accepted methods used for pre-digestion sludge thickening:

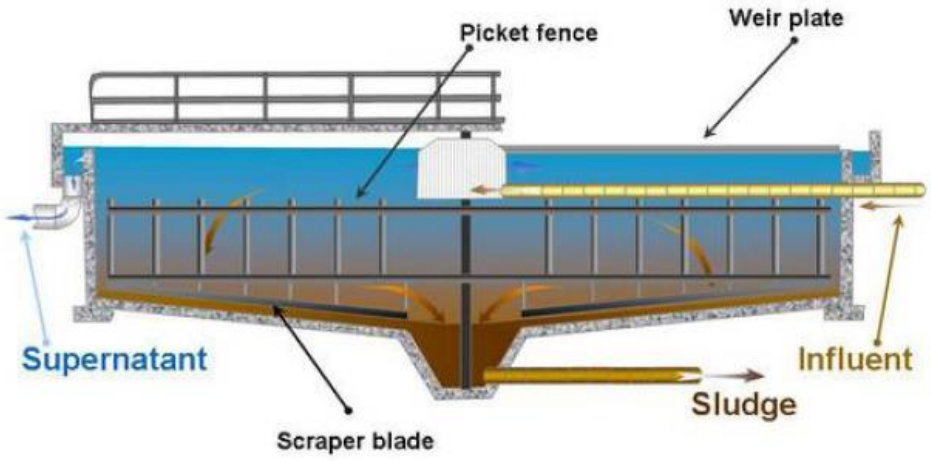
- Gravity thickening
- Dissolved air flotation thickening
- Centrifugation

Gravity thickening is the method most commonly used in South Africa**.**

Reasons for thickening sludge before anaerobic digestion

The concentration of thickened solids should be high enough to promote effective digestion, but not too thick to adversely affect pumping and mixing of the sludge in the digester. The main reasons for thickening sludge prior to digestion are:

- To maximise the use of the available digester capacity in the digestion of the solids, i.e. excess water uses up digester capacity and reduces retention time.
- To prevent the dilution of the feed material which would cause difficulty in the utilisation of the food by the bacteria.
- To reduce the amount of heat required in a heated digester, i.e. excess water with the sludge also requires heating in order to keep the digester contents at the required temperature.
- To prevent the washout of solids and micro-organisms from a hydraulically overloaded digester.
- To prevent the dilution of the generated alkaline buffer in the digester as this could cause pH instability.



References: Water Institute of Southern Africa (2002): Handbook for the operation of wastewater treatment