

Get Equipped

The process of flocculation is employed in wastewater treatment to separate suspended solids from water whenever the solid's natural subsidence rates are too slow to provide effective clarification. Water clarification, sludge thickening and dewatering depend on correct application of the theories of flocculation for their success. Flocs must be handled gently and with very low shear; otherwise, the process is rendered useless.

By David Heigl **Flocculation & Flotation Thickening**

Wastewater from a food processing plant is an example where seepex PC pumps have been successful. Food processing plants get rid of their large solids through screening or settling. The dispersed solids that do not readily settle or are too small to screen are usually removed using the flocculation process by means of a dissolved-air flotation (DAF) thickener.

In the DAF process, the solids-laden slurry is supersaturated with pressurized air. The air is released inside the DAF tank as small bubbles. The bubbles attach to the suspended solids, increase their buoyancy and cause them to rise to the surface of the tank, where a concentrated sludge is formed. A high-molecular-weight polymer is also introduced as a flocculant at a point where the bubbles precipitate and contact the solids. The molecular structure

of the flocculant helps gather the particles in a net or floc. Pumps are used to meter the polymers due to their low shear rate and metering accuracy.

Rakes gently move the accumulating floc sludge across the top of the DAF tank and into a hopper at the end. It is important not to pull apart or shear the floc. The flocculated sludge dewaterers more quickly because of its less gelatinous structure.

When the hopper becomes full, the floc sludge is dewatered to a level determined by the solids-handling capability of a transfer pump. The pump sends the dewatered floc to a tanker truck for transport to land application or a rendering plant. The choice of pump at this stage has a large impact on dewatering costs and the quality of the floc sludge. With this in mind, there are several major advantages to using a seepex pump.

Using pumps with TSE dry-run protection and 6-L geometry for flocculation and sludge floc transfer

