

***BLANKETmaster*TM White Paper**

Superior control methods for maintaining constant sludge depth

This paper explores the problems associated with non-optimum sludge blanket levels in clarifiers and sludge thickeners. *BLANKETmaster*TM is software that automatically maintains a constant depth of the sludge blanket, eliminating these problems.

Problems with maintaining optimum sludge depth and its effects in primary clarifiers/gravity thickener

Traditionally, sludge blanket depth control methods have employed a timer-operated sludge waste pump. Because flow is not constant over a 24-hour period, a pre-set, timer-based control algorithm inevitably leads to variability of sludge depth and sludge concentration. Using this method it is impossible to maintain optimum sludge depth.

When the sludge blanket depth rises above optimum levels:

- effluent TSS increases
- both soluble and particular BOD increase
- odor and corrosion caused by hydrogen sulfide

When the sludge blanket depth decreases below optimum levels:

- energy is wasted due to excessive pumping
- biogas production and VSS destruction are reduced due to a decrease in the ratio of feed solids concentration to anaerobic digesters.

Problems with maintaining optimum sludge depth and its effects in secondary clarifiers

Traditionally, return sludge flow is maintained either as constant or as proportional to influent flow. Because influent flow is not constant over a 24-hour period, the sludge depth fluctuates when either of these methods is used.

When the sludge blanket depth increases above optimum levels it can increase:

- effluent TSS and BOD
- floating sludge

When the sludge blanket depth decreases below optimum levels energy is wasted due to:

- excessive pumping
- increase of hydraulic load to thickening facilities

Achieving optimum sludge depth with *BLANKETmaster*TM software

Optimum sludge depth depends on many factors, including water temperature, location of the sludge blanket depth meter, clarifier hydraulic, and solids loading. *BLANKETmaster*TM maintains a constant sludge depth by managing the control of sludge removal based on readings from sludge blanket on-line analyzers and, occasionally, flow meters, using a sophisticated control algorithm to filter out any erroneous data. The software can also inform operators of unusual patterns in sludge blanket depth, and uses advanced logic to suggest corrective action. *BLANKETmaster*TM eradicates the problems of traditional sludge flow control methods, as described above, and increases treatment efficiency while reducing energy use and the carbon footprint of your operations.