

Suspended Solids Monitoring for Sludge Pumping Control/Savings

Introduction

Solids management is one of the most common causes of headache for wastewater operators today. One of their biggest issues is managing Primary Sludge Pumping to either an Anaerobic or Aerobic Digester.

Most plants pump sludge on a timed basis. Typically, operators simply turn on the pumps and let them run for an extended period of time. With the Hach SOLITAX™ sc Suspended Solids system, operators can save valuable digester space as well as eliminate the power costs related to over-pumping of sludge.

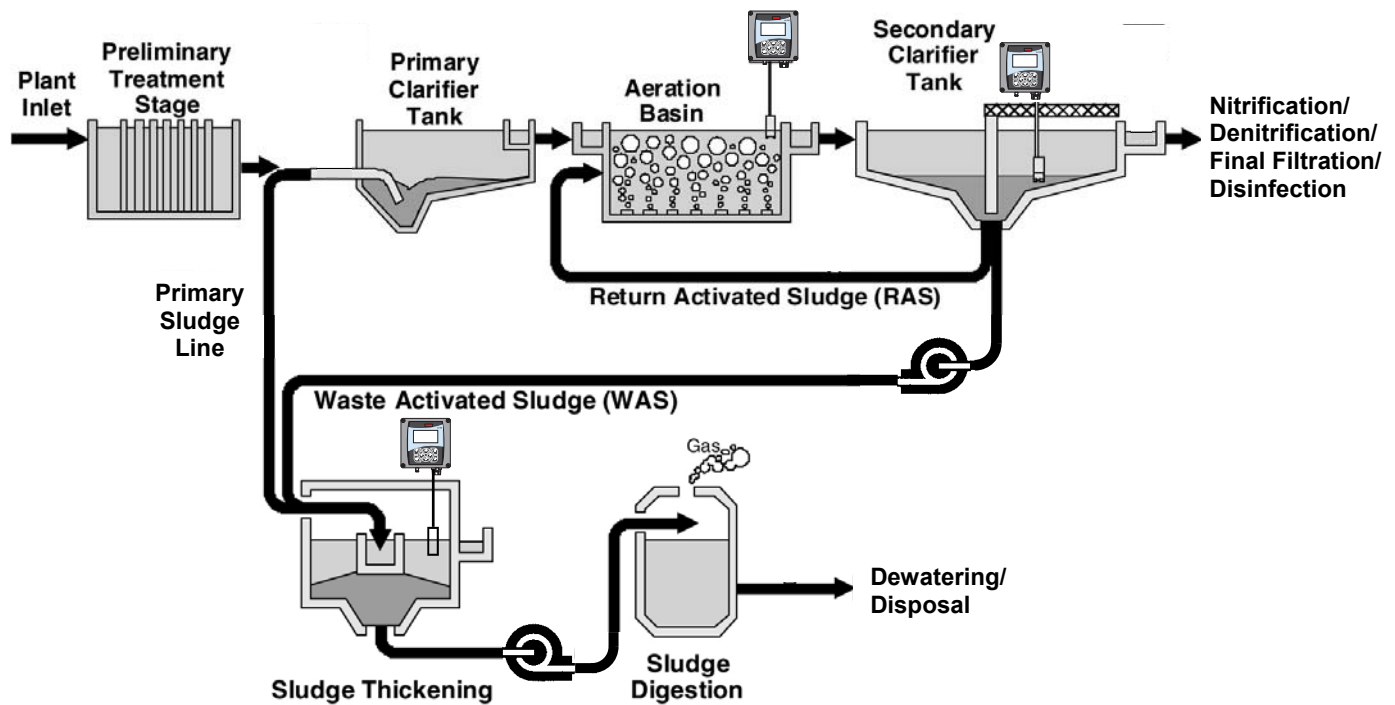


Figure 1 – Typical installation points for the Hach SOLITAX sc system for sludge pumping control

Results

Tables 1 and 2 show the difference in performance when pumping is based on the standard time interval and a percent solids content setpoint.

Annually, the practice of pumping sludge based on monitored % solids would result in 150,000 gallons less thin sludge pumped to the digester. This significant decrease in water volume in an Anaerobic or Aerobic Digester means less stress on the boilers, blowers, diffusers and recirculation pumps.

Sludge pumps would run 780 less hours annually, so this practice saves on power as well as digester volume.

Benefits

The bottom line: savings are realized in terms of power consumption and reduced stress on the system as a whole. Thicker sludge requires less treatment time as well as less chemical (polymer) addition. The less sludge pumped to a digester means less sludge is either land applied or disposed of in a landfill application, reducing demand on environment and the taxpayer.

While every plant operates differently, almost every plant has a problem with solids handling and disposal. The proper use of the Hach SOLITAX sc Suspended Solids system can save significant utility significant costs as well as operator headaches!

This application solution is one of several Hach documents describing wastewater process control based on continuous suspended solids/turbidity measurement. For more detail, refer to:

“Monitoring Suspended Solids/Turbidity in Liquid Processing Stages of Municipal Wastewater Treatment Plant,” Hach Application Solution AS-SS1

“Monitoring Suspended Solids in Biosolids Processing Stages of Municipal Wastewater Treatment Plant,” Hach Application Solution AS-SS2

“Measuring Turbidity and Suspended Solids in Clarifier Supernatant,” Hach Application Solution AS-SS3

“Belt Filter Press Monitoring/Control in Wastewater Treatment Plants,” Hach Application Solution AS-SS4

“Centrifuge Monitoring/Control in Wastewater Treatment Plants,” Hach Application Solution AS-SS5

“Using Suspended Solids Measurements in Dewatering of Wastewater Clarifiers,” Hach Application Solution AS-SS6

“Mixed Liquor Suspended Solids in Wastewater,” Hach Application Solution AS-SS7

	%	GPH	Gal Sludge	Gal Water
Hour 1	4.5%	200	9	191
Hour 2	4.2%	200	8	192
Hour 3	3.9%	200	8	192
Hour 4	3.7%	200	7	193
Hour 5	3.5%	200	7	193
Hour 6	3.0%	200	6	194
Hour 7	2.4%	200	5	195
Hour 8	2.0%	200	4	196
Daily Total	3.4%	1600	54	1546

	%	GPH	Gal Sludge	Gal Water
Hour 1	4.5%	200	9	191
Hour 2	4.2%	200	8	192
Hour 3	3.9%	200	8	192
Hour 4	3.7%	200	7	193
Hour 5	3.5%	200	7	193
Hour 6	–	–	0	0
Hour 7	–	–	0	0
Hour 8	–	–	0	0
Daily Total	4.0%	1000	40	960

Table 1, left, shows typical pumping performance when pumps run eight hours a day. Table 2, right, shows typical pumping performance when pumps run using a percent solids indicator set to turn pump off at 3.5% solids. **Controlling sludge pumping with a suspended solids setpoint results in 600 less gallons of sludge pumped – and three hours less of pumping time – per day.**



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