Sludge Blanket Monitoring

Partech Instruments is a specialist company providing analysers and instruments for monitoring and control in; wastewater, raw water, industrial effluent and surface water applications.

Whatever the application and whatever the location, Partech will supply an effective and efficient service and a support package tailored to suit the customer

Continuous monitoring of the sludge/water interface or sludge blanket is central to the efficient operation of clarifiers, thickeners and settlement tanks. Reliable measurement enables a control system to maintain the optimum depth of sludge in the tank. A sludge interface that is too high can result in pollution incidents caused by carry-over from a final settlement tank into the final effluent channel. The sludge can also become too thick to extract easily or turn septic. If there is insufficient sludge in the tank the settlement process cannot operate correctly and the solids will tend to remain in suspension.

Historically, settlement tanks have been monitored during routine site visits using the operators judgment or a portable blanket method such as the 715 Portable Sludge Blanket Detector. This one-off method of control leaves the site exposed to changes in the process that occur when the site is unattended or while the operator is busy on other work. This means that if change happens to the site loading, the settlement tank can quickly become overloaded with sludge, or be drained of sludge entirely.

The use of Partech's Sludge Blanket monitors will enable the site operators to set maximum and minimum interface levels. The control system can then combine this with other control parameter to improve the quality of both the final effluent and the sludge that is produced.

Partech offer two alternative methods of sensing the location of the sludge/water interface in settlement tanks. It is necessary to decide on the most appropriate measurement principle for each application. Partech will offer any advice necessary to help this process.

The original method offered by Partech is the use of an infrared gap sensor that is mounted on a drum that rotates as the sensor tracks the interface. This method is highly reliable and copes very well when the interface is diffused or air bubbles are present. There is however a requirement to regularly clean the sensor, typically once per fortnight on a final settlement tank.

Partech offer the alternative of look-down ultrasonics or sonar. Here the sensor is located at the surface of the tank and emits an ultrasonic pulse into the tank, by timing the echo from the interface the location can be determined. The ultrasonic principle is currently the method favoured by most users and by using one of our cleaning mechanisms the user need not perform any routine maintenance.

Products

- ASLD 2200 with Soli-Tech 20 Sensor
- Hawk Sonar

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Alternative Measurements

Fixed Point Detection

- 8100 Monitor
- 8200 Monitor
- Soli-Tech 20 Sensor

Portable Alternatives

- 715 Portable
- 740 Portable with Soli-Tech 10 Sensor

Publication No: 184350 Rev 01

Pre-Purchase Considerations

To ensure reliable operation of a Sludge Blanket Monitor, care must be taken to ensure that the correct sensing technique and that the correct sensor operating range is selected. Individual product data sheets and your Partech Sales Engineer will help with this selection.

The principle areas to consider are; type of solids or process, thickness of the sludge, clarity of the supernatant and the definition of the interface.

The size and shape of the particles in the blanket will affect the measurement being made. For infrared sensors, a thick blanket will need a narrow sensor gap while a thin blanket will need a wider gap. With Sonar Transducers dense sludge will need low frequencies while thin sludge needs higher frequencies. Particle size will also have an affect on the sensor selection.

Another process parameter to consider is the settling characteristics of the sludge If the interface that is produced is very well defined with thick sludge and clear supernatant the measurement is relatively straight forward, however when the interface becomes diffused then much greater care is required with the selection of the measuring device.

In addition to process considerations, the physical features of the tank and site must be be taken into account. The size and shape of the tank, the presence of rotating bridges, scum boards and scrapers, will all affect the product selection.

In general on a circular tank the Sludge Blanket Monitor should be located half to two-thirds of the way from the centre to the outside of the tank. On half bridge scrapers where the bridge and scraper rotate together round the tank the sensor should be on the leading edge, ahead of disturbance caused by the scraper.

Once the instrument has been installed, the signal must be transmitted to the control system. A rotating bridge can cause problems if there are insufficient slip rings to allow hard wiring. If this is the case, then Partech can offer low power radio telemetry options.

Operational Considerations

Once the system is up and running it is important that the sensor is kept clean. The infrared sensors will need routine cleaning, typically every fortnight. This is a very quick and simple process and will easily be accommodated in any good housekeeping procedure.

The Sonar Transducers will normally be supplied with a cleaning system that prevents any build up of fats, grease or bubbles on the sonar transducer's face.

Partech's Experience

Partech have been designing, promoting and maintaining Sludge Blanket Monitors for in over 30 years. This experience combined with a product range that includes portable, fixed point and continuous monitors using Infrared and Sonar technologies makes us the leading supplier in this field.

We are happy to review your application in detail and will conduct a full site survey to ensure that you can purchase the correct instrument, first time. Please call us so that we can help.

PARTECH instruments
Partech (Electronics) Ltd
111/113 Charlestown Road
Charlestown, St Austell
Cornwall, PL25 3NN UK
Tel: +44 (0) 1726 879800
Fax: +44 (0) 1726 879801
Email: info@partech.co.uk
Web: www.partech.co.uk