Smart Storm Sludge Blanket Monitor

Installation and Operation

The Ultrasonic Transducer is immersed just below the surface of the water and pointed directly at the bottom of the tank. The Avocet uses time of flight echo processing and advanced algorithms to lock on the true sludge interface level and ignore the floating solid particles and troublesome rag layers. The unique algorithms have been designed to automatically filter all floating particles and electrical noise interference for unmatched performance.

A simple 3-button keypad is used by the operator to input the tank depth. The Avocet automatically does the rest with it's advanced echo processing and signal gain adjustment. The LCD screen displays the echo profile for visual confirmation of the sludge level relative to the tank bottom. A 4-20mA signal is provided proportional to the sludge level for SCADA input.

To overcome build up of solids on the sensor an air purge facility removes debris and reduces the need for continual maintenance.

Alarm states can be programmed for sensor failure/scum detection and high level sedimentation. An optional data storage facility enables the operator to observe the sedimentation performance over any historical period.

The Avocet sets itself apart from other sludge blanket monitors by using extremely high ultrasonic frequencies of 1.1 MHz, and coupled with advanced signal processing, this allows the detection of very small particles even in hostile environments.

Applications

The Avocet is used to monitor and control the blanket level in settlement tanks for a wide range of industries and applications, including;

- Primary Sedimentation
- Secondary and Final Clarifiers
- Remote Settlement Tanks
- Sludge Thickeners
- DAF Tanks
- Sequential Batch Reactors (SBR)
- Lamella Clarifiers
- Counter Current Decantation (CCD) Tanks
- Mining & Process Settling Ponds and Lagoons

The Avocet is particularly suited for identifying auto-desludging and overspill alarm signals and for monitoring the general biological health of thick sludge blankets.

Benefits

- Sediment relative density throughout the tank shown on LCD display.
- Improved efficiency and control of the treatment process.
- Warning of biological upset or hydraulic imbalance.
- Reduce site operational costs significantly with improved process control.
- Reduced sensor maintenance (air purge cleaning).
- Improves health and safety as no manual readings are needed.

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Sludge Blanket Avocet

TECHNICAL SPECIFICATION

Technology/Operation	
Measuring Principle	Underwater ultrasonic sludge level measurement
Measuring Range	0.6-12 metres (2-39 ft)
Performance	
Accuracy	+/- 0.03m
Resolution	0.003m
Response Rate	Fully adjustable
Echo Processing	Sophisticated algorhithms using 32 bit Digital Signal Processing
Power Supply	115/230 VAC
Outputs and Communications	
Analogue	1 4-20mA output, 750Ω
Digital	4 SPDT programmable relays, 5A @ 230 VAC (2 user programmable, 1 purge control, 1 LOE)
Telemetry (optional)	Site specific, range up to 2 miles (3km)
Communication	Standard RS232, optional RS485
Programming	
User Interface	3-button keypad with menu driven programming
Echo Profile	Graphical LCD display of raw echo profile
Programming Security	Password protected
Data Integrity	Non-volatile RAM
Environment	
Temperature Range (electronics)	-20°C to +60°C (-4°F to +140°F)
Outdoor Rating	IP65, UL Approved Enclosure with UV Protected Clear Lid
Design	
Dimensions	280 x 219 x 156 mm (11.0 x 8.6 x 6.1 inch)
Cable Entry	8 Available for Wall Mount: 1xM12, 1xPG9, 5xM20 bottom row
Mounting	2 Fixed Holes & 1 Hanging Hole, Optional DIN Rail Tabs
Enclosure Material	Polycarbonate, flmae resistant to UL94-5V
Weight	Approximately 1.4Kg (3 lbs)
Transducer Specifications	
Standard Cable Length	20 metres (66 ft), optional custom lengths
Cable Specification	Shielded Coax Cable
Maximum Cable Run	50 metres (150 ft)
Temperature Range (Transducer)	-40°C to +95°C (-40°F to +200°F)
Dimensions	50mm diameter x 75mm length (2 x 3 inches)
Mounting	1 inch NPT Male Thread
Material	PVC Housing, IP68 Rating
Beam Angle & Frequency	6° total, 12. MHz
Cleaning	Hose Tail Air Pipe Connector for Air Purge
Cleaning Frequency	User-programmable, 1-720 minutes (12 hours)
Weight	Approximately 0.5 Kg (1 lbs)

Note: In line with our aim of continuous product improvement, these specifications are subject to change at any time without notice. Smart Storm take no responsibility for the use of these figures. All figures quoted are based on test conditions and may be subject to variation due to environmental conditions.