Comprehensive Flow Monitoring from ADS

Comprehensive flow monitoring involves subdividing a sewershed into small and uniformly-sized meter basins to facilitate RDII volume and sewer operational capacity measurement at each metering point. This allows for distinguishing the causes from the symptoms. If the basin size is small enough, RDII in collection systems can follow Pareto’s 80/20 principle. This principle indicates that 80% of the total volume of RDII entering a collection system will enter into just 20% of the system. Therefore, rehabilitation can be performed on a smaller portion of the system, saving time and expense.

FlowShark Triton

This multiple technology flow monitor will power almost every available sensor technology that is used in wastewater applications today. It is the most versatile and competitively-priced, multiple-technology flow monitor on the market. The three multiple technology sensor options available in the FlowShark Triton include a Peak Combo Sensor, a Surface Combo Sensor, and an Ultrasonic Level Sensor (see inside for technology and specifications). This array of monitoring technologies provides a fit-for-purpose monitoring platform.

The FlowShark Triton is also adaptable to a wide range of customer applications and budgets. It can be configured as an economical single sensor monitor or dual sensor monitor. It offers a longer battery life and fewer parts for a more reliable system. This provides a lower purchase price and a lower lifetime ownership cost. The FlowShark Triton has the lowest power cost per data sample of any Intrinsically Safe flow monitor available.

FlowShark Triton Features

- Versatile and durable multiple technology sensors
- Two sensor ports supporting 3 interchangeable sensors providing up to 6 sensor readings at a time
- Single or dual pipe/monitoring point measurement capabilities
- Wireless or serial communication for field versatility
- Industry-leading battery life with a GSM/GPRS wireless connection providing up to 15 months at the standard 15-minute sample rate (varies with sensor configuration)
- External power option available with an ADS External Modem Unit (EMU) or External Modem Unit/Multiplexer (EMU/MUX) and 12-volt DC power supply
- Modbus protocol enabling Telog® RU-33 units and RTUs, such as those supporting SCADA systems, to obtain available data
- Monitor-Level Intelligence (MLI®) to improve accuracy and allow the FlowShark Triton to operate in a wide range of hydraulic conditions
- Superior noise reduction design for maximizing acoustic signal detection from depth and velocity sensors
- Five software packages for accessing flow information: Qstart™ (configuration and activation); Profile® (configuration, data collection, analysis, and reporting); IntelliServe® (web-based alarming); Slicer.com® (I/I analysis); and FlowView Portal® (online data presentation and reporting)
- Intrinsically-Safe (IS) certification by IECEx for use in Zone 0/Class I, Division 1, Groups C & D, ATEX Zone 0, and CSA Class 2258 03
- Thick, seamless, high-impact, ABS plastic canister with aluminum end cap (meets IP68 standard)
- Protective dome for circuit board to limit exposure of electronics when opening the canister or changing the battery

Specifications subject to change without notice.

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### Multiple Technology Sensors

The FlowShark Triton features three depths and two velocities with three sensor options. Each sensor provides multiple technologies for continuous running of comparisons.

#### Peak Combo Sensor
Dimensions: 6.76 inches (172 mm) long x 2.03 inches (52 mm) wide x 0.83 inches (21 mm) high

This versatile and economical sensor includes three measurement technologies in a single housing: ADS-patented continuous wave peak velocity, uplooking ultrasonic depth, and pressure depth.

**Continuous Wave Velocity**
- Range: 30 feet per second (9.1 m/s) to ≈ 30 ft/sec (9.1 m/s)
- Resolution: 0.01 feet per second (0.003 m/s)
- Accuracy: +/- 0.2 feet per second (0.06 m/s) or 4% of actual peak velocity (whichever is greater) in flow velocities between -5 and 20 ft/sec (-1.52 and 6.10 m/s)

**Uplooking Ultrasonic Depth**
- Performance of up to 15 degrees from the center of the invert; up to 30 degrees with Silt Mount Adapter
- Operating Range: 1.0 inch (25 mm) to 5 feet (152 cm)
- Resolution: 0.01 inches (0.254 mm)
- Accuracy: 0.5% of reading or 0.125 inches (3.2 mm), whichever is greater

**Pressure Depth**
- Range: 0-5 PSI up to 11.5 feet (3.5 m); 0-15 PSI up to 34.5 feet (105.5 m); or 0-30 PSI up to 69 feet (21.0 m)
- Accuracy: +/- 1.0% of full scale
- Resolution: 0.01 inches (0.25 mm)

#### Surface Combo Sensor
Dimensions: 10.61 inches (269 mm) long x 2.03 inches (52 mm) wide x 2.45 inches (62 mm) high

This revolutionary new sensor features four technologies including surface velocity, ultrasonic depth, surcharge continuous wave velocity, and pressure depth.

**Surface Velocity**
- Minimum air range: 3 inches (76 mm) from the bottom of the rear, descended portion of the sensor
- Maximum air range: 42 inches (107 cm)
- Range: 1.00 to 15 feet per second (0.30 to 4.57 m/s)
- Resolution: 0.01 feet per second (0.003 m/s)
- Accuracy: +/- 0.25 feet per second (0.08 m/s) or 5% of actual reading (whichever is greater)

**Ultrasonic Level Sensor**
Dimensions: 10.61 inches (269 mm) long x 2.03 inches (52 mm) wide x 2.45 inches (62 mm) high

This non-intrusive, zero-drift sensing method results in a stable, accurate, and reliable flow depth calculation. Two independent ultrasonic transducers allow for independent cross-checking.

**Ultrasonic Level Sensor**
- (See Ultrasonic Depth Specifications Above)

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### Product Specifications

- **Connectors**
  - U.S. Military specification MIL-C 26482 series 1, for environmental sealing, with gold plated contacts
  - Modbus ASCII
  - Modbus RTU
  - Telog RU-33

- **Intrinsically Safe Certification**
  - Certified under the ATEX European Intrinsically Safe standards for Zone 0 rated hazardous areas
  - Certified under IECEx International Electrotechnical Commission Explosion Proof Intrinsically Safe standards for use in Zone 0/Class I, Division 1, Groups C&D rated hazardous areas
  - CSA Certified to Class 2258.03 - Process Control Equipment, Intrinsically Safe and Non-Incendive Systems - For Hazardous Locations, Ex ia IIB T4 Ga

- **Other Certifications/Compliances**
  - FCC Part 15 and Part 68 compliant
  - Carries the CE mark
  - ROHS (lead-free) compliant
  - Canada IC CS-03 compliant

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### ADS FLOW MONITORING APPLICATIONS

#### Orange County, California
Investing $5.5 million in an updated strategic plan based on comprehensive flow and rainfall monitoring saved OCSD $46.5 million, a net savings of $41 million. The savings resulted from an improved flow monitoring plan that, acknowledging the impact of RDII, involved locating 150 flow monitors in equivalent-sized basins with proper hydraulic isolation.

- **Examples of Return on Investment Using ADS Products and Services**
  - Saved $41 million using a strategic monitoring plan

#### City of Los Angeles, California
Investing $4.5 million calibrating its hydraulic model during wet weather and then recalibrating during dry weather flow conditions saved the city $498 million in capital project eliminations and deferments, generating a 100-fold return on investment.

- **Examples of Return on Investment Using ADS Products and Services**
  - Saved $498 million in capital project eliminations and deferments costs

#### Belmont North, Indianapolis, Indiana
Investing approximately $650,000 in flow monitoring and $1 million in rehabilitation saved Indianapolis over $7 million in proposed relief line construction costs. This also reduced the contract period by 3 years and virtually eliminated basement flooding.

- **Examples of Return on Investment Using ADS Products and Services**
  - Saved $7 million in proposed relief line construction costs