Introducing... FilterSmart™

FilterSmart™ is an application specific graphical user interface for the industry leading EchoSmart Interface Level Analyzer.

Make Your Backwash FilterSmart™

Because what you don’t know CAN HURT YOU

Media Expansion
In-Filter Backwash Turbidity
Filter Water Level
Media Level & Loss

ATI ANALYTICAL TECHNOLOGY, INC.

Entech Design
**How Backwashing CAN HURT YOU!**

Backwashing typically results in little loss of water supply to the plant. Water is simply recycled to the head of the plant. So, what’s the big deal? The “skunk in the woodpile” is that your plant loses 100% of the cost of processing the water allocated to backwashing - typically 2% to 3% of annual production.

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**For Effective Backwashing at the Lowest Possible Cost - Optimize Media Expansion while Reducing Water Usage with FilterSmart!**

This filter was backwashed with a good rate of expansion and was clean with only six minutes of High Rate Wash - as indicated by Backwash Turbidity of 15 ntu. The operator did not have the benefit of a continuous, in-filter turbidity measurement and continued the high rate wash for an additional six minutes at a cost of an additional 48,000 gallons of wash water and no increase in cleaning effect.

**Bottom Line - Media Expansion and Backwash Turbidity work hand-in-hand to assure consistent, optimized filter cleaning at the lowest possible cost. Only FilterSmart offers the solution!**

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**Why Media Expansion Matters**

Media expansion is crucial to effective filter cleaning. Expansion occurs when the upward flow of water puts media in suspension typically 30% to 50% above the static bed depth. When properly expanded, media grains circulate aggressively producing an optimum rate of particle collision, also referred to as “scrubbing”. If the expansion rate is too low, the scrubbing effect is reduced and material bound to media grains is not effectively released. If the rate of expansion is too great, the opposite occurs and there is the added possibility of washing media out of the filter. With optimal media expansion, the filter can be properly cleaned with the lowest use of processed water, energy costs and manpower.
FilterSmart is the only instrument bundle designed specifically and uniquely for filter backwashing. It combines two sensors with the FilterSmart application-specific controller to give your operator four measurements that are essential to cost-effective and efficient filter cleaning.

FilterSmart provides four essential backwash control measurements at less than the cost of other suppliers’ backwash turbidimeters alone. The data at right is from a live performance comparison conducted by a surface water treatment plant in California.

Our Factory Remote Service puts every FilterSmart system in the reach of our expert engineers and service technicians for optional instrument commissioning and follow-on service at a fraction of the cost of field services.
# Specifications

## Smart Sensors

**Media Level & Expansion**
- **Measurement Principle**: Underwater acoustic
- **Range**: 1.0 to 32 ft. (0.305 to 10.0 m)
- **Resolution**: 0.12 in. at 10.0 ft. (3.05 mm at 3.05 m)
- **Accuracy**: 0.1 ft at 10.0 ft. (0.35 m at 3.05 m)

**Turbidity**
- **Measurement Principle**: 90 degrees scattered light, pulsed LED
- **Range**: 0-50 NTU
- **Repeatability**: 1% @ 50 NTU
- **Accuracy**: 0.1 ft at 10.0 ft. (0.35 m at 3.05 m)

**Water Level**
- **Measurement Principle**: In-Air acoustic (ultrasonic)
- **Range**: 1.0 to 12.5 ft.
- **Resolution**: 1 cm

## Controller

- **Ambient Conditions**
  - **Operation**: -40° to +140°F (-40° to +60° C)
- **Power Requirements**
  - 100 to 240 VAC, 50/60 Hz - 1A
  - Power 65 W (fused)
  - Optional: 24VDC
- **Display**
  - Graphical backlit monochrome screen
  - Resolution: 320 x 240 pixels
  - Viewing Area: 2.6 x 3.45 in (92 x 122 mm)
- **Communications**
  - RS-485 Serial -MODBUS RTU
  - RS-232

- **(3) 4-20mA Output**
  - (1) Media, Level & Expansion
  - (1) Level Measurement
  - (1) Turbidity

- **Integral RF Module (Optional)**
- **Relays (Optional)**
  - Four relays: 10A @ 250 VAC; 10A @ 30VDC
- **Mounting Configurations**
  - Surface and pipe mounting
- **Enclosure**
  - NEMA 4X, IP65; Polycarbonate
- **Certifications**
  - CE

## Power Supply Unit (Required only in multi-sensor network applications)

- **Ambient Conditions**
  - **Operation**: -40° to +140°F (-40° to +60° C)
- **Power Requirements**
  - 100 to 240 VAC, 50/60 Hz - 1A
  - Power 20 W - 1.34A
  - Optional: 24VDC
- **Communications**
  - RS-232 MODBUS RTU
  - RS-485

- **(3) 4-20mA Output**
  - (1) Media, Level & Expansion
  - (1) Level Measurement
  - (1) Turbidity

- **Integral RF Module (Optional)**
- **Mounting Configurations**
  - Surface and pipe mounting
- **Enclosure**
  - NEMA 4X, IP65; Polycarbonate
- **Certifications**
  - CE

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FilterSmart is an EchoSmart application specific measurement and control package designed expressly for granular media filters.

**Systems are available as standalone instruments or highly cost-effective multiple sensor networks!**

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