NEW TO THE INDUSTRY

MEDIA EXPANSION MEASUREMENT ARM

&

PORTABLE SLUDGE INTERFACE DETECTOR

RAVEN
PROCESS CONTROL INSTRUMENTS
Prior to the backwash cycle, the infrared sensor probe is lowered to rest on top of the media bed as shown in Stage 1 below. With the cable taught, it is fastened to the sliding marker block. The sliding ruler is positioned so that the marker block is on zero. This is the reference point for measuring filter bed expansion as shown below right.

At the start of the backwash, the sensor will react to the turbidity and debris being evacuated from the bed with illumination of all 20 red LED’s on the face of the meter as shown in Stage 2 below. Upon clarification of the backwash water into the waste troughs, the operator slides the marker block, with sensor cable, away from the filter to raise the infrared sensor probe with the expanding bed. While raising the sensor probe the red LED’s will begin to go out. This is the top of the expanding media bed as shown in Stage 3 below. The operator can lock the sliding marker at this point to allow the expanding media bed to catch up to the sensor probe. This procedure is repeated until the media has reached full expansion. The operator will be able to lock in on the top of the expanded media within 1/8 inch. At this point, the operator notes the point on the scale where the marker block is positioned and records the precise amount of expansion.

When the filter bed has settled, it is expected that it will be at a lower level than before the backwash. The probe is lowered back down on top of the bed by moving the marker block toward the filter chamber as shown in Stage 4. The operator can easily verify that the bed has settled to a lower point as the marker block will be in negative territory on the scale.

A pivot point connection on the measurement arm allows the operator to range the probe over 9 linear feet of expanding media in a semi-circle to verify uniformity of expansion at multiple points.

**INTERFACE DETECTOR**

Analyzing the dynamics of the expansion from within the media bed, the infrared sensor probe reports to the operator via the interface detector mounted on the Expansion Measurement Arm.

Operation of the interface detector is simple. No need to calibrate the sensor. It automatically references changes in density. A sensitivity knob fine tunes the probe. Measure the “ragged edge” on top of the expanded bed by adjusting sensitivity to “high” to determine if the top of the bed has a gradual or well defined interface. How do you interpret a gradual uneven interface over several vertical inches between the expanded bed and the wash water above?

**Infrared sensors are uniquely suited to give more than just up or down information about the dynamics of the media bed during backwash. It’s the only technology that lets you interact with the event in so many ways.**
# Media Expansion Measurement System

## Sludge Interface Detector SID-10200

**Handheld Unit**
- **Construction**: Glass-filled polyethylene
- **Width**: 4.25" (106mm)
- **Length**: 6.875" (225mm)
- **Height**: 3.00" (76mm)
- **Weight**: 27.6 oz (790g)
- **Color**: Yellow
- **Case**: 1/8" aluminum plate
- **Environmental**
  - **Moisture**: 95% (NFMA-4-4) weatherproof
  - **Temperature**: -5°F to 158°F (-25°C to 70°C)
- **Power Supply**
  - **Battery Standard**: 6 x AA cells (standard alkaline)
  - **Battery Life (Typical)**: 3 months
- **Operator Controls**
  - **Power**: on/off
  - **Tor**: on/off
  - **Hum**: volume control
- **Sensitivity**: Variable low / high
- **Indicators**
  - **Density Meter**: Sunlight visible LED lightbar
  - **Hum**: 70% max
  - **Battery Low**: Illuminates flashes
- **Calibrations**: Factory set, no field required

**Probe**
- **Model**: SID-13400 flat bottom
- **Construction**
  - **Material**: Epoxy encapsulation
  - **Technology**: IRD emitter/detector
  - **Sensor Gas**: 0.76% (200mm)
  - **Knee**: Polyurethane
  - **Range Min**: 100-2,000 mgl (volumes)
  - **Range Max**: 100-10,000 mgl (volumes)
  - **Height**: 2.5 (63.5mm)
  - **Width**: 3.25 (83mm)
  - **Depth**: 3.25 (83mm)
  - **Cable Envelope**: 4.75 (120.5mm)
  - **Weight**: 21.5 (610g)
- **Color**: Black

**Cable Assembly**
- **Environmental**
  - **Moisture**: 95%
  - **Temperature**: 15°F to 140°F (-25°C to 60°C)
- **Length**: 20 to 50 ft (6.1M to 15.2M)
- **Markings**: 1 ft increments / depth markers
- **Replacement Parts**
  - **Cable Assembly with Probe**
    - 20 ft: P/N 5-10423-20
    - 30 ft: P/N 5-10423-30
    - 40 ft: P/N 5-10423-40
    - 50 ft: P/N 5-10423-50

## Expansion Measurement Arm SID-10500

**Arm**
- **Construction**: Aluminum anodized
- **Width**: 1" (25.4mm)
- **Height**: 40" (1.015m)
- **Weight**: 3.5 lbs (1.59kg)
- **Color**: Grey

**Marker Block**
- **Construction**: Aluminum anodized
- **Material**: Stainless steel
- **Color**: Grey

**Tool Holder**
- **Construction**: Plastic

**Rail Clamp**
- **Construction**: Aluminum anodized
- **Marking**: Single thumbscrew
- **Max Diameter**: 1.50"
- **Max Rail Diameter**: 2.50"

**Pulley**
- **Construction**: Plastic with ball bearing
- **Diameter**: 1"