



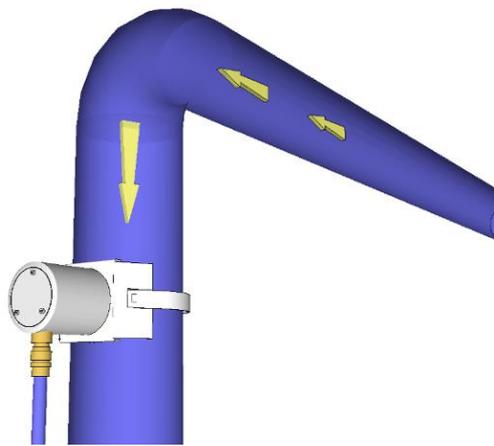
Real Time Acoustic Sand Monitoring



SMS provides sand monitoring using best in class, field proven technology. After extensive testing of acoustic monitoring systems, we identified the instrumentation to give our clients the edge they require.

System Overview

SMS supply single, dual, and quad sensor instrumentation system options. Custom configurations are available on request. SMS combination of unparalleled sand services field experience combined with our class leading acoustic detection system offers the best acoustic sand monitoring package on today's market.



Features

High Sensitivity

- Instantaneous response to sand production

Ideal Solution for HP/HT Applications

- Provides early identification of sand productions

Ease of Installation – Non-Intrusive

- Mounted externally on a pipework

Data Storage and Communication Standards

- Up to 9-90 days in flash memory
- Two wire RS485, Modbus RTU, baud rate configurable

Benefits

Increased Safety

- Early identification of sanding events allowing informed decisions to be made

Reduced Costs

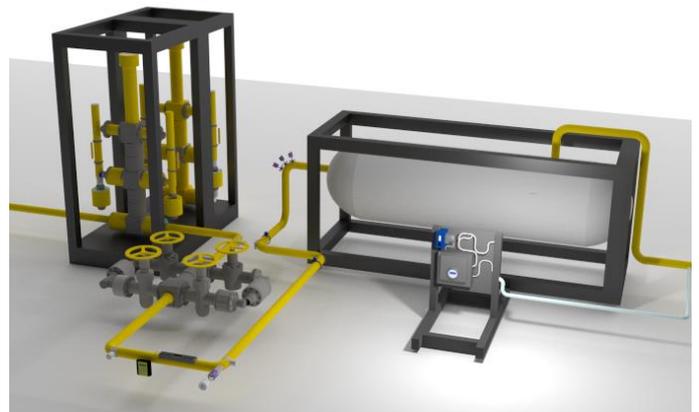
- Minimal maintenance required

Repeatable and Reliable

- Reliable method of tracking sand production

Remote Monitoring

- SMS engineers can monitor equipment remotely when required



Sense



Understand



Perform

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Real Time Acoustic Sand Monitoring

Specifications

Functional Characteristics

| | |
|-------------------------------|--|
| Particle detection limit..... | 15-25µm varies with flow regime, velocity, viscosity etc |
| Output..... | grams/second (g/s) |
| Pipe Dimension..... | ≥2" |
| Uncertainty..... | Down to +/- 5%, depending on flow regimes and calibration level. Can be configured as a sand indicator, indicating whether there is no sand, some sand or excessive sand production or fully calibrated for accurate sand rate |
| Flow Velocity..... | Min. 1m/s for most flow regimes |

Detector Unit

| | |
|-------------------------------|--|
| Power Consumption..... | Max. 0.6W |
| Supply Voltage..... | 11-18VDC (supplied with 24VDC via safety barrier) |
| Ex Classification..... | EEx ia IIB T5 |
| Location..... | Hazardous area, Zone 0, 1 or 2 |
| ATEX Certification..... | NEMKO 02 ATEX 110 |
| CSA US Ex. Certification..... | Certificate of Conformance 1299771 |
| Pipe Surface Temp. Range..... | -40°C to + 290°C (with high temperature housing) |
| Ambient Temp. Range..... | -40°C to + 80°C |
| Weight..... | 3.0kg |
| Dimensions..... | 88mm x 100mm |
| Ingress Protection..... | IP67 |
| Installation..... | Banded onto pipe |
| Material..... | Stainless Steel 316 |
| Communication..... | Proprietary serial SW protocol overlaid on power cable |
| Power Consumption..... | Max. 0.6W |

Field Cables

| | |
|-----------------|--|
| Cable Type..... | Screened twisted pair ≥ 0.75 mm ² (power & data on single pair) |
|-----------------|--|

Portable Interface Unit

| | |
|--------------------------|--|
| Installation..... | CIU / PSU / Safety barrier supplied in complete Portable Interface Unit with field cable connections terminated with Harting connectors and an RS 232 serial interface provided for laptop communication |
| Voltage..... | Input 110 VAC – 240VAC Output 11-18 VDC (supplied with 24VDC via safety barrier) |
| Weight..... | 5 kg |
| Power Consumption..... | 2W |
| Supply Voltage..... | 24VDC +/- 5% |
| Process Bus (COM 2)..... | Two wire RS485, Modbus RTU, baud rate configurable, continuous, real time data transmission |
| Process Bus (COM 1)..... | Two wire RS485, or 3 wire RS232, Modbus RTU, baud rate configurable |
| Data Storage..... | Both data and configuration parameters are stored in Flash memory. No loss of data due to power loss. Data can be stored for up to 90 days with 10 second averaging. Data is uploaded via Modbus link |
| Location..... | Safe area (within Portable System CIU housing) |

Safety Barriers

| | |
|------------------------|--|
| Type..... | MTL 7087+ |
| Ex classification..... | EEx ia IIC T6 |
| Ex Certification..... | BAS No. Ex 95C2261 |
| Location..... | Safe area (within Portable Interface Unit) |