## PipeMonit® Swarm

# Risk Based Monitoring (RBM)



In Partnership with :



ISO 9001:2015 certified | IECEx certified | Achilles JQS qualified

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## PipeMonit® Swarm RBM - Risk Based Monitoring



- Intended for monitoring of points of special interest (maximum pipe temperature 150° C)
- Shorter time period monitoring, 3 months to 2 years, in each location
- Replaces/reduces inspection
- Client will have data from the whole time period
- Logging interval can be set according to client requirement
- Easy to install, 1 day(maximum)
- Easy to move to new location
- No maintenance (except battery change every 3 years)
- Wall loss accuracy much better than inspection, 10 µm resolution





## PipeMonit® Swarm RBM - Risk Based Monitoring







- Where to use
  - Locations where client inspect periodically
  - Locations of particular interest where client wish to monitor for a shorter time period to verify degradation models or verify wall loss rates
- Value
  - Better wall loss
     accuracy/resolution
  - Correlate corrosion/erosion data with process data to get better understanding of corrosion/erosion





## PipeMonit® Swarm RBM - Risk Based Monitoring



#### How to use

Installation, done by agent/partner

- Install Swarm sensors on pipe
- Install Swarm S2 datalogger on the pipe
- Start monitoring
- Battery for 3 years
- 2 years storage capacity (one measurement per day)

Data gathering by Bluetooth, done by agent/partner

- Data gathering SWinstalled in laptop(SW will be delivered by Sensorlink)
- Connect laptop through Bluetooth to Swarm S2 datalogger
- Transfer measurement time series
- Send data to Sensorlink through e-mail

Sensorlink reporting

Move to new

- Data given by Swarm S2
  - Wall thickness time series
  - Temperature time series
- Report from Sensorlink will show
  - Wall thickness, time stamped
  - Wall loss estimates, calculated
  - Temperature, time stamped





# PipeMonit® Swarm RBM - HW system configuration









Swarm S2 Bluetooth

1-4 Swarm S2 LT sensors

Data gathering software, to be installed in laptop

PipeMonit® Swarm RBM tool





# PipeMonit® Swarm RBM - reporting



5

10

15

time axis [µs]



	0	Corrosion rate [mm/year] Thickness [mm]	
2		0	1
0	12	<ul> <li>0.070</li> <li>12.2264</li> </ul>	0 165 12 0563
		• 0 144 12 0492	± 0.124 11 9693

#### Reporting from Sensorlink

- Data given by SwarmS2 •
  - Wall thickness time series
  - Temperature time series •
- Report from Sensorlink will show •
  - Wall thickness, time stamped •
  - Wall loss estimates, calculated •
  - Temperature, time stamped •



70

70

20

80

80

90

90

25

100

100

30



# PipeMonit® Swarm RBM Business model: start up cost + pay for reports

## Sensorlink income:

- HW start up price
- Fixed price per report
  - Analysis
  - Report writing

## Agent/rep income:

- Installation service
- Moving to new location service
- Gather data from PipeMonit®
   RBM and send to Sensorlink





## PipeMonit® Swarm RBM -Benefits

• Less Capex

Sensorlink

- Low entrance price
- Easy to install, maximum 1 day
- Replace inspection/reduce inspection

- Better understanding of corrosion/erosion
  - Enables correlation between corrosion/erosion data with process data
  - Client will have data from the whole time period(Instead of getting data only from inspection date)



