

# Emerson's Roxar Sand Monitoring Optimizes Production and Reduces Risk

## RESULTS

- Case example: Production rates tuned up with 600 - 900 barrels per well per day
- Corresponding profit increase 10 - 16 mill USD per year per well (assuming USD 50 per barrel)
- Early warning saved production well and process equipment, less than 4 hours from alert to controlled sand production
- Increased sand management accuracy
- Complete status overview of all sand monitoring equipment.



## APPLICATION

Installed on production flow lines and test manifolds for upstream oil and gas production and well testing.

## CUSTOMER

Oil & Gas Operators, Engineering, Procurement, Construction (EPC) Companies

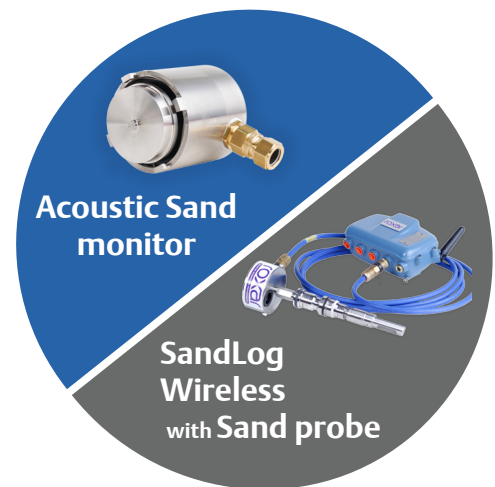
## CHALLENGE

Real-time information is a key challenge when maintaining the integrity of operator assets and optimizing oil and gas production. Many operators face an ageing flow line infrastructure combined with increased sand production on mature reservoirs. This can also lead to increased GOR (Gas/Oil Ratio) over time, higher velocities, more erosion due to produced sand, and significant damage to assets.

Sand production also changes rapidly with a need for online and wireless monitoring (with cabling costs on brownfield installations often prohibitive).

Individual sand and erosion monitoring methods (intrusive and non-intrusive) have strengths and limitations. Together, these methods can be optimized through a combined and instantaneous sand monitoring solution from Roxar.

**Roxar is the only supplier of a combined sand monitoring solution: two independent monitoring technologies (acoustic and intrusive) that can be used to correlate and validate sand production with metal loss within one integrated software solution.**



*Roxar Sand Monitoring Instruments*

**SOLUTION**

Sand and sand/erosion monitoring is normally carried out for each production flow line in order to optimize production and ensure the early identification of sand issues for each well. To this end, non-intrusive, acoustic SAM detectors respond immediately to changes in sand production and are ideal for initiating immediate warnings if sand production changes. They are also well suited to production optimization programs with the purpose of verifying estimated maximum sand-free production rates.

In addition, intrusive sand/erosion multiple element probes and Roxar’s SandLog instruments directly measure the erosive effect of sand production, providing a good indication of actual erosion metal loss on the piping system. The resolution of intrusive sand/erosion probes is so high that the probes are ideal for alarm and production optimization programs – for example, in combination with an acoustic SAM. It is recommended that multiple element sand/erosion probes are installed in vertical flow lines with the main advantage being a wider coverage of sand distribution inside the flow line.

**COMBINING THE TWO TECHNOLOGIES**

The non-intrusive, acoustic and intrusive sensors can both be wired to a Roxar Fieldwatch server/software to provide one integrated solution that can include other Roxar instruments. The SandLog Wireless instrument is also available as part of the WirelessHART communications standard, allowing for the combining of multiple monitoring technologies within one integrated WirelessHART system. On-line monitoring can also serve as a verification tool for operator’s down-hole sand control methodologies.

While each of the sand monitoring technologies can be used individually, a combination of the two aligned with the Fieldwatch software provides important advantages. These include:

- Immediate responses from the SAM01 system and direct erosion monitoring from the SandLog system.
- Changes in sand production measured by two independent measurement concepts. This provides enhanced verification and reliability of the results, leading to better decisions and less false alarms.

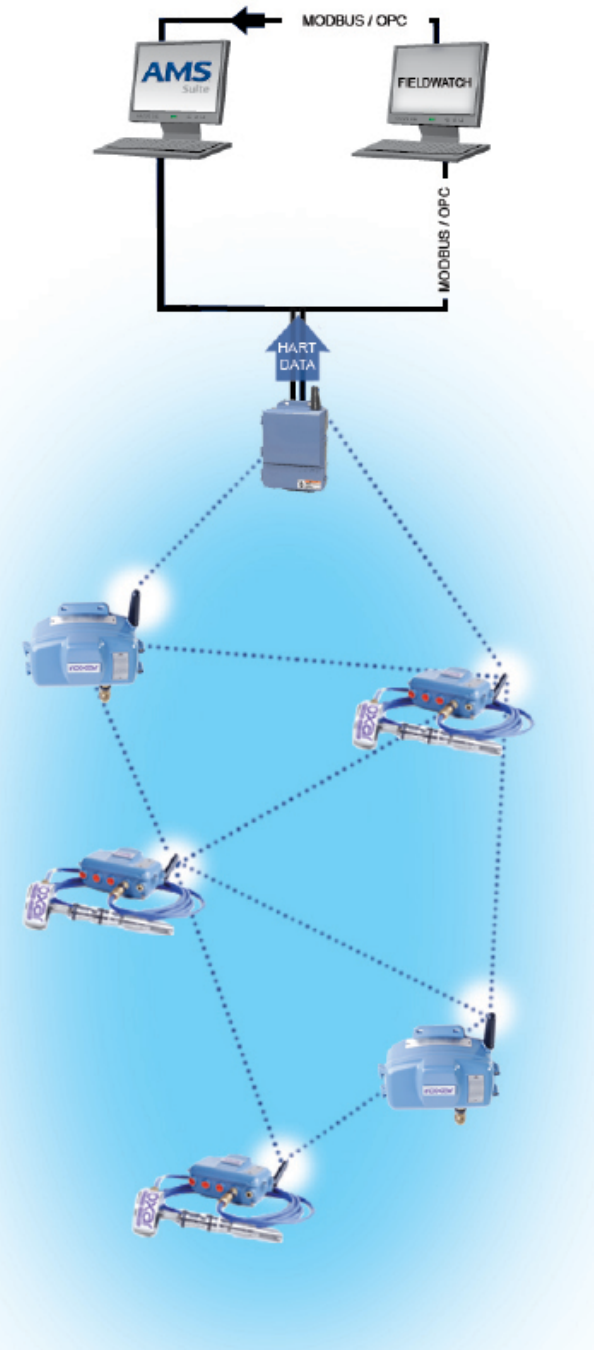
**OPTIMAL PRODUCTION & REDUCED RISKS**

Not only does the integrated system Roxar SAM01 and Roxar intrusive sand monitors generate higher confidence in the data and subsequent production decision-making, they also come with improved data interpretation, reliability and redundancy to support the optimization of sand production rates.

From optimal and increased production through to more profitable wells, the protection of process equipment, and a complete overview of all sand monitoring, Roxar Sand Monitoring provides a complete solution.

For more information:  
[www.Emerson.com/Roxar](http://www.Emerson.com/Roxar)

ROXAR CORRLOG / SANDLOG WIRELESS SYSTEM



Configuration Drawing - Wireless Integrity Control

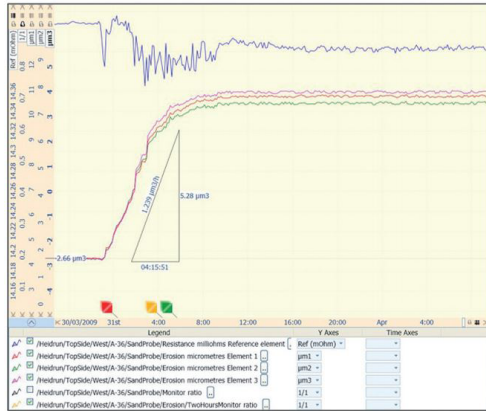


For further information, contact Roxar at +4751818800 or inquire at [Info.Roxar@emerson.com](mailto:Info.Roxar@emerson.com).

**RESOURCES**

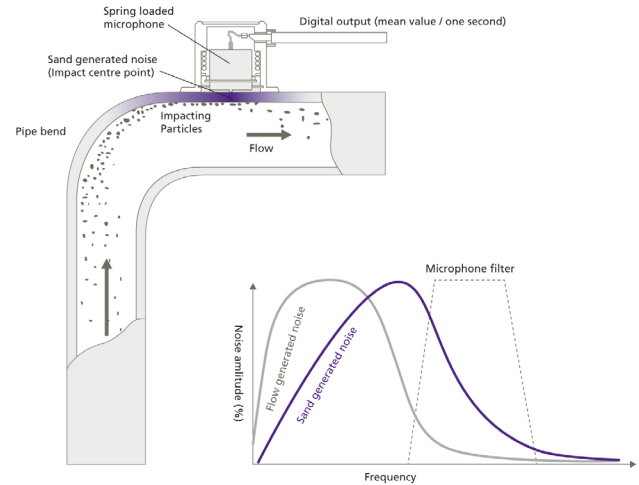
**Roxar Sand Monitoring**

<http://www2.emersonprocess.com/en-us/brands/roxar/sander-rosion/topsidesanderosion/pages/roxarsandmonitor.aspx>



*Roxar's Fieldwatch Plot Showing Sand/Erosion Probe Detection of Sand Burst. Observe that alarm triggered when sand/erosion still at nanometer level, total event including actions and verification was completed with accumulated erosion less than 6 micrometer.*

**A growing focus on safety on aging production sites globally, combined with a drive for more profitable production, makes sand and integrity management more important than ever.**



*Acoustic SAM01 Unit Installed on a Flow Line Bend*

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