

Smart oil and gas

Ex-tremely safe Big Data

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Big Data is set to change the way we work by improving operations and allowing faster, more accurate analyses which lead to more informed decisions being made. Confident decision-making could in turn lead to greater efficiency, reduced risks and cost savings. While the oil and gas sector hasn't really embraced the concept yet, it could derive huge benefit from it.

Why Big Data?

According to Wikipedia, "Big Data is a broad term for data sets so large or complex that traditional data processing applications are inadequate. [Its] challenges include analysis, capture, data curation, search, sharing, storage, transfer, visualization, and information privacy".

The key element is data collection. While this task may be relatively "easy"

to perform in many industry sectors, since the tools and processes are already in place in those environments, it may prove more difficult to acquire industrial data in the oil and gas sector.

Updating and upgrading operations is essential

According to a recent article in Automation World [1], "these operations are often remote and involve several different types of sensors, controllers, remote terminal units (RTUs) and flow computers – often from different companies – that house the data needed by these applications. Plus, some of the equipment in the field is ancient – a result of the "if it ain't broke, don't fix it" mindset; and, given the time period in which much of this equipment was created, it wasn't designed to share data well. On top of this, communications to these remote sites are often limited, relying on wireless telemetry systems like radio,

cellular and satellite that have limited bandwidth and high latency".

How to make oil and gas smart?

By installing sensors and controllers in pipes and wellheads, companies will be able to capture, classify and filter data in the field as well as control processes and perform quality checks. Transmitting this data to onshore and offshore facilities in real time will allow companies to monitor the wells' conditions and operations, detect problems when they arise and make real-time decisions to schedule interventions. This will prevent damage occurring in equipment and reduce the risks of failure and potential accidents.

Of course the systems that need to be put in place are more complex than is implied by the simple installation of a number of sensors and controllers to connect data and people. The entire



Oil pipes



Gas wellhead in Germany (Photo: Hartmann Valves GmbH)

workflow and communications process between the wells and pipes on one side and the facilities on the other has to be fully automated and optimized so as to set up simulation models that will in turn lead to risk mitigation and safer operations.

Smart oil and gas operations will help prevent disaster, maximize production and increase profitability while reducing operating costs.

Designed and built for Ex areas...

As is the case with larger pieces of equipment used in explosive (Ex) atmospheres, any device – from the tiniest of sensors to controllers, central processing units (CPUs) and RTUs – has to be designed and built in compliance with the very strict requirements set out in standards and specifications, most notably in IEC International Standards developed by IEC Technical Committee (TC) 31: Equipment for explosive atmospheres.

Designing and building these devices in compliance with IEC International Standards is not enough on its own. To ensure that any piece of equipment



Explosion-proof pressure transmitters (Photo: American Sensor Technologies)

meets the required criteria, it has also to be tested and certified. Products associated with a certificate of conformity satisfy the criteria for safe usage in hazardous environments.

...tested and certified by IECEx

IECEX, the IEC System for Certification to Standards Relating to Equipment for Use in Explosive Atmospheres, is the only truly international Conformity Assessment (CA) System to provide testing and certification for all items of Ex equipment and installations as well as certifying the skills and competence of individuals working in hazardous areas.

The System addresses the inspection (location and other), installation, maintenance and repair of equipment and systems and assesses the competence of personnel working in this highly specialized area.

IECEX has been endorsed by the United Nations (UN) through the UN Economic Commission for Europe (UNECE) as THE certification system for the assessment of conformity in Ex areas.

- IECEx operates the following Schemes:
- IECEx Certified Equipment Scheme
- IECEx Certified Service Facilities Scheme
- IECEx Scheme for Certification of Personnel Competence (for Explosive Atmospheres)

The System also has the IECEx Conformity Mark Licensing System which provides on-the-spot evidence that products bearing the Conformity Mark are covered by an IECEx Certificate of Conformity.

For more information: www.iecex.com

[1] "How Big Data Can Benefit Upstream Oil and Gas", Automation World, 15 May 2015