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Overcoming challenges in digitising Ex inspection systems

Did you know that many oil and gas companies still don't have effective digital management systems in place to manage their hazardous area (Ex) inspection campaigns? In today's rapidly advancing, digitised, AI world, there are still many companies who use outdated methods when managing hazardous area inspections – this should be a thing of the past, yet so many companies still rely on "manual" methods.

So, the question is: why is there a lack of knowledge in an industry that is under extreme pressure to clean up their working practices, find new ways to improve efficiencies and prevent fatal incidents? Surely by investing in a modern digital system that can detect faults, report issues, ensure maintenance tasks are being met, and collate and display detailed graphical information in easy-to-read dashboards, operatives and engineers can spot potential disasters long before catastrophic events even have a chance of developing. Let me explain why I think this lack of knowledge is so prevalent in the industry.

There are multiple standards and regulations schemes set out for the international market from governing bodies like the International Electrotechnical Commission (IEC) and ATEX, as well as NEC and OSHA in the US. However, many operatives within industry do not have the correct competency requirements, as set out in the standards, to perform their responsibilities correctly.

There are multiple courses available which are tailored to all the different skill sets within the lifecycle of a hazardous area, however with today's "Wall Street" world, the constant restraints of reduced budgets and maximising profits means one of the first areas to get cut is often external third-party training courses. Instead, inhouse training is being created, where particular areas of the standards are conveniently left out to prevent having to spend any extra money. This can lead to claims of: "Well we have been operating all these years and nothing has gone wrong YET" – one of the most dangerous phrases within the hazardous area industry!

If fully compliant inspections and maintenance campaigns were enforced, and the standards followed correctly, the time taken to perform inspections would drastically increase, and the comment "how can we do this more efficiently?" would become a priority.

Suppressed demand

Due to this suppressed demand, companies creating effective digital inspection and hazardous area management systems are faced with a limited market. So, when these digitisation companies work with their distributers, and quotes from hazardous area companies are handed over, the first thing that comes to the procurement department's mind is: how can we cut this down to match our budgetary figures? Since there is no highlighted urgency as mentioned before, the quoted digitisation system is seen as "nice to have" rather than a critical advancement in modern day safety, despite the fact that these digital systems cost less than any form of 'manual' management in the long run. The prevalent fact remains, that this "nice to have" will usually be requested to be removed from the quotation.

Willingness to change

Personnel react to change differently, and often the first reaction to change is fear of the unknown. Humans tend to not adapt quickly to change, this is another reason why companies have difficulty implementing these systems. This makes it challenging when the initial implementation of these systems happens, and this resistance does sometimes create the need for more training. However, this should not last long and once the benefits become more evident, then acceptance starts to set in; improvements can be seen, and full integration can commence.

Key benefits of digitisation

Digitisation offers numerous benefits. Firstly, digitisation enhances accessibility

and convenience by enabling easy storage, retrieval, and sharing of previous inspections records, equipment locations, relevant supporting documents, and photos within a few short clicks from one device. Digital formats eliminate the need for physical storage spaces, and allows quick searches and transfers of data, leading to significant time savings.

Secondly, digitisation promotes efficiency and productivity; automated processes, streamlined workflows, and digitised records reduce manual errors and repetitive tasks. This allows employees to focus on more strategic and value-added activities like safety, which will be discussed in a separate topic. Moreover, digitisation facilitates data analysis and decision-making. With digital data, organisations can utilise advanced analytical tools to gain insights, identify patterns, and make data-driven decisions. Digitisation and statistical analysis can be like a radar or a microscope, as they enable you to see things you wouldn't normally see. This means that you can hit the target without much reconnaissance and be much more effective and efficient. This leads to improved operational efficiency, better resource allocation, and enhanced customer satisfaction.

Additionally, digitisation enables collaboration and remote work, which can be controlled via third-party hazardous area companies, who can advise personnel of the correct course of action within minutes. Digital platforms and tools facilitate real-time communication, document sharing, and project management, allowing teams to collaborate effectively regardless of geographical locations. Lastly, digitisation supports innovation and scalability. Digital technologies provide a foundation for innovation, enabling the development of safety and better working procedures.

All these gains made through digitisation contribute to two headlining factors which massively affect the oil and gas industry:

Safety

By enabling real-time monitoring and data collection, digitisation can be vital for identifying potential safety hazards. Digital inspection systems continuously gather data on various parameters, such as failure points during inspections, comments raised in inspection check sheets, and environmental condition effects. This allows organisations to detect anomalies and take proactive measures to prevent accidents or catastrophic failures.


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Through connected systems and remote monitoring, industry leading safety professionals can monitor and manage critical processes or specific equipment from a centralised location, thus reducing the need for physical presence in hazardous environments. This minimises exposure to risks and improves overall safety.

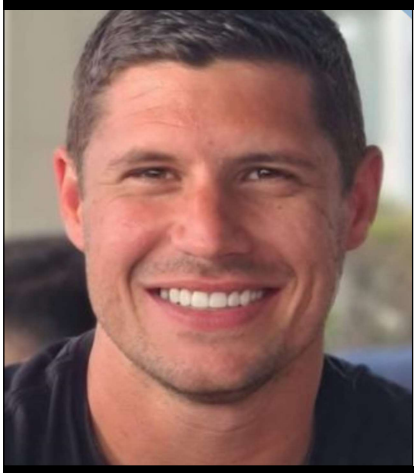
Digitisation also enables predictive maintenance which can prevent equipment failures and mitigate safety risks. By leveraging data analytics and machine learning algorithms, organisations can predict maintenance needs and address potential issues before they lead to safety incidents. This proactive approach ensures that safety-critical equipment is functioning optimally, minimising the chances of accidents.

Cost/Efficiency

Largely due to the reduction in administration time, these digital systems can dramatically reduce costs. Inspection records are automatically available, RFID tags reduce time taken to locate the equipment that is being inspected, no more time spent flipping through files to find the IECEx or ATEX certificates. It's all available in a few short clicks from a single device in your hand. If a company has multiple rigs with around 25,000 Ex tags on each, with the standards being adhered to correctly, then each item would need to be inspected every three years. After running some simple mathematics, it evidently won't take that long before the initial investment is paid back, and going forward these systems will continue to reduce company overheads even further.

Hopefully this will aid the bigger picture of what the oil and gas industry needs to see and realise; digitisation of Ex-inspection systems is a great investment into safety, efficiency, sustainability and long term cost reduction advantages. ■

About the author



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