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ITIS Acoustic Emission Leak Detection

It is known that leaking valves represent a major safety risk and are a major source of lost profits. Find leaking valves with our latest Acoustic Emissions (AE) system long before detection by conventional methods or instrumentation is now possible. Avoid product losses to the flare and Fugitive Emissions, confidently prepare for maintenance outages and avoid excessive valve damage due to prolonged leakage. Non-Intrusive valve condition monitoring and evaluation. No more costly and lengthy downtime caused by alternative invasive testing techniques such as pressure boundary testing and pressure build-up testing. Quick, easy and positive identification of leaking valves (evidence-based approach to valve management). Intrinsically safe certified device, no hot work permits required to complete survey (ATEX, CSA and IEC Ex Certified). To ensure the ongoing safety integrity, environmental protection and efficiency of your process is correctly maintained at all times, it is of critical importance that you optimally maintain your process valve population, based on risk. In managing and maintaining process valves, most operators use a computerised maintenance management system (CMMS) to implement a calendar-based approach to maintenance.



This results in regularly planned process downtime at specific time intervals for planned maintenance (such as replacing valve seats, seals, packings, etc). In most instances, this time based maintenance has very little impact on process safety and efficiency, so it's really not effective or efficient to maintain valves this way. (Lower columns in Red) Many valves are being regularly maintained at great expense, "just-in-case" rather than because a repair is actually needed. Some Valve failures can also be a direct result of maintenance interventions so, by definition, we really want to make as few interventions as possible. That's not just because every intervention needs downtime and incurs high costs, it's also about not exposing operations (and maintenance personnel) to risks and so-called "maintenance induced failures".

This means we needed a complete re-think and new approach to the way we manage and maintain valves. This approach has been proven to work for rotating equipment, so why has it not been applied with the same enthusiasm to valves? Moving to this strategy will see valves only maintained where there is measurable evidence that they are not providing their intended functions of process fluid containment and flow management. (Upper Columns in Green with red one when maintenance was really necessary)



Gathering evidence of current valve condition and performance has an added advantage if this can be done quickly, easily and without having to remove the valve from line (i.e. in-line testing). This is where an acoustic emissions survey tool comes into its own. Using a simple "touch test" to listen for high frequency sound generated by turbulent fluid flowing through a valve leak path, allows operators to find, quantify and trend valve leakage over time. Our latest system is the next generation in Acoustic Emissions (AE) valve leak detection equipment.

The ergonomic handle allows easy and comfortable one handed operation of the fully self-contained and portable device that can be used as a stand-alone unit or in conjunction with a compatible PDA with Bluetooth connectivity. The device measures the value in decibels (dB) of the acoustic emission noise between the frequencies of 60 and 600 KHz. This frequency range eliminates all audible and mechanically generated noise, which is usually of a much lower frequency.

The instrument output is displayed on a liquid crystal display in dB, with a single membrane button and rocker switch providing simple operation of the unit. Valves are monitored by placing the AE sensor on to the valve and recording the readings via the PDA which runs the software application. In the absence of a PDA readings can be recorded manually using the related forms.

The sensor is a piezoelectric transducer which detects the mechanical energy carried by the acoustic wave. The sensor requires that an acoustic couplant (silicone grease) be used to ensure efficient transfer of the acoustic signal into the sensor. The sensor is limited to a maximum surface temperature of 125°C. For any temperatures above this a wave guide attachment must be used. Waveguides are also used in areas of difficult access for the AE sensor.

The only thing you have to do is to hand over the technical details of the valve and the phase of the product which is going through.

Reliable, wireless data acquisition and storage, aligned with latest Asset Integrity Management standard. Consistent and reliable results analysis, with immediate result reporting on the device.

A range of services or studies are available, covering topics among others:

- Flare Stack Valve Leak Detection
- Optimising Maintenance with Acoustic Emissions (AE)
- Avoidance of Unnecessary Valve Repairs
- Pre-Shutdown Planning with AE
- Testing of "On/Off- & Safety Valves"
- Blow-Down Valve Management
- Hot-Tapping and Leak Seal Repair Support
- Loss Reduction Programme Support
- Monitoring of Critical Valves

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