MISTRAS A World of NDT Solutions | Products & Systems Division

PAC NEWS

PHYSICAL ACOUSTICS CORPORATION

An Authoritative Newsletter on Acoustic Emission | September, 2009, Vol. 2.1

Product Line Highlight

Intrinsically Safe Solutions

Some Acoustic Emission (AE) applications require that the equipment be connected within hazardous, gaseous environments where there is risk of ignition or explosion. It is important to use AE equipment that has been certified as Intrinsically Safe (IS) for use in these environments. Intrinsically safe solutions limit the amount of energy into the hazardous area to prevent the possibility of a spark that could ignite gases and liquids.

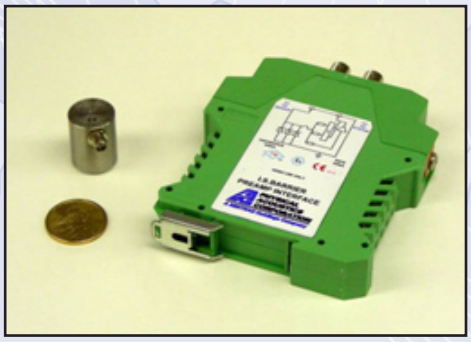
Featured IS Products

Introducing our 1281 Line of IS Sensors and Preamplifiers

Physical Acoustics (PAC) line of "Certified", IS Products operate within the highest and most hazardous gas groups, allowing them to be used in any hazardous environment requiring IS certified equipment. One of our exciting new products is the 1281 family of Intrinsically Safe Sensors and Preamplifiers.

This family of sensors, preamplifiers and barriers connect directly to a standard Acoustic Emission system's AE channel inputs, powered directly from the phantom power supplied from the AE system, and operating within the full AE system dynamic range of 0 – 100dB. The AE system and IS barrier is located in the "Safe" area, while the AE sensor and preamplifier is located in the hazardous area. An impressive feature of the 1281 family is the low power, miniature integral preamplifier inside the sensor, simplifying the connection between the barrier *and* the sensor to a single coaxial cable, keeping cabling costs low. This provides a simple 2 component IS solution in a small sensor package and a DIN Rail barrier. In addition, our 1281 series sensors and preamplifiers have a built-in AST (Auto Sensor Test) allowing pulsing of each individual sensor (from the remote AE system) for assessing sensor coupling, integrity of the cable connection, and overall system verification.

Our selection of IS Sensors in the 1281 family is also very impressive, providing a standard, small IS sensor (less than an inch diameter and height) with five frequency bands (30kHz, 60kHz, 150kHz, 300 kHz and wideband). We also have an Underwater IS Sensor family with the same five frequency choices and a High Temperature Series with separate sensor and preamplifier, also with the same five frequency band choices.



Ask about our 1281 family of IS Products and you will find they are the world's simplest, cost effective IS solutions, and are directly compatible with most AE systems.

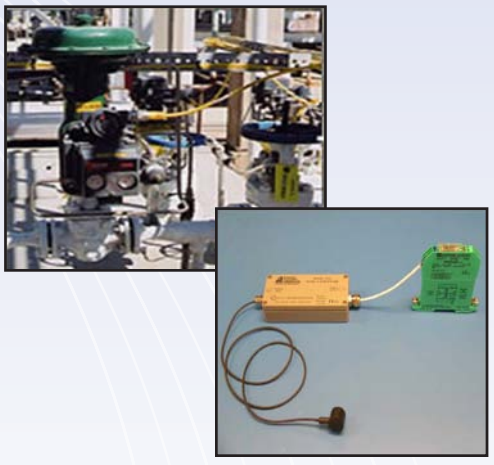
2-Wire Intrinsically Safe VPAC Subsystem:

Our VPAC Subsystem provides on-line leak monitoring with 4-20ma output for direct reading and trending into Plant DCS and SCADA systems. On-line real time valve leak detection and quantification is essential for verifying correct valve operation in critical safety systems and can save millions of dollars by identifying through-valve gas losses early.

By monitoring continuously, the plant can have instant notification when a valve sticks or leaks, saving the losses that occur between manual surveys. Often a repeat valve operation or adjustment of the limits is all that is needed to re-seat a valve properly, providing an essential safety function.

The 1278 Subsystem, configured for valve leak detection, provides an on-line alternative to the portable, walk around, 5131-VPAC, which is used worldwide for loss control in refineries, gas plants and offshore platforms. The 5131-VPAC has been known to save >$1m per annum per unit in losses.

VPAC™ estimates through-valve leakage based on measurements made using a PAC's Model 5131 portable monitor together with data on valve size, type, and differential pressure.



On-Line Valve Monitoring 1278/VPAC System

Valve-Squeak™
Valve Leak Detector

Ultra-Portable Technology

Breakthrough in Leak Detection

Designed for operation and maintenance personnel to perform frequent valve checks in their units, Valve-Squeak is an easy-to-use, through-valve loss detection system. Small enough to fit in your pocket, Valve-Squeak isolates leaks of any size in any valve and can save you thousands, if not millions, of dollars.

Find losses, before they grow

Simple Operation. . .a green light shows a 'no leak', a yellow LED bar graph shows a 'small to very large leak'. Once a leak is identified, a VPAC unit can be used for quantification. Valve-Squeak has high noise and vibration immunity and is Intrinsically Safe for use in hazardous, gaseous environments that require Class I, Div 1, IIC, T4. (Currently only meeting US certifications.)

Check a valve in 10 seconds or less!
Potentially save MILLIONS of dollars!
Advance Maintenance Planning

Application Update

Repair and Online Mechanical Integrity Monitoring of an Ammonia Synthesis Converter

A recent article published in the June, 2009 issue of "Process Safety Progress" described a series of cracks found in a Ammonia Synthesis Converter during a routine inspection. The welding methods and procedures used to address these unique problems associated with the repair of these cracks were completed and inspected using PAC's Online Acoustic Emission (AE) monitoring system.

The system was installed to monitor the mechanical integrity of the vessel while in operation and presents data locally for use by operations personnel as well as remotely via the internet for detailed analysis by engineers.

A major benefit of online monitoring is that it shows an association between defect growth and operating conditions and process information recorded by the AE system. AE data can help optimize the operating conditions to minimize or eliminate defect growth and equipment damage.

Until recently, online AE monitoring was confined to a few, specialized applications such as high energy piping in refineries and power plants. The advent of better computers and software, high speed internet connections, and more reliable instrumentation has made remote monitoring a reality. The AE specialist, in conjunction with the plant engineering specialist, can now operate the AE system and evaluate online data remotely and report results by a service website or e-mail.

For the complete paper, written by Sam Ternowchek, Vice President Online Asset Integrity Management for MISTRAS Products & Systems Division, please **email your request to:**
sales.systems@mistrasgroup.com
Subject Line:
Online Mechanical Integrity Monitoring.

Research

Fiber Bragg Grating (FBG) Development (2009)

MISTRAS Products & Systems Division will be developing a technique for testing composite wrapped pressure vessels using FBG Fiber Optic Acoustic Emission Sensors as a sub-contractor for Los Gatos Research under contract with NASA and NAVAIR.

Once this technology is developed, it can be used for structural integrity monitoring.

MISTRAS
NDT Training Institute

Acoustic Emission Training Courses

Princeton Junction, NJ - USA	
AE for Scientists & Engineers	October 6-8
AE Level I General	October 19-23
PACwin Suite	November 17-19

Upcoming World AE/ NDT Events

NDT in Canada Conference • London, ON	August 25 - 27
Composites World Expo 2009 • Schaumburg, IL	September 29 - 30
Circuit Breaker Conference • Atlanta, GA	October 5 - 9
ASNT Fall Conference • Columbus, OH	October 19 - 23
AEWG - Sturgeon Bay, WI	October 19 - 21

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