

Intrinsically safe sensing in hazardous applications

Pressure sensors are used across a wide range of process and industrial applications in increasingly challenging environments. As each new problem is addressed, the designers and engineers behind pressure sensing technology continue to enhance its capabilities to solve those problems.

However, there are some challenges that have proved particularly hard to surmount, such as providing sensors that can perform reliably in the presence of the high pressures found within applications such as wellhead automation, gas distribution and gas compressors. In these applications, safety is critical and component failure could result in a serious accident.

Many sensors would not be able to cope with the challenges of cavitation or extreme pressure spikes presented by these applications and would thus fail to deliver efficiency. These hazardous



conditions present complications to engineers, not only in ensuring safety but also in carrying out installation and replacement of components, which can be extremely difficult. Constant replacement of sensors both increases costs for operators and regularly exposes

maintenance engineers to dangerous, difficult conditions, posing a threat to safety and necessitating unwelcome periods of downtime. To respond to this need, designers have been striving to provide exceptionally robust and reliable sensors that deliver a long, uninterrupted lifespan and meet approval standards for 'Intrinsically Safe' certification.



Intrinsically Safe (IS) an established protection level defined for the safe operation of electronic equipment in various explosive atmospheres. Locations within hazardous environments are divided into Class, Division, and Group to indicate the existence of flammable gases or vapours, ignitable dust, fibres, or filings present under common or possible conditions of operation. Intrinsically Safe items are designed and certified to eliminate or encapsulate any components that produce sparks or which could generate enough heat to cause an ignition in areas that contain flammable gasses, dusts or fuels.



Gems Sensors & Controls has addressed the lack of safe components for hazardous applications such as wellhead automation, gas distribution and gas compressors with the 31CS and 32CS Heavy Duty Series pressure transmitters, which provide an Intrinsically Safe option for high pressure applications where safety is essential. The Gems solution also minimises risk and downtime during installation because the 31CS and 32CS series sensors can be fitted directly to pipe work. The compact construction of both these series makes them ideal for installation where space is at a premium. The CS Series transmitters are certified for operation in the following areas: Class I, Division 1, Groups C and D; Class I, Zone 0 Ex ia IIB T4 Ga; Class I, Zone 0 AEx ia IIB T4 Ga. These sensors are also certified for Europe (ATEX) as the 31IS and 32IS.

The 31CS and 32CS series are built using stainless steel wetted parts, with pressure sensing elements manufactured via proven Sputtered Thin Film technology, and ASIC electronics for thermal compensation and signal conditioning. The 31CS and 32CS are identical in their compact and durable design, with the exception of a thicker diaphragm and a pressure restrictor on the 32CS series. This enables the 32CS to withstand extreme pressure spikes, which improves overall reliability and stability in pulsating applications.

To make this solution available to the maximum number of applications, Gems has made the 31CS and 32CS available in a wide range of factory-configured settings, while the sensors can also be configured to the customer's individual requirements, depending on the application. Both models can withstand pressures up to 30,000psi and come with a variety of pressure ports and electrical connectors, so they are compatible with most standardised machinery.

Gems has the knowledge and experience to help OEMs at a high technical level, designing, prototyping and manufacturing

bespoke components or integrated sub-assemblies, which improves the overall design and functionality of the end product. The company has a long history of supplying OEMs with components and engineering expertise and sets extremely high standards within its design and manufacturing processes to ensure the best possible quality standards are met. With this depth of experience to draw upon, Gems continues to meet stringent regulations and specifications for safety approvals to provide new solutions that reduce risk and improve efficiency in hazardous environments.

