

Fire and Gas Systems

Fire and Gas systems are an important tool for safeguarding process plants and production facilities that handle flammable and toxic materials. In order to make a fire and gas system an effective tool, a systematic risk-based approach should be used to make key design decisions such as the quantity and placement of detectors. Kenexis helps our clients to design effective systems that minimize life-cycle cost. This assistance includes developing fire and gas detection philosophies, identification of hazard points, risk-based sensor placement, safety requirements specification, mechanical integrity program / test plan development, and validation (pre-startup acceptance testing).

Kenexis is an engineering consulting company dedicated to assisting our clients in the implementation of engineered safeguards, such as fire and gas systems. Our strong engineering background in process, loss prevention, reliability, and instrumentation and controls along with our equipment vendor independence makes us an ideally suited partner for developing and validating conceptual designs of fire and gas system.

Our skill set allows us to start with a comprehensive and systematic review of all equipment to identify hazard points, moves through risk-based determination of sensor quantity and placement using sophisticated dispersion models and quantitative risk analysis tools, continues through specification of sensor and signaling systems, and results in a validated system, including ongoing maintenance and testing programs.



KENEXIS

The *Kenexis Fire and Gas System Solution*™ helps to ensure the ongoing integrity of your fire and gas systems by risk based design and ongoing mechanical integrity programs

✓ Establish Fire and Gas System Philosophy

Fire and Gas system design begins with the development of a fire and gas system philosophy. The determination of when detection is required and what actions are required if detection occurs is complex. The process is governed by numerous government codes and regulations, industry standards and practices, and corporate guidelines—and in some cases, no guidance at all! Kenexis engineers will work with your team to develop a process for establishing a basis for fire and gas system decision making that is compliant with applicable codes, regulations, and standards and is consistent with good engineering practice.

✓ Identify Hazard Points

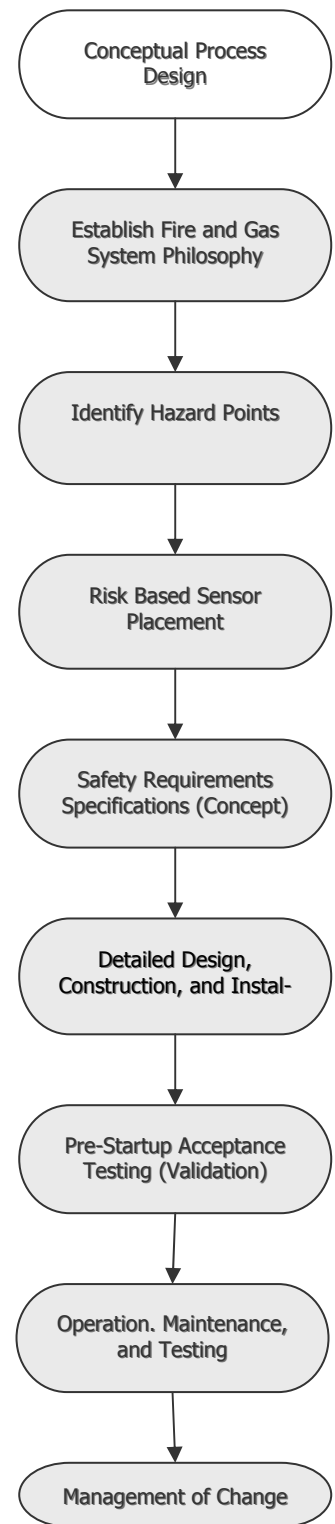
Using the fire and gas system philosophy as a basis, the next step in the lifecycle is identifying hazard points. These are equipment items and locations where there is a reasonable potential that a leak may occur and result in a significant flammable or toxic hazard. Kenexis assists in performing hazard point identification using its comprehensive and systematic process that ensures no release points or receptors are omitted

✓ Risk-Based Sensor Placement

All hazard points requiring detection are then subjected to a risk based analysis to determine the number and location of sensors required to adequately safeguard the point. This analysis may be as simple as a rule-based checklist or may require complex gas dispersion calculations. Kenexis helps its customer by facilitating the analysis process and performing dispersion models and quantitative risk analysis calculations as required. Kenexis can also assist in the establishment and verification of performance targets, such as safety integrity level, when required.

✓ Safety Requirements Specification

All of the requirements developed in the preceding steps must then be collected and presented in a format that equipment vendors, and control systems and electrical engineers will be able to provide a functioning system that meets all of the safety requirements. This specification package is often referred to as the safety requirements specification. Kenexis’ intimate knowledge of the risk analysis and safety requirements along with core skills in instrumentation and control engineering make us an invaluable resource in the development of this conceptual design package and subsequent acceptance testing of the completed system.



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