



SMARTPLANT® PROCESS SAFETY

IMPROVE SAFETY BY REDUCING RISK IN CAPITAL PROJECTS AND PLANT OPERATIONS

Intergraph® SmartPlant® Process Safety is next-generation software that streamlines process safety review and builds your corporate safety knowledge base, leading to considerable benefits for capital projects and your operating plant. By automatically identifying hazards from the plant's schematic drawings using SmartPlant P&ID, Intergraph SmartPlant Process Safety enables companies to:

- Produce consistent, high-quality HAZOP study reports for much less time and cost across the complete design
- Identify and eliminate hazards early in the design process, before change becomes limited and expensive
- Quickly and easily assess the effect of change on the safety of the entire plant
- Take advantage of action management to execute risk reductions

For capital projects, SmartPlant Process Safety leads to lower risk, improved design quality, and reduced schedules. For the operating plant, it means that through better Management of Change (MOC) processes, you can achieve improved and much faster re-HAZOPs and also increase plant safety. Powered by HAZID, SmartPlant Process Safety is an integral part of Intergraph's world-leading SmartPlant Enterprise process design and asset management suite.

Substantially Reduce HAZOP Study Time and Cost

By largely automating hazard and risk identification, SmartPlant Process Safety can easily cut the time and cost of HAZOP studies in half. Gain more focus on consistency and quality. Lower risk and use corporate rules. Improve your auditability by regulatory agencies. SmartPlant Process Safety integrates with SmartPlant P&ID and automatically traces hazard and operability issues and potential safeguards across multiple P&IDs. The HAZOP team then uses the software interactively, considering each node, deviation, and fault-consequence pair, assessing risk, evaluating safeguards,

and assigning actions. The results of previous HAZOPs are available for reference during subsequent studies, which further speeds periodic re-HAZOPs of the operating plant.

Gain a Powerful Visual Aid to Understanding

SmartPlant P&ID provides a powerful visual aid for the HAZOP study team. Information such as nodes, fault-consequence paths, and potential safeguards may be highlighted at any time to help the team evaluate risks and brainstorm for any other fault-consequence pairs. Safety logic diagrams can be automatically created from the P&ID.

Enhance Action Management with Comprehensive Change Validation

SmartPlant Process Safety enables changes resulting from the action management process to be validated before acceptance, even though the HAZOP team may have dispersed. The HAZOP team leader can re-run SmartPlant Process Safety using the latest P&IDs to produce a comparison report showing fault-consequence pairs that have been eliminated by the change and any new issues that may have been introduced.

See Thorough, Consistent, Auditable Results

Unlike conventional HAZOPs in which two teams may produce different results, hazard identification with SmartPlant Process Safety will always be thorough and consistent from HAZOP to HAZOP. Results are fully auditable, even after the team disperses, since SmartPlant Process Safety keeps a complete record of the meeting and all issues considered, whether actionable or not. SmartPlant Process Safety produces a full, conventional HAZOP report, which is configurable to company standards.

Enable Better Quality Designs and Reduced Cost of Change

Process engineers can use SmartPlant Process Safety to check for safety at any stage of the design, even to verify the P&ID on safety

practices before physical design. Improve design quality and eliminate hazards and operability issues before change becomes limited and costly. This also results in shorter HAZOP studies. SmartPlant Process Safety works with preliminary P&IDs, PFDs, and even process simulations. Pull decisions forward to reduce risks.

Build and Retain Corporate Safety Knowledge Base

SmartPlant Process Safety enables companies to capture the safety knowledge of their most experienced engineers, operations staff, and safety people into a corporate safety knowledge base for consistent reuse throughout the organization. If new types of hazards are identified during HAZOP studies, they are easily added to the knowledge base. SmartPlant Process Safety ships with a rich knowledge base of safety information about common plant items you can use across your company's plants.

Improve MOC Processes

Plant modifications are a major source of safety issues. SmartPlant Process Safety may be incorporated into MOC processes to ensure that safety of any plant modification is assessed across the whole plant before you issue work permits. SmartPlant Process Safety will assess the latest P&IDs and produce a report identifying potential hazards and operability issues introduced by the change.

Check the Safety of Your Plants Against Recently Reported Incidents

SmartPlant Process Safety provides a fast way to audit all of a company's plants to ensure they are not susceptible to recently reported incidents in similar plants.

Support Mergers and Acquisitions

Companies often take on the liabilities with process plant acquisitions, so it is imperative to ensure the plant is up to corporate safety standards at the earliest opportunity. SmartPlant Process Safety enables new acquisitions to be checked quickly against the corporate safety knowledge base as soon as the P&IDs are available.

GAIN ROI WITHIN TWO STUDIES

Contact your Intergraph representative to see how SmartPlant Process Safety can give you return on investment within the first two HAZOP studies.

REAL-WORLD BENEFITS FROM A PROCESS PERFORMANCE SOLUTION

- Identifies and eliminates hazard and operability issues much earlier in the design – before change becomes limited and expensive
- Substantially shortens the time and cost of HAZOP studies and critical path activities – enabling new projects to come to market and achieve payback
- Reduces the cost of HAZOPs as done on a periodic basis
- Improves the management of change processes – helping to save costly plant downtime
- Supports mergers and acquisitions – provides a fast process for analyzing the newly acquired plant against corporate standards for process safety
- Ensures HAZOPs are consistent – producing a full, auditable record of the team's decisions
- Captures and reapplies experts' safety and operability knowledge – making it consistently available across the corporation
- Integrates safety into a project's electronic workflow – provides a mechanism to integrate hazard identification, analysis of likelihood versus severity, and risk reduction through the standardized manner in which information is entered
- Build and add your own rule for customer-specific processes and/or equipment
- Divide in nodes
- Use the P&ID as a visualization aid

ABOUT INTERGRAPH

Intergraph is the leading global provider of engineering and geospatial software that enables customers to visualize complex data. Businesses and governments in more than 60 countries rely on Intergraph's industry-specific software to organize vast amounts of data into understandable visual representations and actionable intelligence. Intergraph's software and services empower customers to build and operate more efficient plants and ships, create intelligent maps, and protect critical infrastructure and millions of people around the world.

Intergraph operates through two divisions: Process, Power & Marine (PP&M) and Security, Government & Infrastructure (SG&I). Intergraph

PP&M provides enterprise engineering software for the design, construction, and operation of plants, ships, and offshore facilities. Intergraph SG&I provides geospatially powered solutions to the defense and intelligence, public safety and security, government, transportation, photogrammetry, utilities, and communications industries.

For more information, visit www.intergraph.com.

