



SMARTPLANT® P&ID

CREATE AND MANAGE YOUR PLANT CONFIGURATION FROM CONCEPT TO OPERATIONS

A key part of Intergraph® SmartPlant® Enterprise, SmartPlant P&ID is an asset-centric, rule-driven engineering solution that can help to efficiently create, maintain, and improve plant configurations. SmartPlant P&ID helps you design and configure your plant processes using design rules that enforce engineering and customer standards. It enables you to configure the plant accurately and make the right decision early in the design cycle, increasing the efficiency of downstream design activities such as control system design and piping. Engineering decisions made in five minutes impact the 40-year life of a plant. So, early, accurate decisions are important. SmartPlant P&ID plays a key role in design, construction, commissioning, and operations, enabling plant owners to better plan for maintenance, operational tasks, and expansions or modifications. In addition, the SmartPlant P&ID data can be leveraged to plant operation-critical systems, such as control systems (SmartPlant Instrumentation) and safety with HAZOP analysis (SmartPlant Process Safety).

ADD VALUE ACROSS THE ENTERPRISE

SmartPlant P&ID offers value for all plant operations teams, such as engineering, technical services, research, environment, and inspection. It helps improve the value of your existing P&IDs by being focused on data and derived deliverables. SmartPlant P&ID streamlines data entry, identifies and resolves inconsistencies, consolidates data that may reside in various files/spreadsheets/databases, and helps you present your data in the format that best meets the needs of your specific task, lowering costs and operational risks. This is made possible by functions such as system editing, plant data editing (non-graphical interface to edit data across all P&IDs in the plant), automation, the ability to import data from spreadsheets, and the display set function, which basically queries the data and presents it in a graphical view. Our product direction is to make the software

solution task-driven, which means that depending on your login, the software will display different properties and access rights to add or change data. This greatly improves user efficiency. SmartPlant P&ID enables conversion of P&IDs created in AutoCAD, MicroStation, and other formats via SmartPlant Import Assistant and technical support services to SmartPlant P&ID. Take a test drive today at <http://testdrive.intergraph.com>.

STREAMLINE ENGINEERING TASKS THROUGHOUT THE WORKFLOW

The design rules built into SmartPlant P&ID streamline engineering tasks throughout the workflow. You can make the right decision early, reduce design iterations, and increase design quality and safety. SmartPlant P&ID Integrity, a module of SmartPlant Process Safety, enables the automatic checking of the P&ID against project standards, best practices, engineering practices, and safety aspects of the design. It greatly reduces checking time and increases design consistency. Intergraph delivers approximately 2,000 API-compliant verification rules that can be extended by users. Automation enables the user to add tasks to automate design activities, significantly improving productivity, plus link external applications from vendors or in-house development to give you a competitive edge. SmartPlant P&ID provides workshare capabilities to support multi-office project execution, and allows you to compare versions for effective management of change. SmartPlant P&ID's built-in design rules and system editing capabilities also allow fast and consistent data entry throughout a complete piping system. The rules enable design validation across the project, and allow automatic updating of the design when the design basis changes, saving a significant amount of design checking time and increasing design quality. Rules help design data consistency and accuracy, for example, checking against pipe specifications, to help increase productivity and design quality while reducing operational risks.

BENEFITS FOR EPC COMPANIES

EPC contractors can use SmartPlant P&ID to efficiently deliver a high-quality design with a competitive edge by streamlining project execution. SmartPlant P&ID helps to:

- Facilitate global worksharing for multi-office project execution and concurrent engineering, reducing hours and cost and increasing design quality (on- and off-line modes).
- Drive substantial savings during front-end engineering design, ensure accurate data and deliverables, and optimize design and review scenarios.
- Create consistent design driven by the built-in rules, streamlining the entire data checking process. Perform system editing.
- Shorten the commissioning cycle, speed time to plant startup, and provide as-built P&IDs for operations.
- Automate deliverables and automate design actions.
- Take advantage of typicals.
- Use pipe specification access and rules.
- Edit data efficiently using Plant Editing in a non-graphic environment across all P&IDs in the plant.
- Take advantage of HAZOP, logic diagrams, and action management.
- Support a hosted environment.

CREATE A HIGH-QUALITY PLANT CONFIGURATION

SmartPlant P&ID offers unique capabilities to create the plant configuration with all equipment, pipelines, and instruments, and develop a connectivity and relationship between these assets that will better verify and use the design throughout the complete plant life cycle. SmartPlant P&ID helps you create, access, and manage your data. The software focuses on the plant data instead of on drafting, with all P&ID information stored in the data model, including connectivity throughout the plant.

BENEFITS FOR PLANT OWNERS

SmartPlant P&ID helps O/Os better plan for maintenance, expansions, and modifications; manage risk-based inspection (RBI) processes; enhance plant safety; and more. You can:

- Use P&ID data in complementary operational and engineering-critical activities such as safety analysis, hydraulic analysis optimization, managing LDAR, and process optimizations.
- Automate HAZOP identifications with SmartPlant Process Safety, reducing the effort and improving the quality of the safety analysis using the corporate knowledge base.
- Facilitate better planning for maintenance and plant shutdowns, manage RBI processes by identifying critical systems and assets, and benefit from connectivity of the systems on the P&ID.
- Support the as-built project by executing projects in running plants, keeping new and existing situations separate, and consolidating them after project execution.
- Find first block valves to safely exchange assets using the connectivity and relationships in SmartPlant P&ID through automatic tagouts, supporting lockout/tagout capabilities.
- Use display sets to create deliverables to execute specific tasks such as maintenance, inspection, etc.
- Make data available via SmartPlant Explorer in an easy-to-use, safe environment.
- Conduct “what if” production scenarios to assess project capabilities.
- Check for engineering and safety practices using rules.
- Access related information for the “roadmap of the plant” with SmartPlant Enterprise for Owner Operators.
- Conduct maintenance planning and identify critical dependence of systems through the connectivity model.
- Meet regulatory agency demands and prove compliance with governmental regulations, such as OSHA, EPA, and FDA.

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 to make processes and infrastructure better, safer, and smarter. The company'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, operation, and data management of plants, ships, and

offshore facilities. Intergraph SG&I provides geospatially powered solutions to the public safety and security, defense and intelligence, government, transportation, photogrammetry, and utilities and communications industries. Intergraph Government Solutions (IGS) is an independent subsidiary for SG&I's U.S. federal and classified business.

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