

PROCESSES, POWER & MARINE SOLUTIONS AT-A-GLANCE



www.intergraph.com

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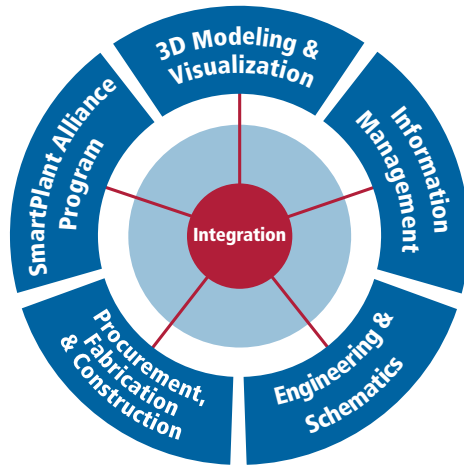
PROCESS, POWER & MARINE

SOLUTIONS AT-A-GLANCE

 INTERGRAPH®



SOLUTIONS



Intergraph® overarching solutions help our customers implement specific work processes by unifying Intergraph products, third-party products, and our customers' legacy software together as an integrated whole. Long-term strategic engineering opportunities should be addressed at the enterprise level. Intergraph has developed a low-risk, modular implementation path through the SmartPlant® Enterprise and SmartMarine® Enterprise, which include the following components:

- **3D Modeling and Visualization** – Experience economies of knowledge, quality of design, consistency of design, and the ability to leverage best practices globally
- **Information Management** – Gain a fresh, electronic approach to the creation, storage, and management of engineering information throughout its life cycle
- **Engineering and Schematics** – Cover the plant front-end and detailed design for plant configuration, control systems, and power distribution
- **Procurement, Fabrication, and Construction** – Span the complete project execution life cycle from engineering through procurement and tracking to construction
- **SmartPlant Alliance Program** – Leverage a strong value proposition with solutions provided by complementary software providers

SMARTPLANT ENTERPRISE

Intergraph's SmartPlant Enterprise solution offers a powerful portfolio of best-in-class applications, which may be deployed individually or as a flexible, integrated enterprise solution – allowing an organization to successfully unleash the untapped value often restricted by silo-centric communication and execution. Modular architecture provides scalability to create substantial return on investment while reducing risk.

SmartPlant Enterprise leverages success-critical project information and knowledge to improve and automate work processes, from the very early project phases through operations and maintenance up to decommissioning. By tackling this major “pain point,” SmartPlant Enterprise helps the industry gain multiple hidden benefits – for example, it improves engineering efficiency by up to 30 percent.

SMARTPLANT ENTERPRISE FOR OWNER OPERATORS

Building on Intergraph's experience in operations and maintenance, and Intergraph's leading market share in capital projects, Intergraph offers SmartPlant Enterprise for Owner Operators to manage the engineering design basis in operating plants. This multi-discipline package delivers an integrated engineering solution to support owner operators throughout the plant life cycle.

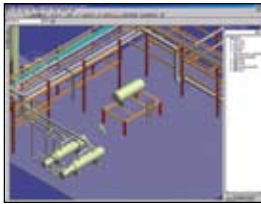
During the plant design, procurement, construction, and completion/start-up phases, Intergraph's planned, pre-configured applications include support for managing engineering and project execution work processes for owner operators. Collaboration with contractors and suppliers is supported via bi-directional data exchange mechanisms facilitating seamless handoff of workflows throughout the value chain. Data exchange with EAM systems such as SAP ensures consistency of information with maintenance. A role-based Web portal provides interoperability between operations systems.

SMARTMARINE ENTERPRISE

Intergraph's SmartMarine Enterprise includes all of the applications, features, and business value of SmartPlant Enterprise with additional integrated applications that support a full range of flexible design, fabrication, assembly, and life cycle management capabilities for ships and offshore platforms.

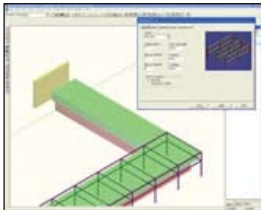
SmartMarine Enterprise helps shipyards, marine, and engineering companies with better decision-support capabilities to facilitate global design, construction, and life cycle optimization – ultimately making contractors and yards more competitive.

3D MODELING AND VISUALIZATION



SmartPlant 3D

- Offers next-generation, data-centric, rule-driven software solution
- Streamlines engineering design processes while preserving existing data and making it more usable/reusable
- Breaks through the constraints imposed by traditional plant design systems by providing advanced automation and integration capabilities



SmartPlant Layout

- Offers full integration with SmartPlant 3D
- Provides a new solution for preliminary 3D plant layout, supporting proposal development, early design estimates, and plant layout optimization
- Offers tools for automatic pipe routing, layout case management, and cost estimation through the SmartPlant Enterprise.



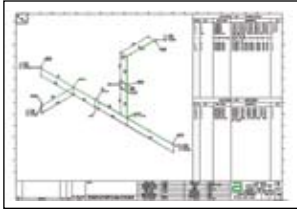
SmartMarine 3D

- Delivers proven, multi-discipline, tightly integrated environment for streamlining ship and offshore design, production, and life cycle management
- Provides automated, configurable engineering rules built within the software to ensure design accuracy and consistency, reducing design errors, changes, and rework
- Enforces design rules, resulting in increased productivity, quality, and reliability by enabling faster, more efficient creation, transfer, and review of the design and fabrication phases of the project as it develops
- Includes all of the features, functions, and business value of SmartPlant 3D



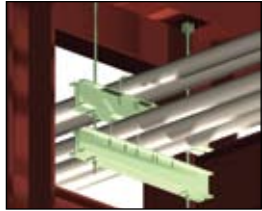
PDS®

- Delivers a comprehensive computer-aided design/engineering (CAD/CAE) application for plant design, construction, and operations
- Enables EPC firms and facility owner operators to complete projects more efficiently and reduce the total cost of construction and implementation
- Improved drawing generation with PDS Ortho-Draw



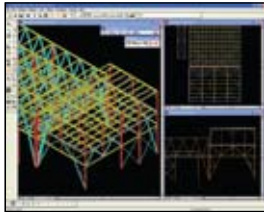
SmartPlant Isometrics

- Designs new or modifies existing pipelines or piping systems in only minutes and generates isometric drawings in seconds with ISOGEN®
- For brownfield projects, enables EPC firms or owner operators to update and document as-built piping systems electronically, aiding plant modification and reducing errors and costly rework



SupportModeler™

- Builds company standards into very flexible libraries of pipe support assemblies
- Accelerates the modeling and detailing of both standard and engineered pipe supports



FrameWorks® Plus

- Provides powerful structural modeling and drawing tool that supports your total workflow: drawing, modeling, analysis, and reporting
- Adds value to your modeling process by integrating structural tasks with the plant creation process



SmartPlant Review

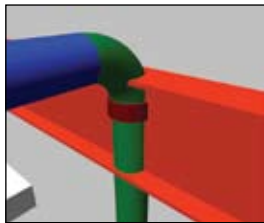
- Enables interactive review and analysis of large, complex 3D models of process, power, and marine structures
- Offers all of the visualization tools you need to review designs during engineering, construction, operations, or maintenance – in one powerful application

3D MODELING AND VISUALIZATION



SmartPlant Review Publisher

- Adds versatility to SmartPlant Review with ability to compress and distribute VUE files
- Compresses SmartPlant 3D, PDS, PDMS, MicroStation, and AutoCAD projects and schedules their economical distribution for easy viewing over the network and Web



Clash Manager

- Works with SmartPlant Review and PDS
- Enables rule-based reduction of PD_Clash collisions to only the most substantial ones
- Handles envelope production



3D Symbol Designer

- Acts as easy graphical symbol editor for SmartPlant 3D, with no Microsoft® Visual Basic® programming skills needed
- Produces Visual Basic code and Excel® bulkload sheets for SmartPlant 3D
- Includes PDS export functionality Information Management



SmartPlant Markup

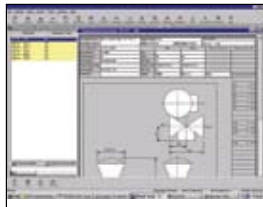
- Provides precision viewing and markup capabilities to the CAD and raster formats commonly used in process engineering applications, including MicroStation, AutoCAD (DWG, DXF), Intergraph raster, SmartPlant P&ID, and SmartSketch® files
- Functions both as standalone desktop application and in integrated environments with SmartPlant Foundation and other applications that manage documents, drawings, and markups

ENGINEERING AND SCHEMATICS



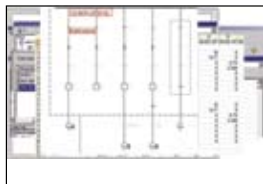
SmartPlant P&ID

- Provides an asset-centric, rule-driven engineering solution that creates and maintains the plant configuration and related process, equipment, instrumentation, and piping data for the life of the plant
- Helps create, manage, store, and access piping and instrumentation diagram (P&ID) data – the “roadmap” of the plant – to keep it accurate and up to date for the efficient design, construction, operations, and maintenance of a plant



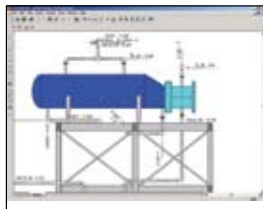
SmartPlant Instrumentation

- Offers a single source of plant information, ensuring consistency across instrument tasks and deliverables
- Prevents failure by better planning maintenance, and managing and storing the history of the control system
- Assists in planning plant expansions and control system modernizations



SmartPlant Electrical

- Addresses the electrical needs of the entire life cycle of the plant, from concept to detailed design through operations and maintenance, including start-up, continuous operation, emergencies, and shutdowns
- Generates single-line diagrams and schematics automatically, creating graphical reports based on data provided by the engineers



SmartSketch

- Offers 2D drawing generation that provides business diagramming results with high-end drawing technology
- Provides a cost-effective precision engineering and drafting technology that speeds productivity, cuts costs, and enables a sophisticated degree of automation for detail work



SmartPlant Process Safety

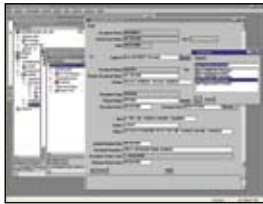
- Captures company HAZOP knowledge and consistently applies it across the enterprise and the facility life cycle
- Lowers operational risk and shortens schedules without compromising quality, and is powered by HAZID

INFORMATION MANAGEMENT



SmartPlant Foundation

- Enables electronic management of all of the plant's engineering information, integrating data on the physical asset, processes, and regulatory and safety imperatives
- Encompasses a plant's design, modifications, upgrades, and refurbishment, effectively managing the evolving plant configuration from front-end engineering design to plant decommissioning



AIM/Directa

- Addresses problems overlooked by conventional document management products
- Solves specific issues such as transmittals (controlled distribution of documents), plant structures (relating tags, assets, documents), and design tool integration (import of 2D schematics, connectivity, classifications)

PROCUREMENT, FABRICATION, AND CONSTRUCTION



SmartPlant Materials

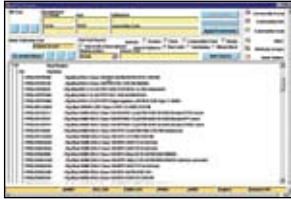
- Provides an integrated life cycle material and supply chain management solution
- Offers a common collaboration platform and project workbench for all partners in any project supply chain, whether it is an owner operator, EPC company, or fabricator
- Organizes multi-discipline hierarchical bills of material, rule-based requisition management, sophisticated purchasing management, fabrication tracking, and site management



SmartPlant Construction

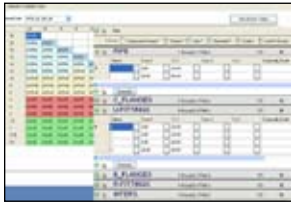
- Streamlines construction and integrates engineering to improve CAPEX efficiency
- Reduces risk and improves transparency of construction
- Improves decision-making capabilities through ad-hoc reporting on construction progress, risks, and change costs

PROCUREMENT, FABRICATION, AND CONSTRUCTION



SmartPlant Reference Data

- Provides solution for defining and maintaining the part catalog with robust, fast, and rule-driven creation and maintenance
- Handles materials standardization with a completely Web-based single database/catalog for all disciplines and tools



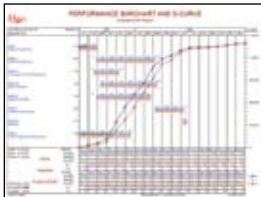
Standard Database for SmartPlant Reference Data

- Delivers a comprehensive range of commodity codes with dimensions that can be used to uniquely describe materials throughout a project life cycle
- Works seamlessly with SmartPlant 3D, PDS, and SmartPlant Materials



SmartPlant Spoolgen®

- Enables fabricators to add manufacturing and construction information to design isometrics (IDFs and PCFs) from plant design systems
- Automatically generates all necessary drawings and reports without the need for redrafting or re-entry of material data



PRISM Management Suite

- Offers the only commercial project management system that provides complete integration of project data from estimate, budget, schedule, cost control, earned value curves, and project risk in a single suite of applications

COMPLEMENTARY SOLUTIONS

THIRD-PARTY SOLUTIONS

- 3DS Net, Inc. – OrthoGen
- Det Norske Veritas (DNV) Software – Nauticus Early Design
- FALCONEER Technologies – FALCONEER

Take a Closer Look

OrthoGen delivers powerful multi-discipline drawing solutions. Automatic drawings generated from 3D models are created in a fraction of the time previously spent, and they accurately and consistently reflect model conditions.

Nauticus Early Design supplies a complete package for early design of ship hull structures. The software integrates 3D CAD and ship analysis systems. Ship designers can perform contract and classification design quickly and efficiently.

FALCONEER provides process information management plus process performance auditing and advising to make plants smarter and safer. Process information can be managed in real-time for improved productivity.

STRUCTURAL SOLUTIONS

Fabrication

- AceCad – StruCad
- Design Data – SDS/2
- Tekla Corporation – Tekla Structures

Analysis and Design

- Computers & Structures, Inc. – SAP2000
- Engineering Dynamics, Inc. – SACS
- Georgia Tech Research Corporation – GT STRUDL
- Research Engineers International – STAAD

Other Partners

- ACE Structural Engineering Applications (ACESEA) – ACE FrameWorks Plus FPL Utilities
- Dimensional Solutions, Inc. – Foundation3D

SMARTPLANT ALLIANCE PROGRAM

AND PRODUCT-SUPPORTED INTEGRATION PARTNERS

The primary goal of the SmartPlant Alliance Program is to increase the value of SmartPlant Enterprise for our clients by growing into neighboring and complementary business areas. Benefiting from SmartPlant Enterprise's open architecture, the SmartPlant Alliance Program encourages complementary solution providers to offer more extensive and valuable solutions for SmartPlant Enterprise clients. SmartPlant Alliance Members can leverage the strong value proposition of SmartPlant Enterprise for their own business. There are three types of SmartPlant Alliance Members:

- **SmartPlant Alliance Technology members** – Software and solution providers who integrate their products with SmartPlant Enterprise technology
- **SmartPlant Alliance Services members** – Consultants and service providers who offer service-centric solutions around SmartPlant Enterprise
- **SmartPlant Alliance Content members** – Companies who develop content for SmartPlant Enterprise products – for example, suppliers provide their electronic catalogs in a SmartPlant Enterprise-readable format



TECHNOLOGY MEMBERS

- ABB – ABB 800xA engineering
- CAXperts
- Emerson Process Management – DeltaV
- Engineering Planning & Management, Inc. (EPM) – GENESIS Solution Suite including the EDISON Suite
- Honeywell

Intergraph supports existing condition data capture for revamp projects:

- Hi-Cad – Z+F
- Leica
- Quantapoint
- Trimble

SERVICES MEMBERS

- Aquatech International
- CSC
- GaN Corporation

Take a Closer Look

Aquatech International offers water and wastewater treatment solutions and services to industrial and infrastructure clients. The company offers services based on SmartPlant Foundation.

CSC provides business process transformation and enterprise IT system deployment in assisting clients to realize the full potential of SmartPlant Enterprise.

GaN Corporation delivers innovative software development and information technologies to maximize clients' productivity in customizing SmartPlant Enterprise

CONTENT MEMBERS

The following companies have either current or planned activities to place their data into Intergraph formats.

Catalogs

- Carnes
- Cooper
- Lindab Safe
- Metstrut
- Schneider Electric
- SimDuct
- Spiral Manufacturing Company
- Tyco Flow Control
- Victaulic

Hanger and Support Vendor Libraries

- Anvil International
- Behringer
- Bergen-Power Pipe Supports
- Binder Group
- Carpenter & Paterson
- Hilti
- LISEGA
- PT&P
- Part Supports Limited
- Thomas & Betts

- Tri-Clover (Alfa Laval)
- Unistrut
- Waukesha Cherry-Burrell

Other

- American National Standards Institute (ANSI)
- American Petroleum Institute (API)
- American Society for Testing and Materials (ASTM)
- American Society of Mechanical Engineers (ASME)
- American Water Works Association (AWWA)
- Deutsches Institut für Normung e.V. (DIN)
- International Organization for Standardization (ISO)
- Manufacturers Standardization Society (MSS)
- Oracle
- PAS, Inc.
- Process Industry Practices (PIP)
- VGB PowerTech e.V. / KKS Power Plant Classification System

PRODUCT-SUPPORTED INTEGRATION PARTNERS

- ETAP
- IBM
- Licensed content (such as API and KKS)
- Meridium
- Microsoft
- SAP®
- And more







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.