

# LEVERAGE YOUR POTENTIAL IN ELECTRICAL DESIGN & ENGINEERING

INTERGRAPH SMART® ELECTRICAL



# ENGINEERING & SCHEMATICS

## INTERGRAPH SMART® ELECTRICAL

A safe and reliable power distribution system is fundamental. Intergraph Smart® Electrical has helped design many projects of all sizes, from small to mega projects, successfully addressing the demands of design and operations.

### **Intergraph Smart Electrical**

SmartPlant Explorer

Intergraph Smart Instrumentation

SmartPlant Isometrics

SmartPlant Engineering Integrity

Intergraph Smart P&ID

Intergraph Smart P&ID Engineer

Intergraph Smart Design Validation

SmartSketch®



### **USER INTERACTION**

Today's users expect a modern look and feel. But more importantly, an interactive solution must be easily understandable by the engineers and designers using the software. This helps users to work as efficiently as possible without the confusion of too many options or complicated, IT-type terminology.

The latest version of Smart Electrical harmonizes the user experience across the different SmartPlant Engineering & Schematics solutions.

### **TASK-BASED APPROACH**

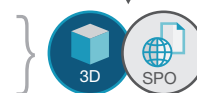
It really does not matter which task is performed. In all cases, focus is the key to best results. Connecting these tasks in a smart way will result in better deliverables that will support your facility's engineering, construction, and operations.

## THE ENGINEERING & SCHEMATICS SOLUTION SUITE MATRIX

SOLUTION	COMPLEMENTARY SMARTPLANT APPLICATIONS				
Intergraph Smart P&ID*	Process Engineer	Engineer	Engineering Integrity	Design Validation	Intergraph LiveView
Intergraph Smart Electrical			Engineering Integrity		Intergraph LiveView
Intergraph Smart Instrumentation	External Editor	Operational Excellence	Engineering Integrity		Intergraph LiveView

\*ISO 15926 Integrated Capability

All can export to Intergraph Smart® 3D and SmartPlant Enterprise for Owner Operators. An interface to PDMS is also available.



Smart Electrical is moving toward a task-based environment just as the other SmartPlant Engineering and Schematics products. This means that the interface focuses on the task at hand, for example:

**CREATE THE ONE-LINE DIAGRAM** – Generate the loads, panels, and connections in the Electrical Engineer and automatically create the one-line diagram.

**PERFORM SYSTEM ANALYSIS** – With a bi-directional interface to ETAP, you can seamlessly send data to ETAP for analysis. Retrieve the data with changes and then update the design in Smart Electrical for a consistent and validated design.

**BALANCE LOADS** – See a quick overview on the loads per bus. You can move loads around to meet project requirements.

**MAKE CONNECTIONS** – Use the reference data catalog with the cables to drag and drop to make the connections. With changes to the reference cable, automatically update the project cables.

**CREATE SCHEMATICS** – Take advantage of your best practices and/or project standards to create schematics and interface with Intergraph Smart Instrumentation for any I/O interfaces.

Smart Electrical offers a variety of capabilities depending on the type of project and scope of work. The solution is flexible and fits the project at hand in the most efficient way.

This task-based focus will increase your productivity and data quality. Productivity gains of more than 40 percent have been reported.

## ENHANCEMENTS

The latest version offers a number of significant changes to boost data quality, productivity, reliability, and safety.

One of the key enhancements is the ability to make complex graphical deliverables to meet project requirements and standards.

**DELIVERABLES** – Drawings and documents

- Create smart complex graphical drawings of any type and content
- Import external CAD and add smart electrical components and connections

Define an individual revision to an item in a registered report

## CABLE MANAGEMENT

- Create and edit parallel cables faster
- Support NEC 2011 regulations in tray fill validations
- Cable route within Smart Electrical and with the Intergraph Smart 3D interface

## ELECTRICAL ENGINEERING

- Support electrical loading cases, including multi-case load summary reports, to enable design for all operational cases

## INTEGRATION

- Retrieve electrical equipment from Smart 3D





Smart Electrical offers many productivity-boosting capabilities, such as batch operations for the creation of electrical items, cable sizing, and more, to take the manual and time-consuming tasks out of the equation.

## DESIGN RE-USE

- Bring existing designs created in traditional CAD systems into new Smart Electrical projects
- Leverage best practices to save time, lower risk, and lower OPEX costs

## BRIDGING THE GAPS

Data sharing is the cornerstone of productivity and data quality drivers. The latest version of Smart Electrical offers an Application Programming Interface (API). This offers great flexibility to tie in complementary tools, either third-party or in-house.

Smart Electrical is part of the SmartPlant Enterprise, which means it is integrated with other solutions like Intergraph Smart P&ID for loads, Smart Instrumentation for I/Os, and Smart 3D for cable routing.

## DEPLOYMENT

Smart Electrical is designed for the process, power, and marine industries and by the engineers and designers in those industries. The one thing that is sure in engineering is change, and so Hexagon PPM provides capabilities to manage and document these changes through the design process.

As projects grow larger, project execution must change to meet the needs of joint ventures, cloud deployment, and modular design. Smart Electrical is up to the task for these emerging trends.

Plant and ship owners are looking at the cost of design and construction in addition to the cost of operations. All of these can be impacted by the design. Smart Electrical facilitates best practices and rules to check against the project or company standards to meet these budget goals.

## VALUE PROPOSITION

Gain value across the workflow. Smart Electrical addresses electrical-related work processes throughout the plant life cycle – from initial load lists to one-lines, to schematics, cable routing, and construction, to commissioning and operations.

Smart Electrical enables you to execute projects in a consistent manner, yielding measurable business benefits.

TASKS	LABOR HOURS	
	Without Smart Electrical*	With Smart Electrical*
One-line Diagram	16	2
Validation	20	10
Loading Balance	5	3
Connections (Wiring/Cable/Routing)	30	2
Schematics (1)	0	5
Deliverables (Reports/Drawings)	15	5
<b>Total Project</b>	<b>86</b>	<b>27</b>

**67% SAVINGS**

\*Rounded assumptions to indicate potential savings based on market inputs

## About Hexagon PPM

Hexagon PPM is part of Hexagon (Nasdaq Stockholm: HEXA B; hexagon.com), a leading global provider of information technology solutions that drive productivity and quality across geospatial and industrial landscapes.