

# Intergraph Smart<sup>®</sup> Electrical

Leverage Your Potential in Electrical Engineering and Design



# Engineering & Schematics

## Intergraph Smart® Electrical

A safe and reliable power distribution system is fundamental. 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

- Intergraph Smart Instrumentation
- Intergraph Smart Isometrics
- Intergraph Smart Engineering Integrity
- Intergraph Smart P&ID
- Intergraph Smart P&ID Engineer
- Intergraph Smart Design Validation
- SmartSketch®

## Project Transparency and Agility with Hexagon’s Digital Backbone

Smart Electrical is part of Hexagon’s greater ecosystem that incorporates the Digital Backbone, which enables real-time connectivity amongst all of Hexagon’s Digital Project solutions as well as into the operations and maintenance of an asset. With any internet access or smart phone, project teams have access to tailored data specific to their needs with the ability to collaborate with their peers instantly. This unlocks a continuous feed of project data regardless if stakeholders are users or not.

## 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 Hexagon 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 Applications				
Smart P&ID*	Process Engineer	Engineer	Engineering Integrity	Design Validation	SDx2
Smart Electrical			Engineering Integrity		SDx2
Smart Instrumentation	External Editor	Operational Excellence	Engineering Integrity		SDx2

\*ISO 15926 Integrated Capability

All can export to 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 Hexagon Engineering & Schematics products. This means that the interface focuses on the task at hand, for example:

- **Create the Online 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% have been reported.

## Enhancements

With the integration of Hexagon's Digital Backbone, Smart Instrumentation connects to all project data and bidirectionally enables faster design iterations and closer project collaboration for an overall more informed, productive team

### **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
- Cable schedules can be sent to Smart 3D for proper tray routing allowing true cable length and tail calculations to be brought into Smart Electrical for confirming calculations

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

- Retrieve electrical equipment from Smart 3D

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 Hexagon's Digital Projects, 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 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 lifecycle – 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
Total Project	86	27

67% Savings

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

## About Hexagon

Hexagon is the global leader in digital reality solutions, combining sensor, software and autonomous technologies. We are putting data to work to boost efficiency, productivity, quality and safety across industrial, manufacturing, infrastructure, public sector, and mobility applications.

Hexagon's Asset Lifecycle Intelligence division helps clients design, construct, and operate more profitable, safe, and sustainable industrial facilities. We empower customers to unlock data, accelerate industrial project modernization and digital maturity, increase productivity, and move the sustainability needle.

Our technologies help produce actionable insights that enable better decision-making and intelligence across the asset lifecycle of industrial projects, leading to improvements in safety, quality, efficiency, and productivity, which contribute to Economic and Environmental Sustainability.

Hexagon (Nasdaq Stockholm: HEXA B) has approximately 24,5000 employees in 50 countries and net sales of approximately 5.5bn USD. Learn more at [hexagon.com](https://hexagon.com) and follow us [@HexagonAB](https://twitter.com/HexagonAB).