

STANDARD DATABASE FOR INTERGRAPH SMART® REFERENCE DATA



CONTENTS

- 1. Introduction 2
- 2. Intergraph Smart® Reference Data 3
- 3. Standard Database for Intergraph Smart Reference Data 3
 - 3.1 Piping Data 3
 - Piping Specs 3
 - List of Standards Data 4
 - List of Piping Parts 4
 - 3.2 Non-Piping Data 4
 - 3.3 Interfaces 5
- 4. Business Benefits 7
 - 4.1 Time and Cost Savings 7
 - 4.2 Data Quality 8
 - 4.3 Cost Value Proposition 8
 - 4.4 Secure Investment for the Future 8
- 5. Future Content Development Plans 9
 - 5.1 Next Releases 9

1. INTRODUCTION

Hexagon PPM has built a Standard Database for Intergraph Smart® Reference Data that delivers a comprehensive range of commodity codes for piping, ducting, electrical, equipment, structural content and hangers and supports that can be used to uniquely describe material throughout a project lifecycle. Within Smart Reference Data, the Standard Database uses sophisticated and in-depth rules to maintain commodity codes and material descriptions (see Figure 1).

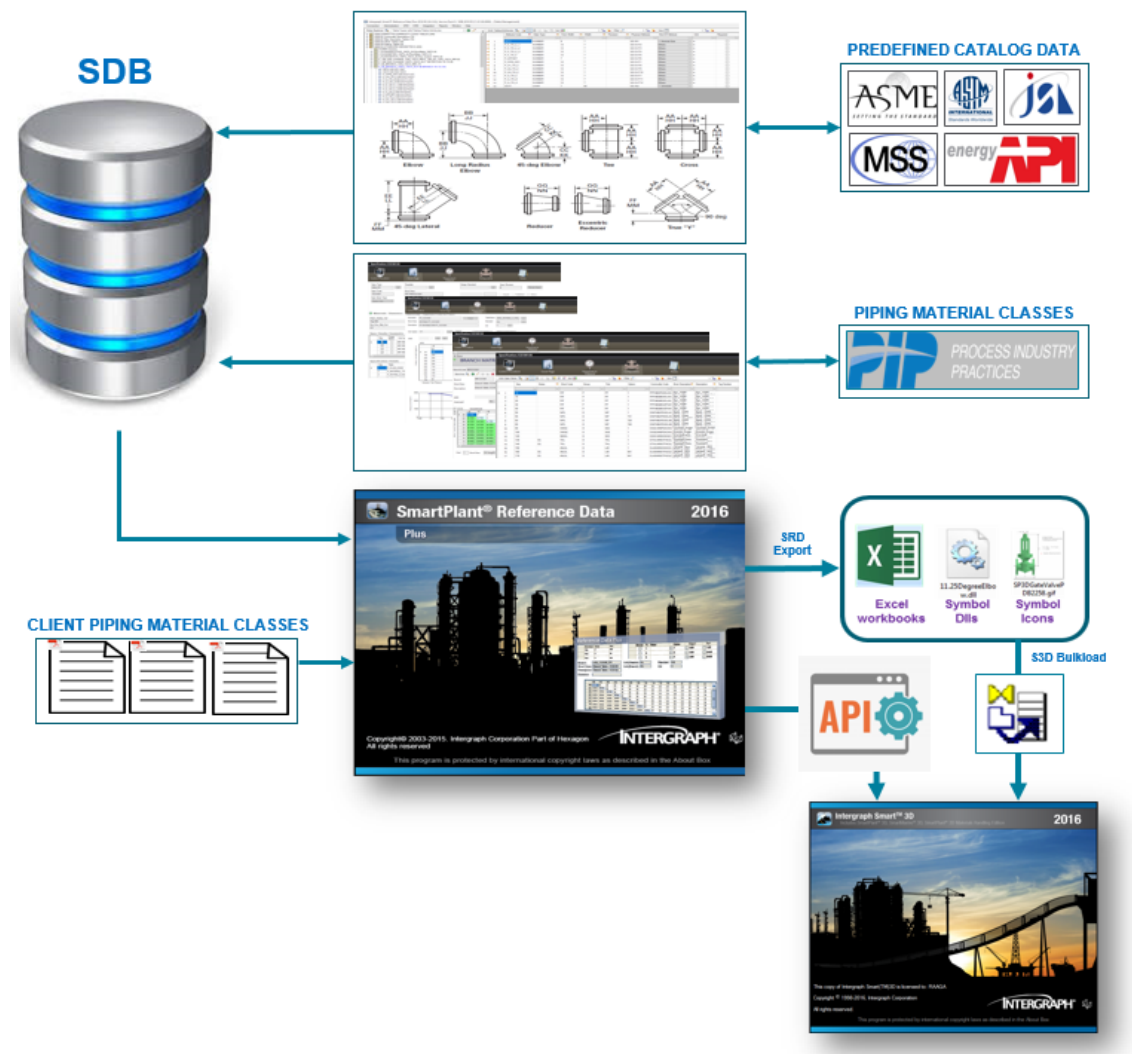


Figure 1: Standard Database for Intergraph Smart Reference Data uses advanced rules to manage data effectively.

2. INTERGRAPH SMART® REFERENCE DATA

Smart Reference Data is a user-definable, rules-based catalog and specification management tool for both projects and the enterprise. This is the tool used to manage the data in the Standard Database and is a separate product from the Standard Database. It can be used with Intergraph Smart 3D, Intergraph Smart Materials, and other enterprise software.

Smart Reference Data offers several benefits, such as:

- Providing a single point of data entry for materials and specifications, which minimizes the potential for inconsistent data across both teams and systems.
- The standardization of material classifications dramatically reduces engineering cost, especially in a global environment.
- Tight integration with design and procurement systems, which results in efficient change management, critical for successful project execution.

3. STANDARD DATABASE FOR INTERGRAPH SMART REFERENCE DATA

Standard Database for Intergraph Smart Reference Data is a preconfigured, recommended practice solution to enable rapid implementation of enterprise reference data management and/or materials management in general.

The Standard Database incorporates a comprehensive catalog of industry-standard material parts, organized and described for “out-of-the-box” use by owner operators and engineering, procurement, fabrication, and construction companies.

The content is pre-configured to enable catalog and piping specification interfaces to intelligent 3D applications. The content is certified for use with 3D design tools, schematic tools, and material management.

Comprehensive rules ensure any additional commodity codes added are unique and maintain data integrity. The commodity coding philosophy is suited to the coding of any material and is not limited to the piping discipline.

3.1 PIPING DATA

Standard Database for Intergraph Smart Reference Data is delivered with:

Piping Specs

- 79 Process Industry Practices (PIP) piping Specifications (Based on ASME B31.3).

- 8 Sample Power Industry Piping Specifications (Based on ASME B31.1)
- 6 Sample EN based Piping Specifications

List of Standards Data

- American Standards (US)
- Guobiao Standards (GB)
- Japanese Industrial Standards (JIS)
- European Norms Standards (EN)
- International Organization for Standardization Standards (ISO)

List of Piping Parts

- US Metallic Piping Parts
- US Non-Metallic Piping Parts
- GB Parts
- JIS Parts
- EN Parts
- ISO Parts
- Piping Specialty Data
- Piping Instrument Data

3.2 NON-PIPING DATA

Standard Database contains ducting, electrical, equipment, structural content and hangers and supports. This includes thousands of ducting parts, electrical parts, and cables. Also included are hundreds of equipment components and AISC structural steel cross sections. The Hangers and Supports are industry generic and applicable to process, power, onshore, offshore, and pharma applications. Some of the sample support types are shown below.

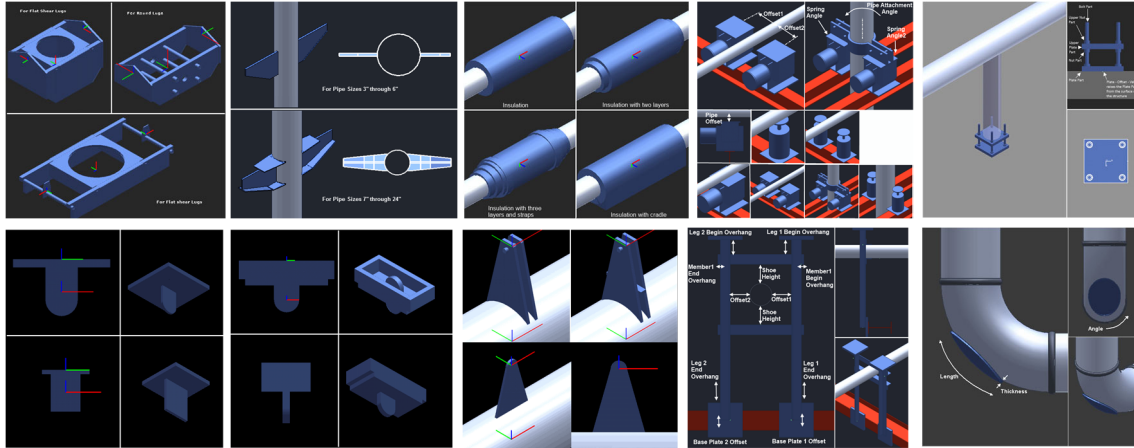
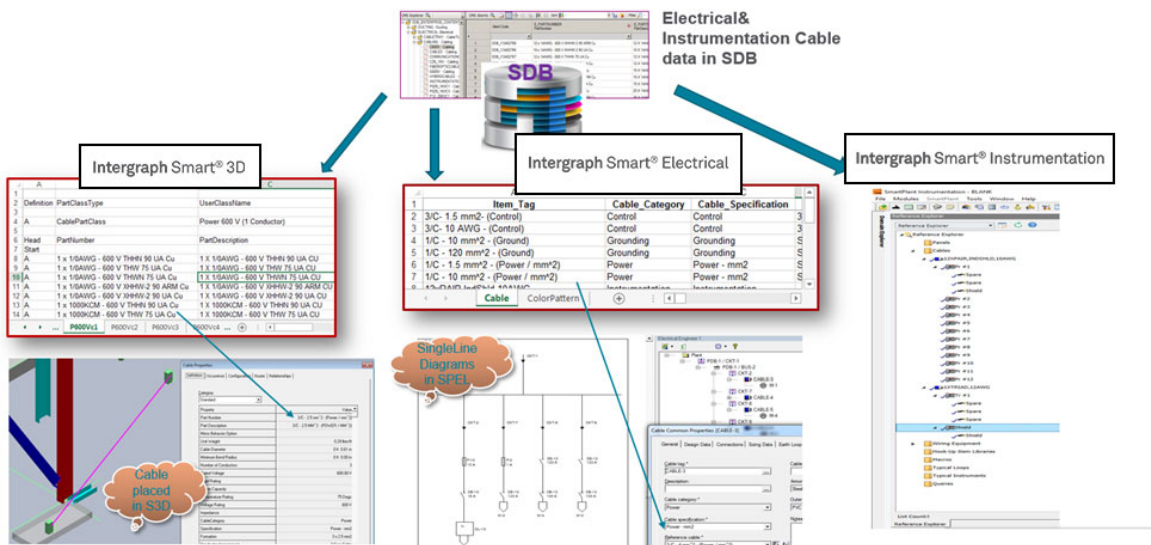


Figure 2: Some of the hundreds of delivered sample supports.

OOTB configuration to export cable reference data to INS in addition to SEL & S3D



3.3 INTERFACES

Standard Database for Intergraph Smart Reference Data (SDB) is delivered with a pre-configured interface to Intergraph Smart 3D. Smart 3D loads its design specifications via a comprehensive Microsoft Excel spreadsheet. The delivered SDB interface is configured to map from the Smart Reference Data relational database to produce an excel spreadsheet that can be loaded into Smart 3D. The delivered SDB interface can be easily configured to load data directly into Smart 3D, bypassing the need to use the Bulkload tool.

SDB has all the Smart 3D-related Piping symbols loaded in its Symbol Library Management. The commodity codes refer to the Smart 3D symbols. The configuration is delivered to have the applicable Symbols exported along with the data workbooks that can be loaded into Smart 3D.

SDB interface supports export of Electrical Cable data to Intergraph Smart Electrical. The delivered interface is provided with a configuration to map from the Smart Reference Data relational database to produce an Excel spreadsheet that can be imported into Smart Electrical.

SDB interface supports export of Piping specification to SmartPlant Isometrics. The interface is configured to export 5 PIP specifications that can be loaded into SmartPlant Isometrics.

SDB interface supports export of Piping specifications to CADWorx. The interface is configured to export 10 PIP specifications that can be loaded into CADWorx 2017R1. 3.4 SDB Merge Tool:

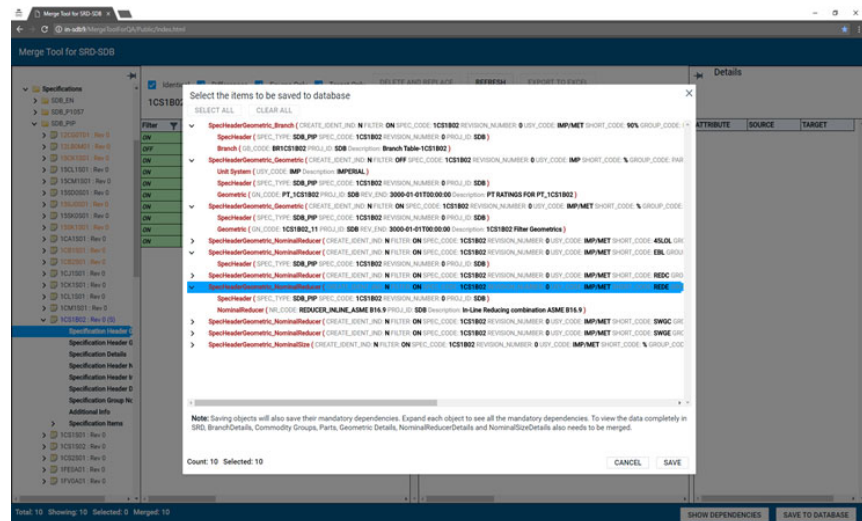
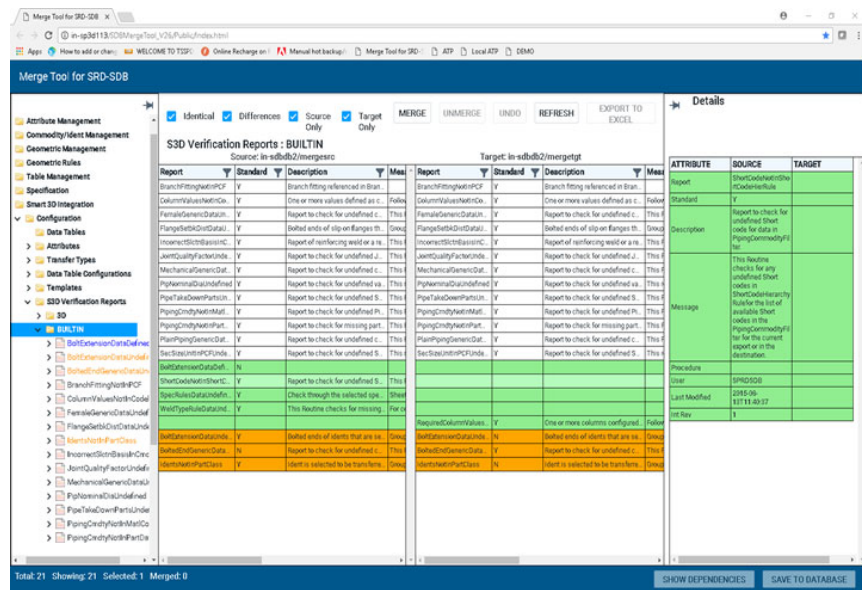
SDB Merge Tool is a web-based tool which will provide functionality to view and compare two SDB databases and show all of the differences in a user intuitive data grid interface. Users can examine the differences, select the data which needs to be merged and update the data into the database. This tool provides the flexibility to selectively merge and save required content from one database to another.

Major Capabilities of SDB Merge Tool:

- Intuitive, web-based user interface to select, view and merge required data from one SDB database to another.
- Automatically identifies the mandatory parent (upstream) dependencies required for merging the selected data.
- Ability to select a set of records and merge at one go with all its child dependent data into target database.

It also offers the ability to report the data from both the source and target database into an Excel file. User can click on a node and report the data related to that object. The data is reported for each attribute value side by side. This enables an easy comparison of the data differences.

STANDARD DATABASE FOR INTERGRAPH SMART REFERENCE DATA



4. BUSINESS BENEFITS

Significant savings and advantages are available to clients using the Standard Database:

4.1 TIME AND COST SAVINGS

- **Configuration** – Users can save months of tedious configuration work.

- **Implementation and consulting** – Users can typically save an additional three to twelve months on initial implementation in addition to reducing related consulting services, depending on the scope of material covered.
- **Training** – Training requirements are not as extensive, which saves training time, implementation time, and cost.
- **Physical dimension tables** – Hexagon has invested thousands of hours in physical dimension tables for every component in the catalog, saving EPCs and owners alike, the time, cost, and effort in recreating this industry-standard, certified information.
- **Intergraph Smart 3D** – Standard Database components and specifications have been downloaded, tested, and certified for use with Smart 3D. This saves Smart 3D users considerable time and effort. Users benefit from more complete and accurate specifications, plus quicker, error-free startups of Smart 3D.

4.2 DATA QUALITY

- **Production startup** – Ensure fast and high-quality production startup by eliminating the need for re-entering standard reference data.
- **Joint ventures** – Using Standard Database across a consortium or joint venture partnership ensures that seamless electronic models will result, easing the integration of data from multiple EPCs and suppliers.

4.3 COST VALUE PROPOSITION

Hexagon has invested hundreds of thousands of dollars in the configuration of the Standard Database. With each release of the product we are adding and updating content and re-certifying all the data. This solution is available to clients at a small fraction of that cost. This represents a significant cost value proposition.

4.4 SECURE INVESTMENT FOR THE FUTURE

Users can maintain and expand the Standard Database through regular new releases and an advanced Visual Migration tool. You will conveniently receive new releases as soon as they become available through a maintenance agreement.

5. FUTURE CONTENT DEVELOPMENT PLANS

The following content is envisioned as being included or planned for future releases of Standard Database for Intergraph Smart Reference Data.

5.1 NEXT RELEASES

The next release for Standard Database is scheduled for Q4 of 2018 (version 2018R1). This release is scheduled to offer the following new content and features:

- 12 New Process Industry Practice (PIP) Piping specification are included.
 - Duplex Stainless-Steel Specs
 - Low temperature Stainless-Steel Specs
 - Alloy 20 & Alloy 254 Butt welded end Specs.
- New Japanese Piping Specifications are included as per latest revision of JIS & JPI Standards.
- Provided SDB OOTB Configuration to Export Cable Reference data to Intergraph Smart Instrumentation (INS).
- Enhance SDB spec report as per latest industry practices.
- Enhanced CADWorx Configurations in SDB OOTB for exporting of TOPWORKS.
- Enhanced Merge tool to show difference category in tree view.





About Hexagon

Hexagon is a global leader in digital solutions that create Autonomous Connected Ecosystems (ACE). Our industry-specific solutions create smart digital realities that improve productivity and quality across manufacturing, infrastructure, safety and mobility applications.

Hexagon's PPM division empowers its clients to transform unstructured information into a smart digital asset to visualize, build and manage structures and facilities of all complexities, ensuring safe and efficient operation throughout the entire lifecycle.

Hexagon (Nasdaq Stockholm: HEXA B) has approximately 20,000 employees in 50 countries and net sales of approximately 3.5bn EUR. Learn more at hexagon.com and follow us @HexagonAB.

© 2018 Hexagon AB and/or its subsidiaries and affiliates. All rights reserved 12/18 PPM-US-0104B-ENG