# AVEVA **Diagrams**

Easy creation of P&ID, PFD and similar diagrams that fully integrate with the model database

P&IDs, PFDs and HVAC diagrams are important documents that define the functional design of any plant, ship or offshore structure. They are a key part of the design activity and continue to be referenced and developed during the operation and maintenance phases.

AVEVA Diagrams™ provides a fast, efficient and effective solution for creating schematic diagrams. A further advantage is that, as the diagram is constructed, data is automatically created in a schematic model database.

The resulting information can therefore be effectively managed, and easily accessed by any engineer who requires the information and has the appropriate access rights.

During diagram drafting, rules and automatic actions can assist users to create fully consistent diagrams, thereby avoiding costly downstream errors. When used as part of an integrated AVEVA software deployment, AVEVA Diagrams adds P&ID data into the complete project information model, exposing it to the full range of AVEVA's design, engineering, collaboration and life cycle management technologies.

Fast, easy creation of intelligent P&IDs
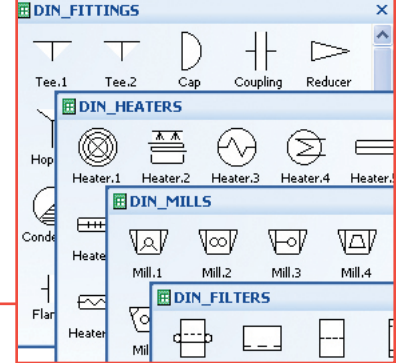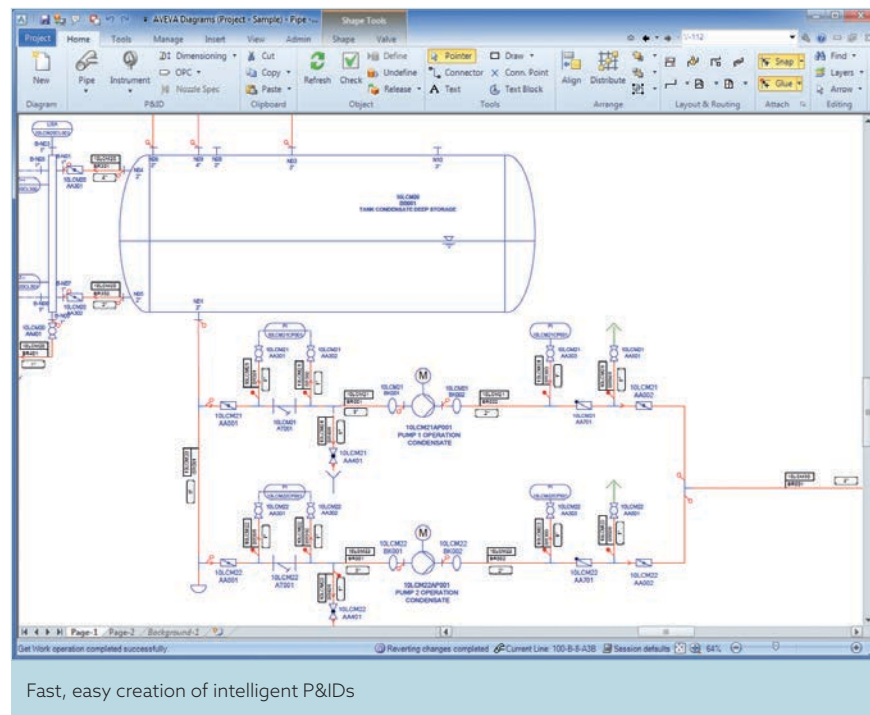
Business Benefits

▮ Integration with AVEVA Engineering™, AVEVA PDMS™, AVEVA Everything3D™ (AVEVA E3D™) and AVEVA Outfitting™ provides a common technology platform for engineering, schematic and 3D design.

▮ World-class data management and exceptional configuration and customisation capabilities are complemented by minimised system administration requirements.

▮ Unrivalled opportunities for integrated schematics, engineering and 3D working.

▮ The complete set of diagrams can be checked for completeness and consistency across the entire project, improving quality and reducing rework.

▮ Diagram information is readily available to engineers and 3D designers, reducing the man-hours spent in detailed design and in later design modifications.

▮ Enhanced consistency between schematics, engineering and 3D improves quality and reduces rework in design, construction and commissioning.

▮ Advanced automatic formatting reduces effort needed to produce P&ID variants such as hazop and material selection diagrams.

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AV=VA™

Key Features

Easy-to-use diagramming

▪ An easy-to-use, feature-rich environment for drafting P&IDs, PFDs and HVAC diagrams.

▪ AVEVA Diagrams is available with a set of the most common diagram symbols used in shipbuilding and the process plant industries. This is complemented by an intuitive import wizard which provides an easy way for users to create their own intelligent symbols. Symbols can have default values, as well as the ability to prompt the user for values when selected for inclusion in a diagram.

▪ Effortless reuse of existing data can be achieved through intelligent copy / paste and design reuse functions.

▪ Diagrams can be made against backdrop drawings such as general arrangement drawings.

▪ Background drawings can be layout-aware, allowing early approximate 3D placement of equipment and components.

Integrated with AVEVA Engineering, AVEVA Everything3D, AVEVA PDMS and AVEVA Outfitting

▪ Items are automatically and instantly created in the model database as the diagram is being drafted. These items are automatically organised and can be viewed and navigated according to user preferences and project standards, using a configurable Project Explorer.
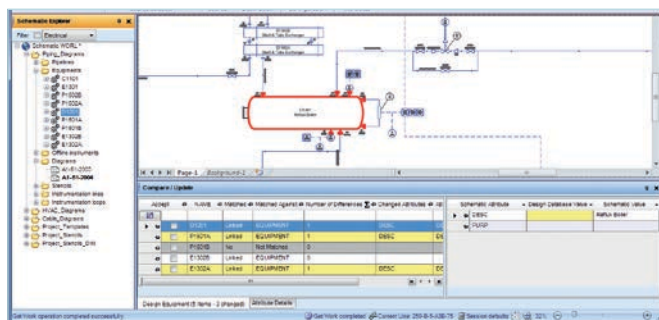

Built-in Compare & Update function allows easy alignment of P&IDs with data from other sources

▪ The application runs in the same technology environment as the AVEVA Engineering, AVEVA E3D, AVEVA PDMS and AVEVA Outfitting 3D modelling applications, so it has access to all the database and functional capabilities of that environment.

▪ The database can store schematic data for all P&IDs in a project. This means that a complete schematic model of the entire project can be developed.

▪ The schematic model created by AVEVA Diagrams can be used with AVEVA Schematic 3D Integrator™ to build the 3D model and to check the consistency between the P&ID data and the 3D model.

▪ The application creates all the objects and connectivity needed for any lists, schedules and datasheets to be managed in AVEVA Engineering. Any objects and attributes that have already been created in AVEVA Engineering can easily be placed on diagrams using the Unassigned Items function.

▪ Instruments created in the diagram are handled as part of the schematic model and can be managed and reported as other elements in the database. It is possible to import the instruments into AVEVA Instrumentation™ to engineer and design the instruments and generate all required deliverables.

▪ A unique 'Schematic Model Viewer' provides automatically generated, multi-system, navigable presentation of database data.

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In-context access to the full Digital Asset

▪ The Design in Context™ capability enables faster, better and more informed decision making. It creates a direct connection to the centralised Digital Asset repository (if available). When an object is selected in the AVEVA Diagrams environment, the Context panel dynamically updates a list of available content relevant to the selection, such as datasheets, vendor documentation, purchase orders, planning charts and calculation sheets. This content can then be opened, in context to selected object, via a new embedded universal viewer, ensuring decisions are made on the basis of all available information.
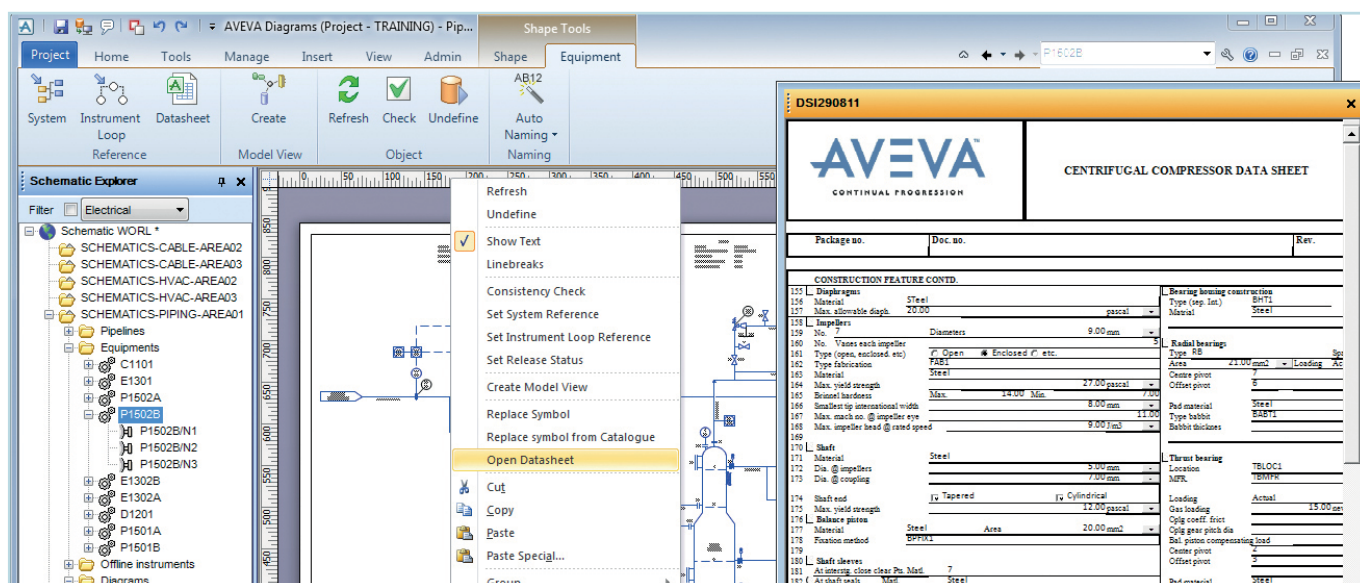

Users can open and view Process/Mechanical datasheets created in AVEVA Engineering directly from objects in the P&ID drawing
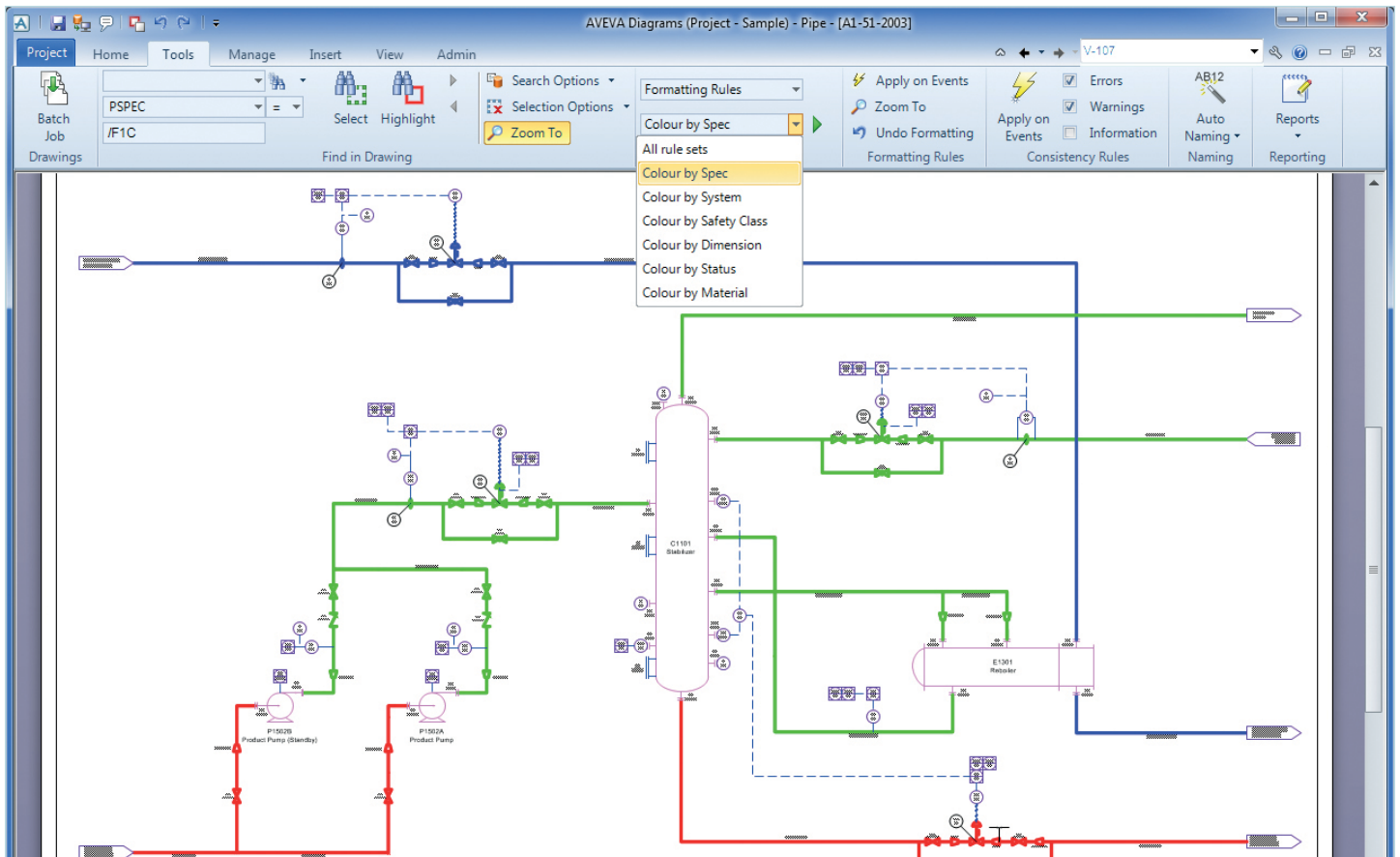
Advanced rule-based features for applying automatic formatting and checking consistency

Specification-driven, catalogue-based design capabilities

▌ AVEVA Diagrams can be used both with and without piping specifications. This capability enables a flexible design process so that it is possible, for instance, to start drawing a diagram without a specification, and then apply the specification later in the design process.

▌ AVEVA Diagrams can work with specifications and catalogues created using AVEVA E3D, AVEVA PDMS or AVEVA Outfitting.

▌ In specification-driven mode, the correct components can be automatically selected as the diagram is drafted, and existing, out-of-spec items can be rapidly identified and corrected.

▌ Options for user-controlled selection of components are also available.

▌ Powerful and easy-to-use resize and respecify functions are available. These make it quick and easy to modify initial or pre-existing drawings in line with a rapidly evolving design or a late design change. New components are automatically associated with the relevant lines and fittings.

▌ Automatic exchange of symbols through catalogue definition allows an initial, generic symbol to be replaced by a specific one when the catalogue reference is set or changed. Existing symbols can also be manually exchanged, while retaining connections and attributes.

▌ 'Fitting assemblies' provide the ability to define a group of multiple fittings that can be integrated into the diagram with a single drag-and-drop operation.

▌ Support for revisioning of drawings according to customer-defined workflows and revision schemas. This capability also includes automatically generated revision blocks and revision marks.
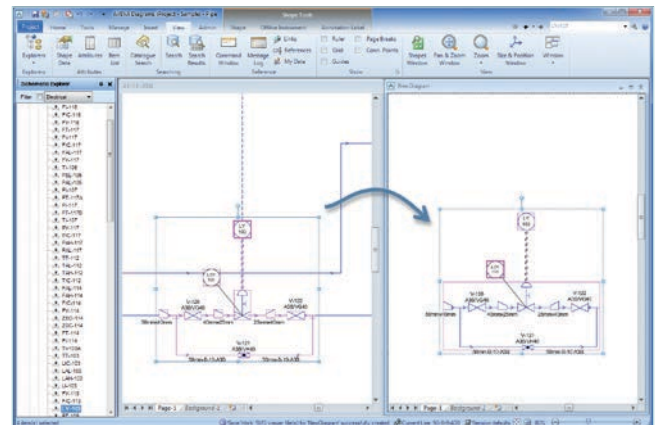
Data can be reused through an intelligent Copy-Paste mechanism, within or between projects
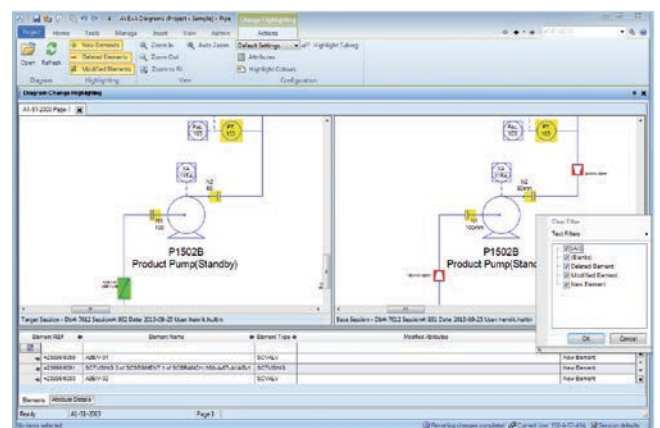

Change highlighting

# Key Features (continued)

Data-driven, rule-based capabilities

▰ AVEVA Diagrams builds an intelligent, connected schematic model of the complete design, allowing a wide variety of consistency checks to be applied.

▰ Off-sheet connectors are fully intelligent, so design consistency can be maintained and checked across sheet boundaries.

▰ Powerful, rule-based autoformatting functions support effective reuse of existing diagrams in new projects, and allow project- and client-specific requirements to be applied. These rule-based functions can be triggered through events, so that they are automatically applied to the diagram.

▰ Flexible, rule-driven, automatic annotation and attribute presentations are provided for automatic display in the diagram.

▰ Engineering consistency checks can be carried out, for example to check that bores are fully consistent along a line, or that flow directions are consistently applied.

▰ Any checks can be applied across one or more diagrams so that it is also possible, for instance, to ensure consistency across a complete system before issuing.

▰ Changes between two revisions of the diagram or the diagram data can be easily viewed, both graphically and in the grid view, with the powerful change-highlighting capability. Additionally, any changes made by engineers and designers from other disciplines on the project can be easily accepted through the Compare & Update functionality.

Configurable and compatible

▰ An extensive set of options and settings gives a high degree of configurability, making it possible to adapt the solution to your specific project requirements.

▰ Import and export of common drawing formats is provided, together with database import/export of line lists and equipment lists using a spreadsheet file.

▰ AVEVA Diagrams allows the generation of configurable .DWG and .DGN outputs to comply with project, industry and company standards. Configurable reports can be produced and exported to Excel.

▰ Fully compatible with AVEVA Engineering, AVEVA E3D, AVEVA PDMS, AVEVA Outfitting, AVEVA Schematic 3D Integrator™ and AVEVA NET™.

▰ Compatibility with AVEVA Global™ enables schematic data as well as documents to be globally distributed in multi-location projects.

▰ Shared technology with the AVEVA 3D modelling applications provides powerful, scalable data management capabilities and enables shared system administration and report generation.

▰ Engineering data as well as 3D data can be referenced into the diagrams and included in project reports.

▰ Integration with AVEVA Instrumentation enables the detailed engineering and design of the instruments derived from the diagram, using powerful capabilities such as Compare & Update and change highlighting.
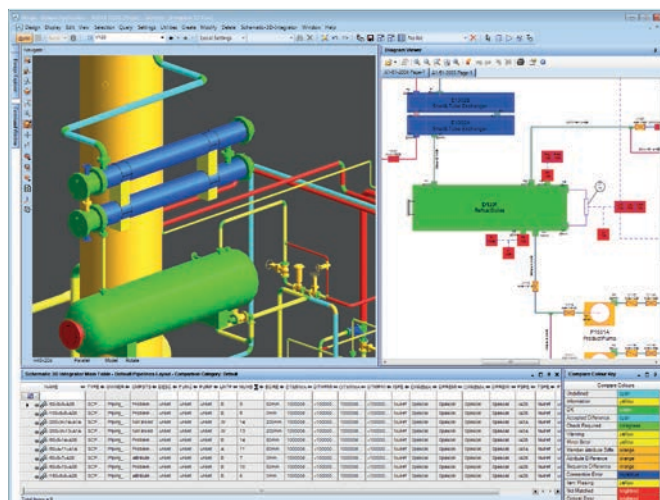
Drawings and objects created in AVEVA Diagrams are directly available for AVEVA Schematic 3D Integrator, enabling consistency checking against the 3D model. AVEVA Schematic 3D Integrator is included in AVEVA E3D and can be added to AVEVA PDMS as a separately licensed option.
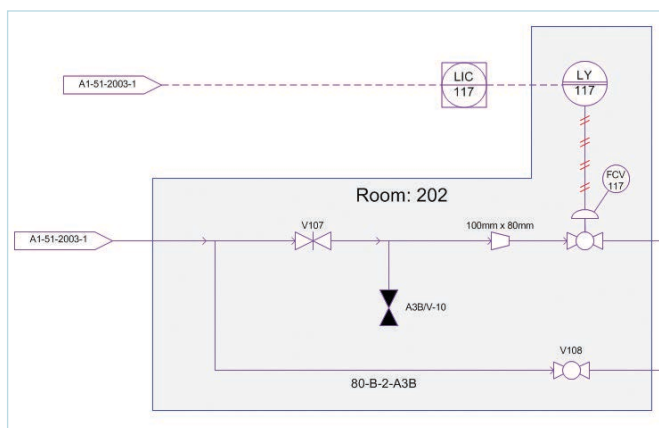
The Area Shape function provides fast, consistent attribute settings across groups of objects
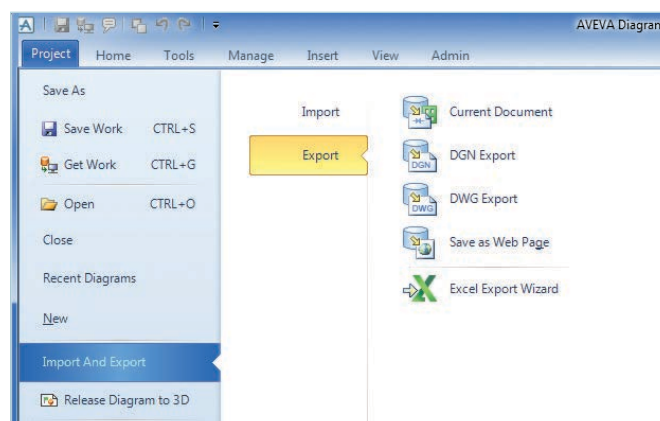
AVEVA Diagrams can produce deliverable drawings in common industry formats, such as .DWG, .DGN & PDF