AVEVA **Engineering**

Manages evolving multi-discipline data for tagged engineering items such as lines and equipment

AVEVA Engineering™ enables multi-disciplinary teams of engineers to work effectively together to develop and maintain the detailed definition of all the key engineering items involved in plant or marine projects.

As a project progresses, engineers build a database of its engineering objects, such as lines, equipment and valves, and all their key attributes. This object data is stored and managed in the project information model, enabling its integration with schematic and 3D design data and supporting global project collaboration where required.

AVEVA Engineering is highly versatile and configurable. It is typically used as an authoring tool for the process and mechanical disciplines, but is equally well suited for pipe stress, safety or other specialist disciplines. It enables each discipline to retain full control of their own data while being able to access and reference data from other disciplines. When used as part of an integrated AVEVA software deployment the complete project information model is exposed to the full range of AVEVA's design, engineering, collaboration and lifecycle management technologies.

Built-in tools enable project or engineering managers to monitor design progress and the completeness and consistency of data. This monitoring covers a wide range of disciplines and their engineering, schematic and 3D data, thereby providing a coherent and comprehensive view of project status.

The application can generate not only key project documents (such as process and mechanical datasheets, tag registers, line lists, equipment lists or valve lists), but also any kind of ad hoc or departmental report.
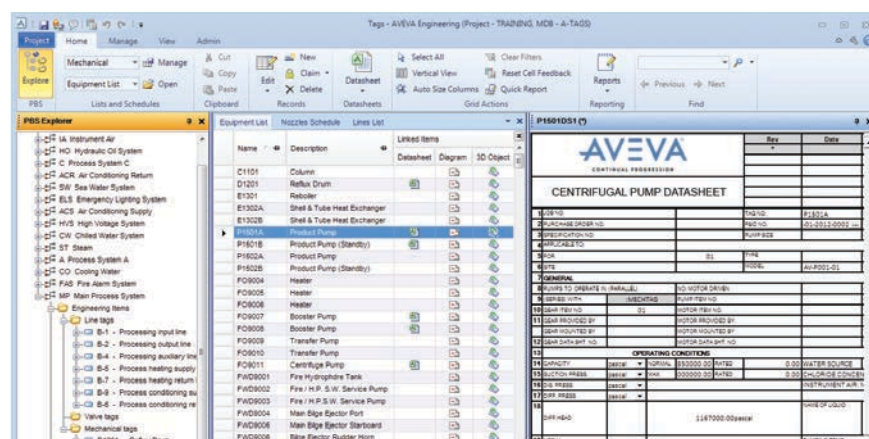
The configurable Project Explorer view enables users to navigate and access project data. Datasheets can be version-controlled with change highlighting.
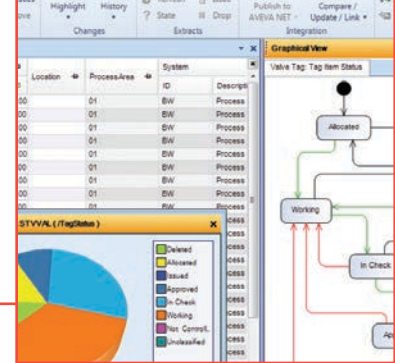
Business Benefits

Increased project control

❚ Puts engineering data into a common project database where it can be more effectively managed, controlled and used

❚ Enables changes to be implemented quickly and efficiently, reducing their impact on cost, schedule, quality and risk

Increased efficiency

❚ Enables effective multi-discipline collaboration

❚ Creates high-quality datasheets, lists, schedules and other deliverables on demand

Increased project quality

❚ Fewer errors from uncontrolled handover of data between disciplines

❚ Enables the detection and elimination of a wider range of data inconsistencies, reducing the risk of costly, late design changes and associated rework

❚ Generates deliverables direct from the project database, eliminating sources of error

Increased capability

❚ Enables efficient multi-site collaboration on a wider range of engineering data

❚ Removes boundaries between data sources, enabling better integrated, more effective working methods

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Overview

Engineering data can be created, viewed or modified using both spreadsheet list-style and datasheet-style user interfaces, according to need or preference.

Users can also browse and navigate the complete project data including engineering, 3D, schematics and catalogue data using a configurable Project Explorer.

The database is under continuous access control, defining what information a user may create, view or change.

All changes to the data are automatically stored in the database, creating a permanent audit trail. Users can follow up on changes using change highlighting and history functions.

Built-in status control tools enable the status of every individual object to be fully controlled, and enable users to view change information on demand as they work.

Configurable consistency checks can be applied across the database at any time to verify the quality of the data.

Project wide, formatted reports including charts and graphics can easily be created directly from the database.

Compare & Update allows synchronisation of data between all AVEVA products, as well as external systems and data sources.

The product is built on the proven AVEVA PDMS™ and AVEVA Outfitting™ technology, which enables distributed, multi-location working using AVEVA Global™.

AVEVA Engineering can be readily configured to suit a wide range of project, customer or industry requirements. It includes a powerful programming language (PML) and .NET APIs, enabling the application of all kinds of customer or industry specific customisation and automations.


Users of AVEVA Engineering can access and reference a comprehensive set of data from other applications as they work. This enables P&IDs and the 3D model to be viewed for the currently focused engineering object.
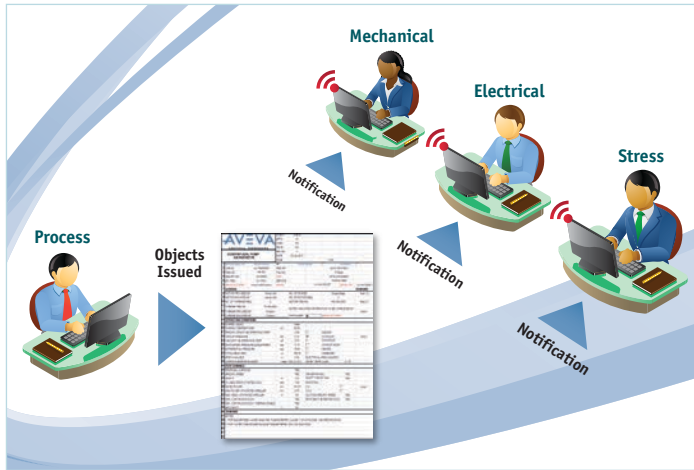
AVEVA Engineering ensures that updates from one discipline to another are correctly applied through controlled publication of issued data, notifying dependent disciplines when ready to accept changes.
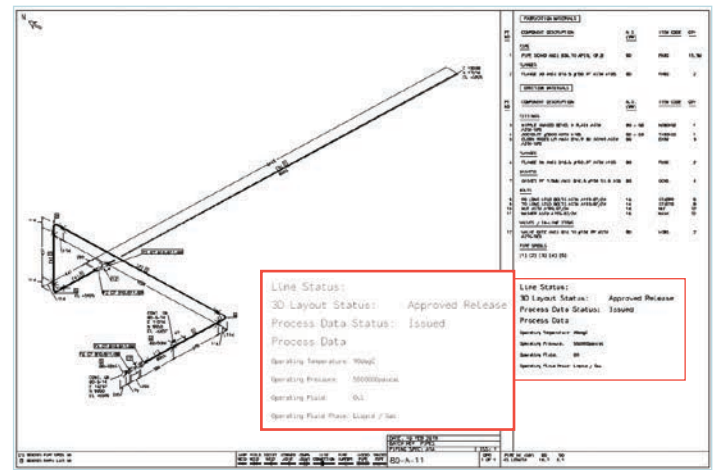
Linked engineering data can be referenced and used on schematic and 3D deliverables. The example shows process data from AVEVA Engineering included on a piping isometric drawing.

Key Features

▎ **User-defined lists with sophisticated access controls**

Data can be viewed and edited through a spreadsheet-style grid that can include information across different engineering disciplines. List layouts can be defined by the administrator for all users on the project, and it is also possible for users to create their own layouts, containing only columns relevant for their current task. Features such as configurable drop-down lists and reference browser aid users in their work. Each discipline maintains full control of its own data for any given item, whilst enabling other project participants to view the item's complete data. This also includes support for issued and working versions of the data.

▎ **Revision-controlled datasheets**

Datasheets can be created from predefined project templates, and can be used for data input and editing while working on the deliverable document. Data changed through list views is reflected in the datasheet views and vice versa, enabling users to choose their preferred input methods. Datasheet version control is provided through customer-defined revision schemas. When 'round-tripping' information to external agencies, such as equipment suppliers, change highlighting is applied to re-imported data also, enabling any changes to be accepted or rejected before updating the database.

Above: Automatic change highlighting and history of changes
(green = added records; red = deleted records; yellow = modified attributes).
Right: Example report showing completeness of attributes in a line list.

Key Features (continued)

▌ Controlled Object Revisioning

Efficient collaborative working is supported by object-level revision control across engineering disciplines. Engineering data created or updated by one discipline – process, mechanical, instrumentation or electrical – is issued to the rest of the project team at a controlled release level using subscription and notifications. Other engineering disciplines can confidently use this change-controlled data in their own workflows. Each discipline retains control of which changes to accommodate and when to do so, combining flexible and efficient working with robust control of data consistency.

▌ Database-driven with proven, scalable, multi-user technology

AVEVA Engineering delivers the concurrent, multi-discipline, multi-user working environment required by project engineering teams on today's demanding plant and marine projects. Engineering, 3D design and schematics data are all managed in a common project environment, enabling users to easily view and reference data from other disciplines. Users of AVEVA's schematics and 3D products can reference and include AVEVA Engineering data in their deliverables.

▌ Configurable Project Explorer

Customer-defined Project Breakdown Structures can be defined to suit project and company standards. The Project Explorer mechanism offers a very flexible way to navigate and access the project data, according to each user's role. Because AVEVA Engineering stores data in the same project environment as the 3D and schematic data, a Project Explorer can be defined that includes objects from all domains.

▌ Compare & Update

Compare & Update utilities enable AVEVA Engineering data to be compared against data created in other AVEVA products and/or external systems, and updates to be selectively applied as required. This makes the alignment with a new revision of data from another engineering department easier, faster and more accurate. Linking mechanisms can selectively connect the different datasets, enabling transitions between parallel and single-source working, as required, at different stages of the project.

▌ Automatic change recording and highlighting

Changes can be efficiently implemented using bulk update and search-and-replace features. They are automatically tracked in the database. Change information can be selectively viewed by users as they work and additions, deletions and modifications can be highlighted within any dataset that a user is working with.

▌ Built-in status control

Engineers have better visibility of the quality of information, and can generate progress reports directly from their working data.

▌ Data consistency checks

A wide range of inconsistencies can be detected in the engineering data itself, and across the engineering, 3D, schematic, instrumentation and electrical datasets.

▌ Automatic reports direct from the database

High-quality, formatted project reports can be produced directly from the database, optionally including charts and graphics.

▌ Built-in viewers for P&IDs and the 3D model

Viewers for P&ID and for 3D are built in, and enable users of AVEVA Engineering to view and reference schematic and 3D data while the engineering data is being manipulated.

▌ 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 Engineering 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.

▌ Multi-location global working

AVEVA Engineering is compatible with AVEVA Global, enabling it to be used across even the most complex multi-location, collaborative engineering projects.

▌ Publish to AVEVA NET™

Data and documents generated from AVEVA Engineering can be published to AVEVA NET.

▌ Highly configurable

All aspects of the product, including the data model, engineering discipline boundaries and access rights, are highly configurable. A powerful, built-in programming language (PML) and .NET APIs enable all kinds of customer/industry customisations and automations to be applied.

▌ Common AVEVA technology infrastructure

Existing system administration and customisation/configuration skills as used on AVEVA PDMS, AVEVA Everything3D™, Outfitting, Diagrams and Schematic 3D Integrator can be used for AVEVA Engineering.

AVEVA Engineering is one of AVEVA's Engineer products, which create schematics, diagrams, datasheets, engineering lists and indexes