AVEVA **Electrical**

For the rapid production of high-quality project deliverables in an intuitive design environment

Electrical engineering creates power and control-system intelligence, enabling and controlling all of a project's critical functions. But process is considerably more complex than just ensuring that the right connections are made. Power supplies must be correctly specified for both normal and peak demands, cables and switchgear optimally sized for their current-handling capacities, fault conditions analysed, and so on.

AVEVA Electrical™ is a feature-rich software suite for electrical engineering and design. Its ease of deployment, advanced graphical user interfaces and use of design rules and catalogues for data creation enable maximum workflow flexibility, making AVEVA Electrical the preferred choice for projects of all sizes.

Stand-alone, integrated with AVEVA Instrumentation™ or fully integrated with the project's selected suite of applications, AVEVA Electrical is functionally rich, both for the engineering contractor in design and for the Owner Operator in day-to-day operations. Together with its intuitive user interface, AVEVA Electrical enables the efficient creation and delivery of high-quality deliverables for successful and profitable project completion.

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Business Benefits

Increased productivity

- Highly intuitive to use
- Integrates with AVEVA's engineering and 3D design solutions
- Instantly creates single-line diagrams
- Creates and manages engineering data
- Supports Compare & Update for efficient collaboration
- Enables integrated E&I projects
- Creates multi-purpose datasheets
- Works in local language

Automatically generated deliverables

- Key deliverables accurately created and automatically generated

Increased design quality

- 'Graphical engineering' reduces opportunities for error
- Change highlighting enables efficient design development
- Applies cable-sizing standards, in-built, customer- or project-specific
- Enables intelligent cable routing and management when integrated with AVEVA 3D design solutions

Rapid payback

- Easily and rapidly deployed on new or existing projects
- Integrates with standard office applications
- Manages inconsistencies in the design

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AVEVA™

Key Features

AVEVA Electrical comprises three integrated modules which share a common, multi-user database for design and as-built data. By hosting AVEVA Instrumentation and AVEVA Electrical project databases on one database, customers can share and control equipment and connections.

∎ Equipment can be shared between AVEVA Instrumentation and AVEVA Electrical, enabling each technology to terminate on shared objects.
∎ E&I engineers and designers can collaborate on the same project and share/control information.

Use of catalogues and rules enables efficient, compliant design. Accurate design information is further supported by seamless integration with 3D model data, e.g. for cable routing. High-quality documentation maximises productivity during project construction and in operations.

AVEVA Electrical supports multiple languages throughout for ease of deployment and use worldwide. Data integrity is ensured by extensive validation processes, automatic cross-referencing and rigorous change control. Straightforward customisation enables configuration by users, without the need for programming skills. Intuitive use minimises training needs and makes users immediately productive.

Other important features include:

∎ full integration with AVEVA's information management solutions
∎ interfaces to all industry-standard document management systems
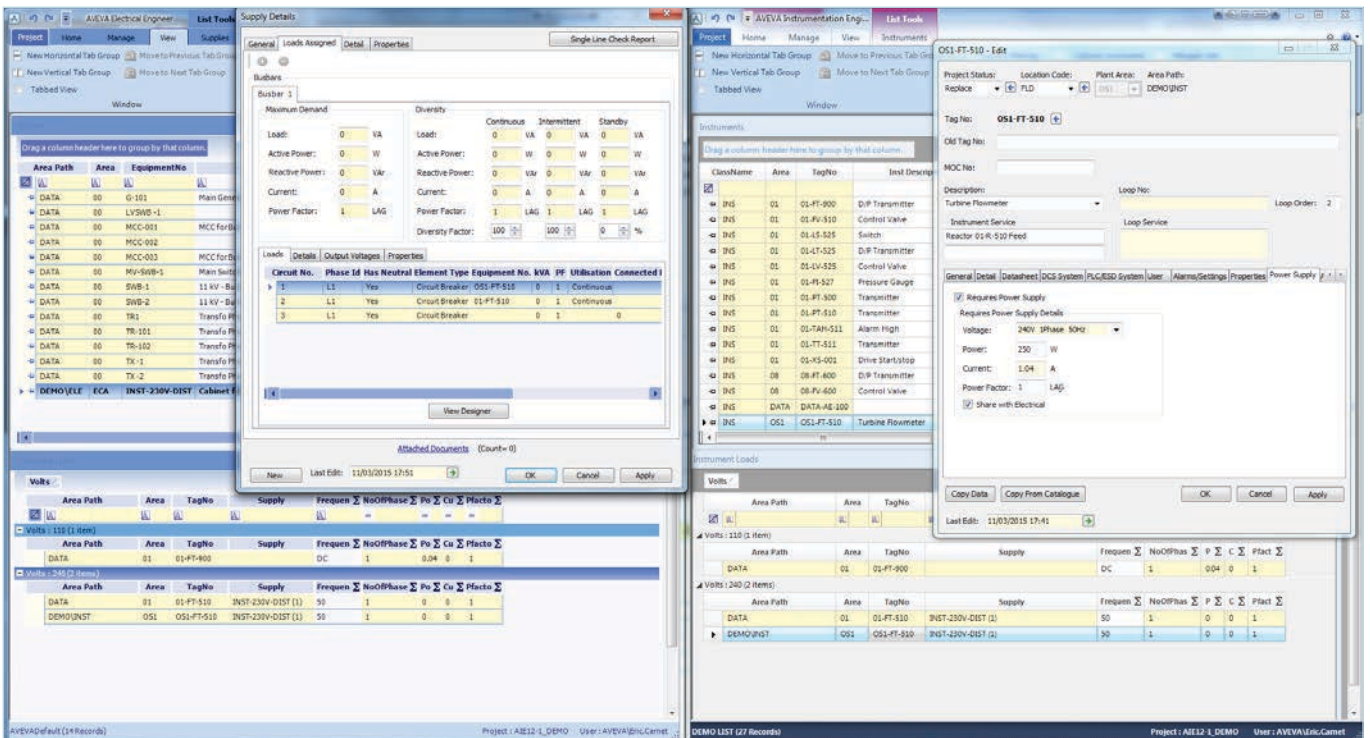∎ report comparison and highlighting.

The flexible feeder hierarchy constantly monitors the project loads. Single-line diagrams are instantly created and re-created from this flexible feeder. AVEVA Electrical enables the user to create and manage electrical engineering data, design data and documentation.

The Compare & Update facility enables the user to perform Excel data interactions while being able to modify and control the information exchange.

Key deliverables
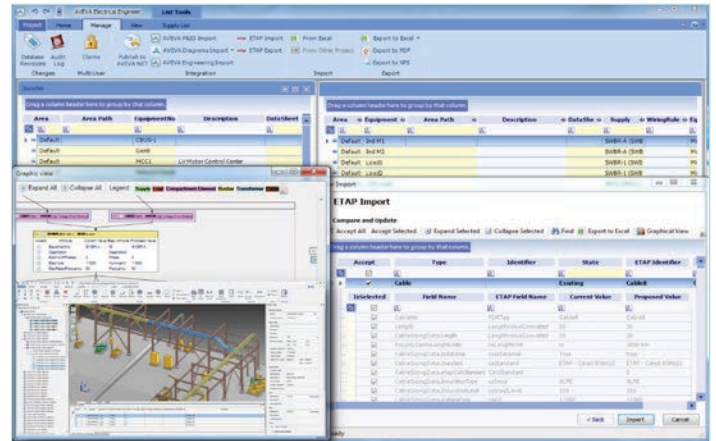Accurately created and automatically generated, including:

∎ Electrical datasheets
∎ Load lists
∎ Key one-line diagrams
∎ Single-line diagrams (with or without CAD)
∎ Schematic and standard installation diagrams
∎ Cable block diagrams
∎ Termination drawings
∎ Installation details
∎ Cable schedules, including routing information
∎ Bills of Material (BoMs)

Working within the same project electrical engineers can visualise instrumentation objects and vice versa.

ETAP Integration

AVEVA Electrical now integrates with ETAP, the industry leading electrical analysis tool. This integration enables the round-tripping of data between both applications. Projects can be initiated in either AVEVA Electrical or ETAP and the integrity of data between the applications can be ensured. Combined with AVEVA Everything3D™, the integration enables the whole lifecycle of electrical design to be realised; from analysis, to functional design, to physical layout.

Integration between AVEVA Electrical and ETAP enables complete round tripping of data.

Integrated Modules

Electrical Engineer module

This module enables equipment data entry or import, Compare & Update, change tracking, automated generation of highly customisable single-line diagrams and specification documents, and the creation and management of reports and documentation. Its features include an intuitive and flexible spreadsheet-style interface, as well as the items below.

Electrical load list
- Import legacy load list data
- Define electrical data
- Define load type (such as motor, feeder, distribution board, HVAC, lighting and power)
- Define circuit type (including DOL, FWD/REV, VSD, CB)
- Define wiring rules to automatically create equipment, cables and terminations, when applied
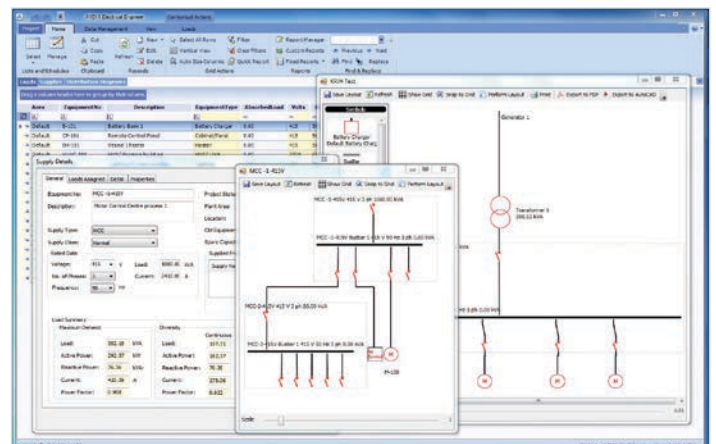
Supplies list
- Import legacy supply data
- Define electrical design data
- Define supply type (MCC, distribution board, switchboard, etc.)
- Assign loads from load list (and MCC module or circuit number)
- Calculate demand (kW, FLC, kVAr, pf) for normal, standby and essential loads
- Define all switchboard and MCC compartment elements, instruments and sub-equipment

Calculations
- Loads; change in any load rolls up through all supplies
- Cable sizing (volt drop, fault level) by installation method to BS, IEC, NEC and ANZ standards
- Interface with existing 'home-grown' Excel cable-sizing calculations

Electrical equipment datasheets
- User-defined (using Excel) for MCCs, distribution boards, motors, UPS and so on

Automated single-line diagrams (SLDs).

Integrated Modules (continued)

Electrical Wiring Manager module
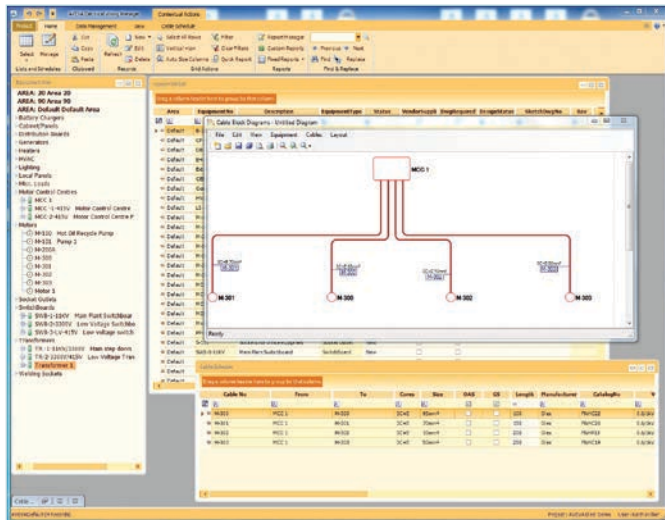
Intelligent cable schedules
- Cable creation by catalogue, by copying or importing existing data
- Catalogue-driven gland and gland adapter assignment, with BoM reports
- Automatic core marking updates from Catalogue Number changes
- Automatic cable and drum schedule reports for minimum wastage
- Management of frozen cables and drums information
- Cables and equipment management within AVEVA 3D models, with all necessary information, such as length, cable status or cable node path, exchanged between AVEVA Instrumentation and AVEVA Everything 3D™ (AVEVA E3D™)
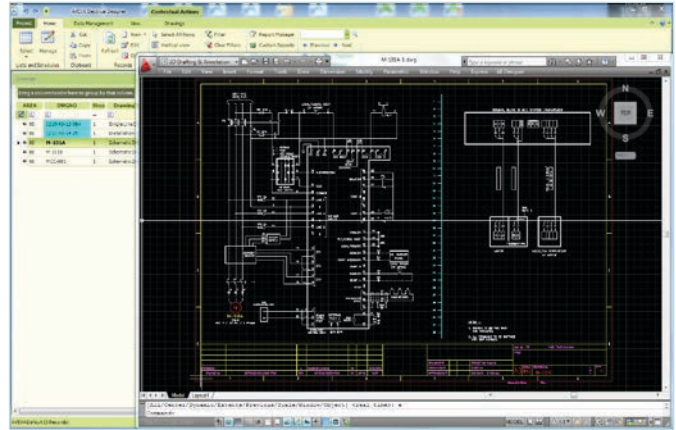
Terminations
- Drag and drop by cable or wire
- Automatic wire number inheritance
- Copy existing equipment (including internal terminals and devices)
- Termination reports without CAD

Cable block diagrams
- Interactive (edit cable, equipment properties and terminations)
- Add new equipment/cables on the fly

Automated creation of schematics.

Electrical Designer module

Creation of single-line diagrams in AutoCAD
- View design hierarchy within an AutoCAD environment
- Colour highlighting to show which equipment is linked with an AutoCAD drawing
- All underlying engineering data automatically updated

Creation of schematic diagrams in AutoCAD
- Based on user-defined templates
- Engineering data updated from load list / supplies list
- Editable and updatable

Termination diagrams
- Drag-and-drop wire terminations
- Automatic creation of editable and fully customisable cable block diagrams
- Automatic rule-based numbering and wiring
- Graphical termination reports in PDF or CAD format

Installation details
- Based on user-defined templates and assigned components
- Create project BoM

AVEVA Electrical Wiring Manager creating cables using the Cable Block Wiring Diagram.

AVEVA