EPLAN Education Handbook

Electrical Schematic Design and Engineering with EPLAN

(Instructional Materials for Student)

As of: 16.12.2021

Table of Contents

Contents and Objectives of the Course

This documentation serves as a guideline for students at educational institutions to understand how to use EPLAN Education software in Electrical Schematic Design and Engineering in theory and practice. With this documentation, we would like to give you some suggestions on using the e-learning content prepared for you.

This document is supporting material to our e-learning offer for educational institutions, which we have made available via the EPLAN Cloud website to educational institutions and their instructors and the students.

The learning material we provide is also an optimal preparation for the EPLAN Education certification examinations, EPLAN Certified Student (ECS) or EPLAN Certified Technician (ECT).

This means that all those students who are interested in these certifications can take them after the course.

Access to the learning materials requires free registration with EPLAN Cloud. You can access the learning content via the following link or via the QR code shown.

EPLAN Cloud website:	QR Code:
https://etraining.epulse.com/update-training-2022/tutorials/home	

Learning materials are offered in many foreign languages and are fully localized, i.e., in each e-learning there is a narrator next to the subtitle-text to clarify the content.

Therefore, the learning materials are very well suited for your host students from other countries, who will be able to comprehend the lesson content in their native language.

For students, we have prepared a total of 16 learning materials in e-learning format. The aim of the course is the device-oriented design of a standard-compliant, error-free project with the EPLAN platform. The

project objective is finalized with the last exercise unit, i.e., the last e-learning lesson.

In this manual, we describe the unique learning contents of the e-learning, the learning objectives, and the description of the main advantages of the processes and functions presented in the e-learning.

After this course, students will be able to understand the process and methods of electrical design and be able to read and prepare design documentation.

Students will also learn about the EPLAN core products. They will understand the basic functionalities of the EPLAN core products as EPLAN Electric P8 or EPLAN Data Portal and their benefits.

Students will understand the advantages of device-oriented project planning in contrast to symbol-oriented project planning and engineering.

Proposal for the practical part of the lesson

- Main topic 1: EPLAN User Interface
- Main topic 2: EPLAN Backstage View
- Main topic 3: Constructing a standard-compliant, error-free project

You will work practically with the EPLAN Education software in the above three main topics, guided by e-learnings. The necessary theoretical content will be taught to students in the lecture at their educational institution.

The learning content to be imparted is explained to you in the e-learnings step by step.

Each E-Learning consists of three parts:

- **Intro** - here, the advantages of the function are explained in an understandable and straightforward manner with the support of animations.
- **How to** – here, the practical implementation of the function by using EPLAN Platform 2022 is presented.
- **Quiz** - here each participant has the opportunity to test what they have learned through a knowledge check.

All the learning content we show in e-learnings can be replicated because we also provide the master data for it. This ensures not only theoretical understanding but also practical success.

In this way, the students will be well prepared for tackling the job market tasks in electrical project planning and engineering.

In this document used symbols, have following connotation:

Notes or further information

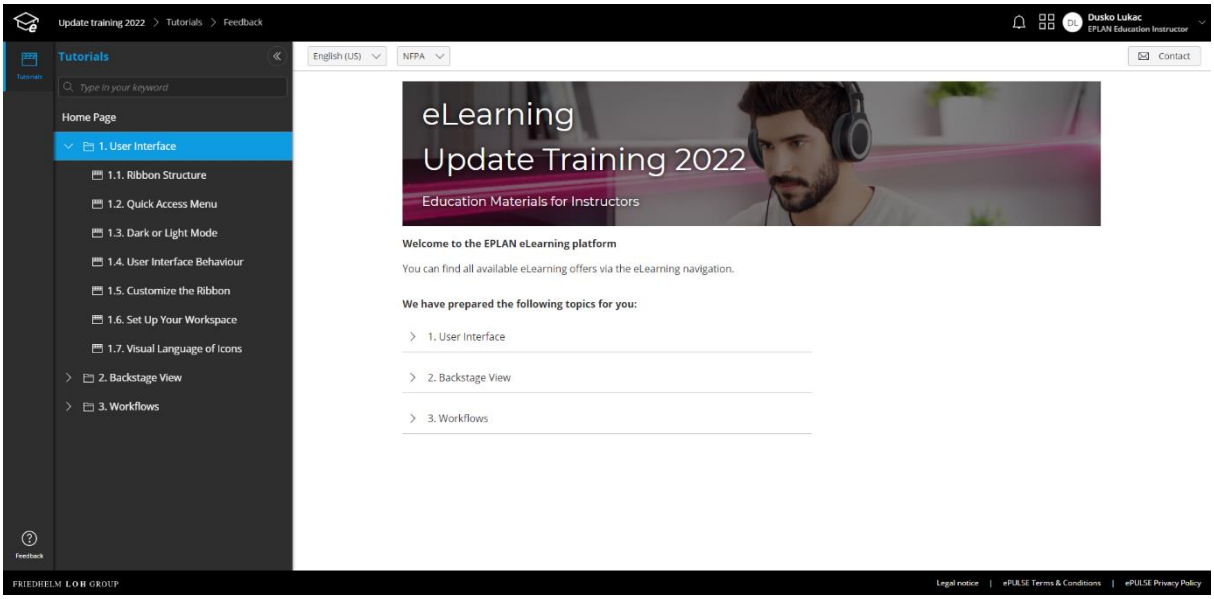
Important notice

Product or functional advantages

Proposal for Practical Part of the Lesson and Explanation of the E-learning Contents

After logging in to EPLAN Cloud, you will be taken to the learning content, which is structured in three main sections

1. User Interface,
2. Backstage View and
3. Workflows



After you have become familiar with the EPLAN User Interface in the first section, we recommend that you get to know the settings area of EPLAN, the so-called Backstage View.

Only after that, please start with the Workflows section.

In this section we show you how to design a standard-compliant, error-free project.

You can also use the result of the project planning as an assessment criterion for the student performance.

EPLAN User Interface (Part 1)

Topics that can be presented in the lesson:	Learning content:
- 1.1 Ribbon Structure	▪ Ribbon technology, comparison of EPLAN graphical elements with other software solutions. ▪ Differentiation between Ribbon, Tab, Command group, Command or Quick access toolbar.  *Practical exercise to be done according to the e-learning template.*
- 1.2 Quick Access Menu	▪ Finding the desired EPLAN function by using the Quick Access menu. ▪ Search for the function using keywords. Example of searching and using the terminal navigator.  *Practical exercise to be done according to the e-learning template.*
- 1.3 Dark or Light Mode	▪ Settings for the dark/light mode changeover. ▪ Switching the EPLAN Platform from dark to light mode. Switching the Graphical Editor from dark to light mode.  *Practical exercise to be done according to the e-learning template.*
- 1.4 User Interface Behavior	▪ Automatically adaptation of the EPLAN Platform to screen or window size, including all available menus. ▪ Using undocked dialogs on different screens. Availability of the Object Snap and Grid settings in a central toolbar.  *Practical exercise to be done according to the e-learning template.*

EPLAN User Interface (Part 2)

Topics that can be presented in the lesson:	Learning content:
- 1.5 Customize the Ribbon	▪ Features of the Ribbon. ▪ Changing the position, display name, and the visibility of the tabs and creation of the new tab with one command group for selecting the desired user interface design.  *Practical exercise to be done according to the e-learning template.*
- 1.6 Set Up Your Workspace	▪ Creation of different workspaces for different use cases, storing the position of the main window and navigators for each configuration. ▪ Switching between different workspaces.  *Practical exercise to be done according to the e-learning template.*
- 1.7 Visual Language of Icons	▪ Recognizing the errors in circuit design by using the visual language of the icons. Visualization of “New,” “Create,” or “Generate” actions. ▪ Visualization of the “Update” actions. Easier identification of the repetitive functions.  *Practical exercise to be done according to the e-learning template.*

EPLAN Backstage View (Part 1)

Topics that can be presented in the lesson:	Learning content:
- 2.1 Settings and Open Project	▪ Open the projects using Backstage View. Edit project information such as company details. Using the Restore project dialogue. Adjusting the project structure. ▪ Determining the project status. Work with the Settings dialogue (Project, User, Workstation, and Company).  *Practical exercise to be done according to the e-learning template.*
- 2.2 New Project	▪ Creation of new projects and facilitation of process by using the pre-installed “EPLAN Basic Projects”. Using predefined, standard-compliant master data and settings. ▪ Differences between NFPA, IEC and GOST standards presented on examples. Creation of reusable Basic Projects according to your own specifications.  *Practical exercise to be done according to the e-learning template.*
- 2.3 Backup Project	▪ Creation of the project backups. Using the settings for the backup and learning about the different backup options to define which data will be backup. ▪ Learning about the different backup methods.  *Practical exercise to be done according to the e-learning template.*
- 2.4 Print Project	▪ Printing the project documentation and options for adding attached files to your printout.  *Practical exercise to be done according to the e-learning template.*

EPLAN Backstage View (Part 2)

Topics that can be presented in the lesson:	Learning content:
- 2.5 Data Import / Export Functions	▪ Import and export of project and manufacturing data. Formats of importing and exporting the data (*.aml, *.xlsx, *.xml, DXF). ▪ Exporting the Device Tag List in desired format. Importing the DXF files.  *Practical exercise to be done according to the e-learning template.*
- 2.6 Extras	▪ Creating “Basic projects”, compressing the project or clean the data no longer needed. Synchronizing project data, restore or backup master data. ▪ The System messages section. “Extensions” section with options to manage the Scripts and Add-ons, as well as Rights Management. Example how to set up the Rights Management.  *Practical exercise to be done according to the e-learning template.*
- 2.7 Help & Support	▪ Help command area with sub-areas Support, Information, and Improvement Program is explained. Accessing the EPLAN Information Portal (accessing Help and Manuals), managing the software and keeping it up to date. ▪ Accessing the EPLAN Solution Center to contact the support. Example how to contact EPLAN Support by using Help command area if problems occur. Example how to use Download Manager of EPLAN to download updates or additional programs.  *Practical exercise to be done according to the e-learning template.*

EPLAN Workflows (Part 1)

Topics that can be presented in the lesson:	Learning content:
- 3.1 Create a Project	▪ How to create project by using the project template (Basic Project). ▪ Data which project contains (pages, structure definitions, master data, reports, symbols, plot frames or forms).  *Practical exercise to be done according to the e-learning template.*
- 3.2 Create Pages	▪ Types of pages (automatic and interactive pages). Examples of pages' types and how to recognize them. ▪ An example of creating the interactive pages in the already created project, to step-by-step, create the holistic error-free project.  *Practical exercise to be done according to the e-learning template.*
- 3.3 Build Power Supply	▪ Symbols vs. Devices and explanation which data they contain (graphical representation, logic, parts data, commercial data). ▪ An example of symbol-oriented projecting of power supply unit in the project, before implementing the device-oriented approach and its advantages. Inserting first symbols and cables on multi-line pages and using device-selection options to allocate the device data to symbols. ▪ Working with Insert Center. Inserting Path functional texts.  *Practical exercise to be done according to the e-learning template.*

EPLAN Workflows (Part 2)

Topics that can be presented in the lesson:	Learning content:
- 3.4 Using Macros	▪ Advantages of Macro techniques to avoid creating the recurring elements repeatedly. Creation of the 3-fold power NO contact as a macro and using it in the project. ▪ Working with macros which include Placeholder objects. Advantages of Placeholder objects and examples how to use them.  *Practical exercise to be done according to the e-learning template.*
- 3.5 Block Editing	▪ Creating “Basic projects”, compressing the project or clean the data no longer needed. Synchronizing project data, restore or backup master data. ▪ The System messages section. “Extensions” section with options to manage the Scripts and Add-ons, as well as Rights Management. Example how to set up the Rights Management.  *Practical exercise to be done according to the e-learning template.*
- 3.6 Using Data Portal	▪ What is Data Portal and how to use it. Parts, macros, and other standardized data in Data Portal. Integration of devices out of Data Portal directly into the project. ▪ Example how to get a suitable PLC control unit for the project out of Data Portal, without necessity to create it on your own.  *Practical exercise to be done according to the e-learning template.*

EPLAN Workflows (Part 3)

Topics that can be presented in the lesson:	Learning content:
- 3.7 Device Navigator	▪ Device Navigator as a central tool for designing, in order to save engineering time. Logical overview on project data in the Device Navigator. ▪ Synchronizing view function and drag and drop function of Device Navigator presented on example of inserting coils, contacts or PLC inputs and outputs.  *Practical exercise to be done according to the e-learning template.*
- 3.8 Function Texts	▪ Enriching the project documentation with individual function texts to document the function of components within a project, which appear also in reports. ▪ Differences between standard texts, path function texts and function texts.  *Practical exercise to be done according to the e-learning template*
- 3.9 Messages Management	▪ Using Messages Manage to find out the electrical or logical errors in the project. ▪ Fixing some common designing errors and creating a fault-free project.  *Practical exercise to be done according to the e-learning template*
- 3.10 Reports	▪ Creating reports out of error-free projects. Targeted output of project data, on example of parts lists, terminal diagrams or PLC overwise, taking into account the international standard for classification of documentation (IEC 61355).  *Practical exercise to be done according to the e-learning template.*

EPLAN Education Certifications – EPLAN Certified Student (ECS) and EPLAN Certified Technician (ECT)

The completion of the e-learning and the project designed in the e-learnings are the content basis for the ECS and ECT certification.

The certification documents the acquired know-how and brings advantages for career entry. The EPLAN Education examinations test candidates in theory and practice (application skills) on the product EPLAN Electric P8 Education.

The final examination is carried out by an external, independent, registered certification body - Competence Center for EPLAN Certifications / TAE - responsible for all EPLAN examinations, including the EPLAN Certified Engineer (ECE) certification.

In the following table, you can see the most important details about the certification program:

	EPLAN Certified Student (ECS)	**EPLAN Certified Technician (ECT)**
For whom is this exam intended?	EPLAN Education users who are visiting an advanced technical college or a university.	EPLAN Education users who are visiting the vocational or and advanced technical school.
Exam content:	In the theory part: Answering multiple-choice questions on the topic of the standard-compliant design with EPLAN. In the practical part: Standard-compliant design of an EPLAN project.	In the theory part: Answering multiple-choice questions on the topic of the standard-compliant design with EPLAN. In the practical part: Standard-compliant design of an EPLAN project.
Exam type:	Practical and theoretical examination.	Practical and theoretical examination.
How many times can I repeat the exam?	Three times	Three times
Which forms of examination are possible?	On-site exam at the educational institution if it participates in the partner program or as an online-only exam.	On-site exam at the educational institution if it participates in the partner program or as an online-only exam.

Am I allowed to use teaching aids during the exam?	Yes, the use of the following assistive materials is permitted: EPLAN Electric P8 software (including help system).	Yes, the use of the following assistive materials is permitted: EPLAN Electric P8 software (including help system).

Participation in the partner program is **free of charge for educational institutions and instructors.** Instructors are provided with all exam materials and solutions, including access to the online exam platform.

You can access the EPLAN Education online exam via the following link or via the QR code shown.

EPLAN Certified Student (ECS) / EPLAN Certified Technician (ECT):	QR Code:
https://www.eplan-certified.com/	

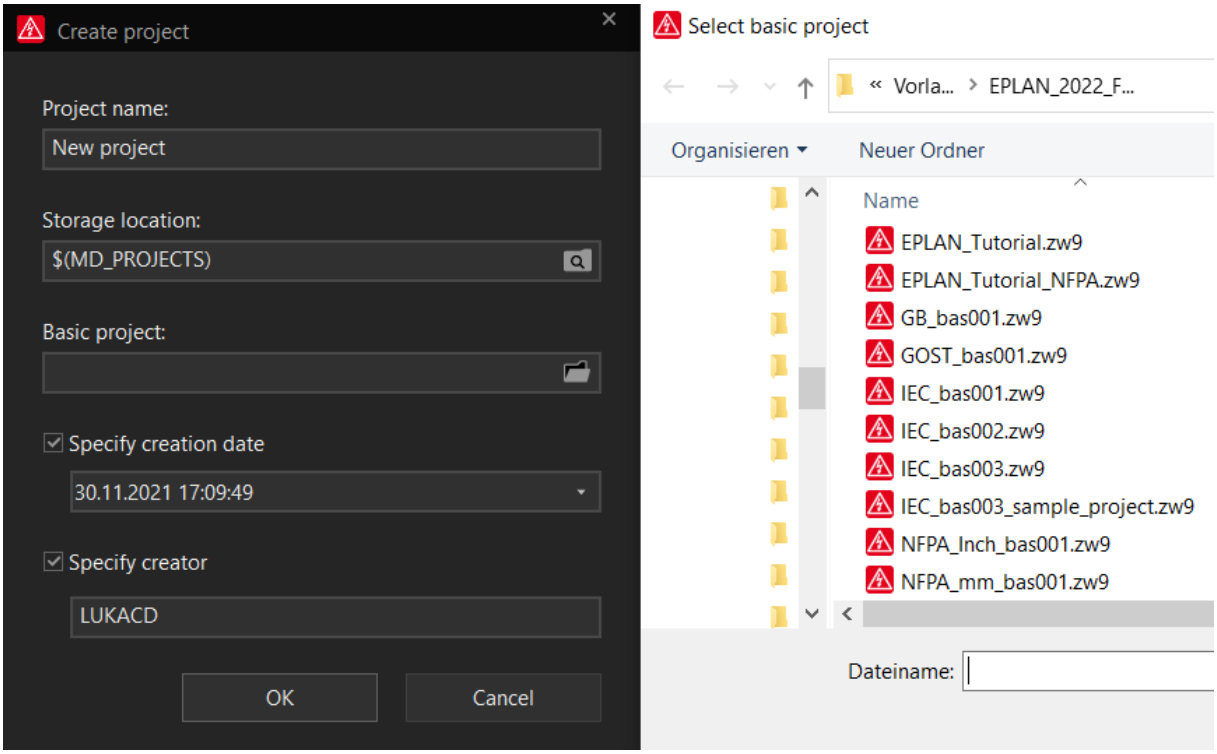
Also, in the case of the online exam, the practical and theoretical parts must be done. The practical part is uploaded via the online portal for the exam.

To participate in the Partner Program or in case you have any further questions, please contact our Certification Body at the following e-mail address:

contact@eplan-certified.com

Advantages of EPLAN Functions by Topic

EPLAN Project Templates

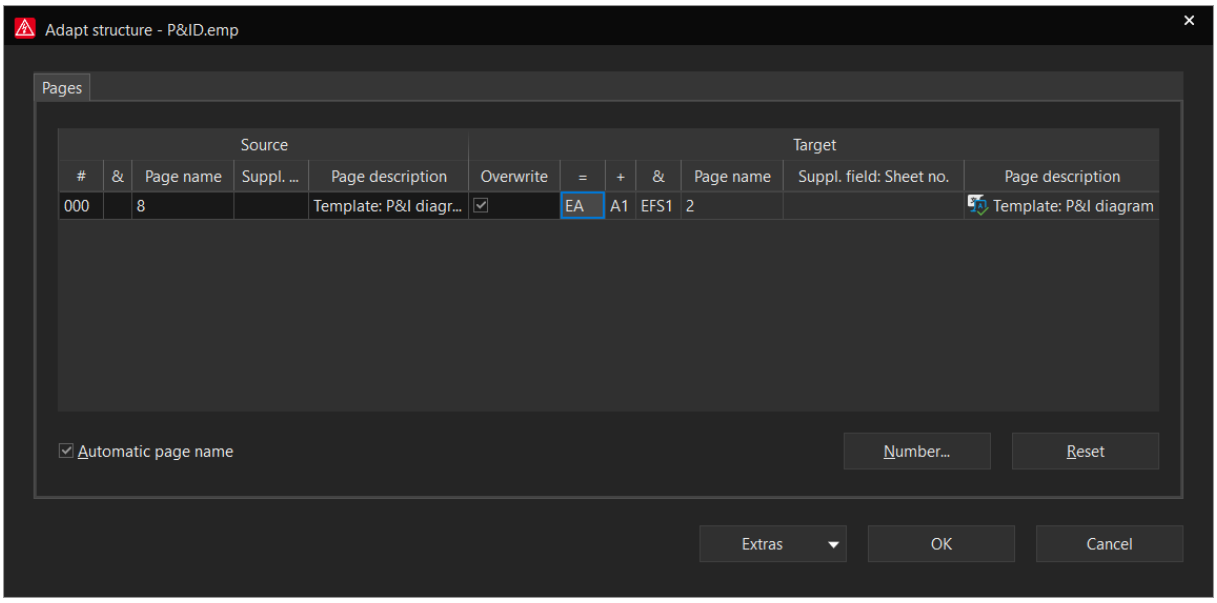


1. The restored project has all necessary project-ready data to begin the creation of EPLAN schematics.

2. EPLAN project templates (e.g. data backup in *.ZW1format) include schematic pages, symbol libraries, and devices used in the project.

3. EPLAN example templates are supplied, providing the project environment to NFPA, IEC, GOST, or similar standards.

Page Marcos

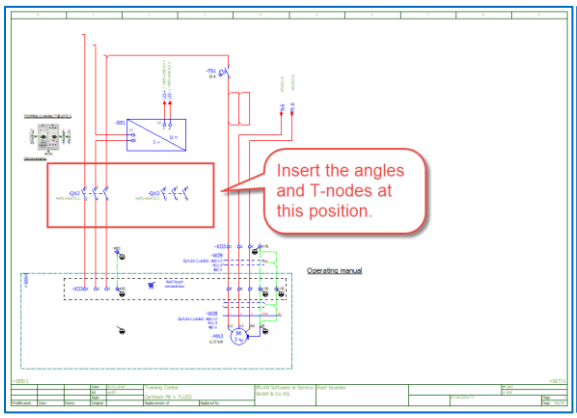


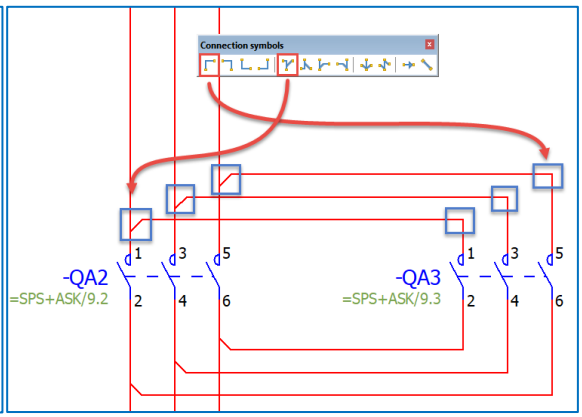
1. Page macros are pre-drawn schematic pages that could contain one partial function, like a power supply circuit and its feeds.

2. Page macros include all devices and connections.

3. Page macros can be easily created; they are easy to handle and can be exchanged between the technicians via e-mail.

Auto-Connecting Lines, Angles, T-Nodes



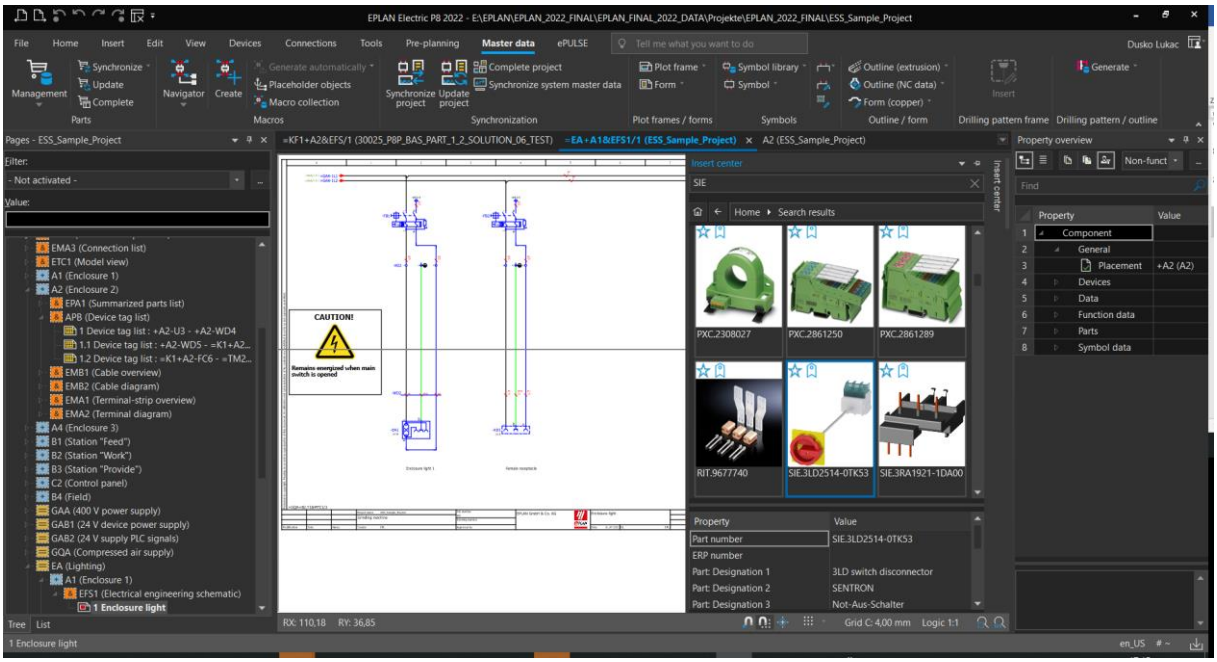


1. Customers do not have to draw the connecting lines manually; automatic lines save time in the design.

2. Angles, T-nodes, and cross-connection are provided in the standard library, allowing a schematic to be connected quickly.

3. Automatically drawn auto-connecting lines include information such as type of connection, for example, wire connection, direct connection etc. Users do not have to spend time setting lines as wires or internal links.

Symbols and Symbol-Libraries

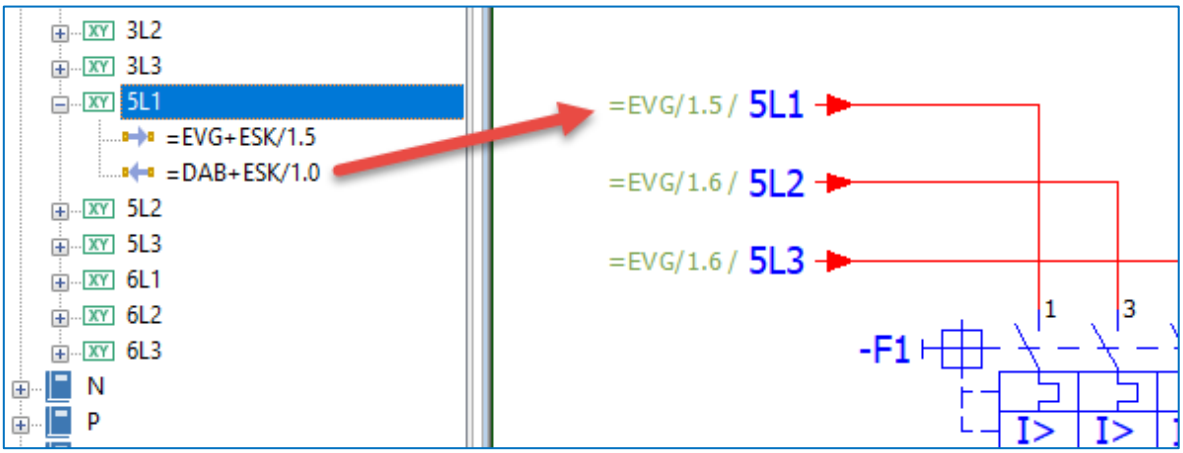


1. Customers can choose symbols from a large selection of pre-created symbols from our symbol libraries based on standards.

2. EPLAN symbol libraries are based on international standards.

3. All symbols are provided with eight variants (rotations). Creating own symbols can be slow, without standards being followed

Cross References and the Interruption Point Navigator

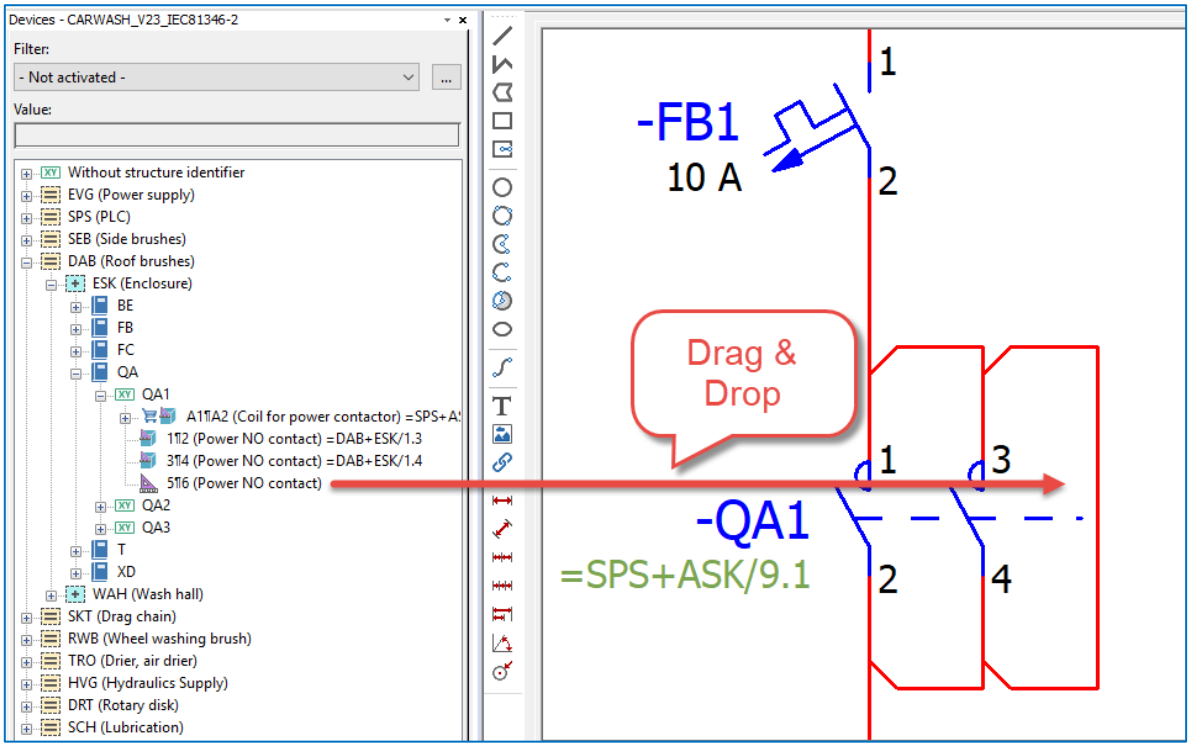


1. Customers benefit from automatic cross-references, which hyperlink allowing faster navigation.

2. By using the Interruption point navigator, the interruption point will automatically the assigned right Device Tag, eliminating errors by user intervention.

3. Real-time cross-references are created between items, no labor-intensive manual creation or refreshing (please see in the picture e.g., =EVG/1.5/)

Main and Auxiliary Functions, Icons in the Devices Navigator

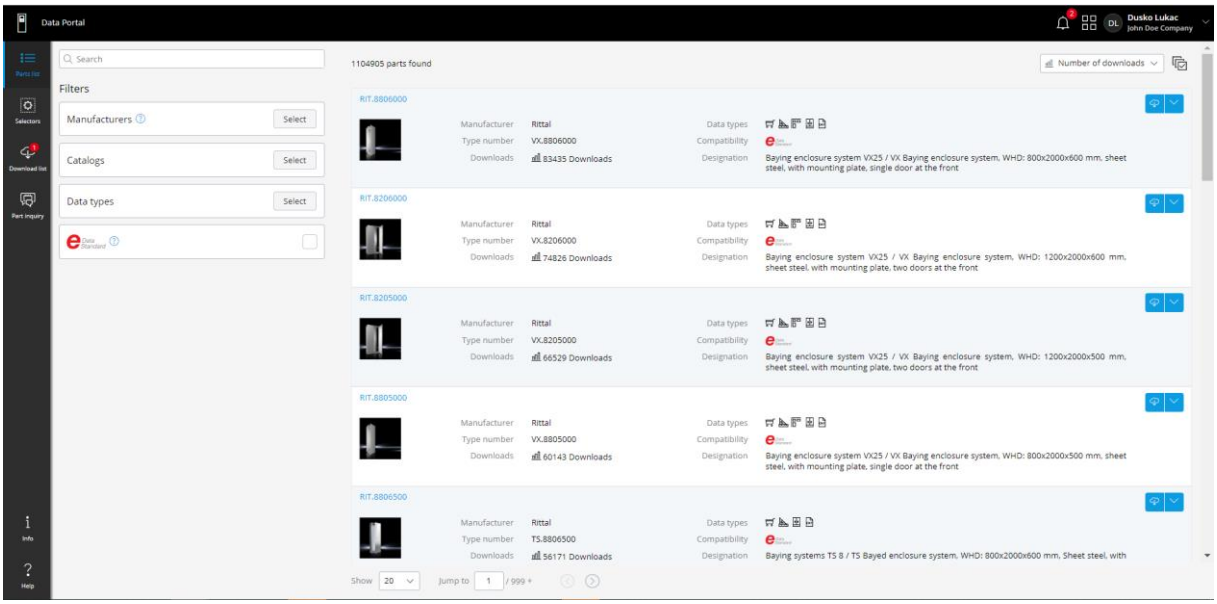


1. Visual linking between parent and child representations are shown in navigators and dragged for rapid design creation of the schematic.

2. Secondary functions are automatically assigned the right main function, including automatically the right cross-reference to its counterpart.

3. The icons in the navigators provide holistic information about whether the configuration is correct, e.g., whether a device is oversized or if contacts on the device are free for use. This benefit means you can quickly see if an auxiliary contact is required.

EPLAN Data Portal and Device-Oriented Design

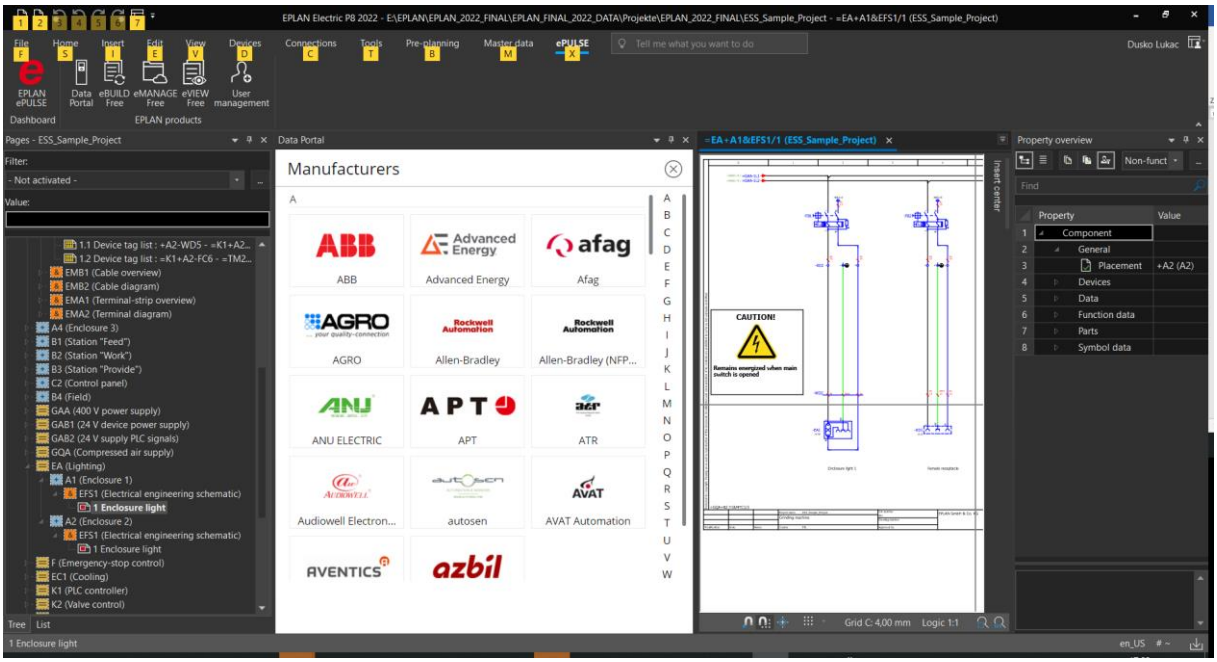


1. By using EPLAN Data Portal, customers have access to over 1.000000,00 datasets from over 300 manufacturers, including detailed device data like 2D and 3D-macros, properties, pictures, or documents.

2. Customers need not create complex devices from scratch. These devices are available in the EPLAN Data Portal and are ready to be placed into the schematic or to be imported into the parts management database for use at a later time or on future projects.

3. Solutions on the EPLAN Platform can access this service. Simply adding the components available to the project reduces configuration work and increases the quality of the machine and system documentation.

Working with EPLAN Data Portal

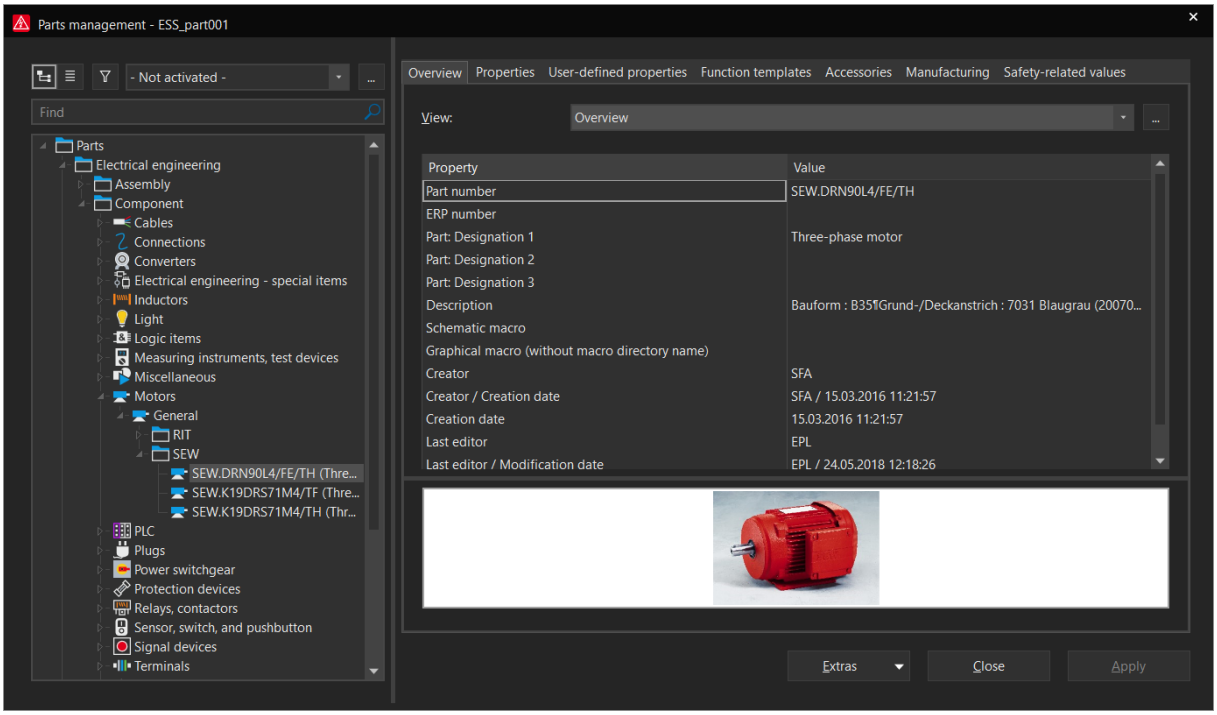


1. By using EPLAN Data Portal, customers can place devices directly onto the schematic page, no creation required, and quality data from the manufacturer.

2. Devices are complete and ready to use. They include technical data necessary for producing the schematics such as dimensions and datasheets for final delivery, eliminating searching websites for data.

3. Customers will save time and money because they do not have to construct device-related symbols. They are already linked and included in the device, which EPLAN Data Portal provides.

Parts Management Database

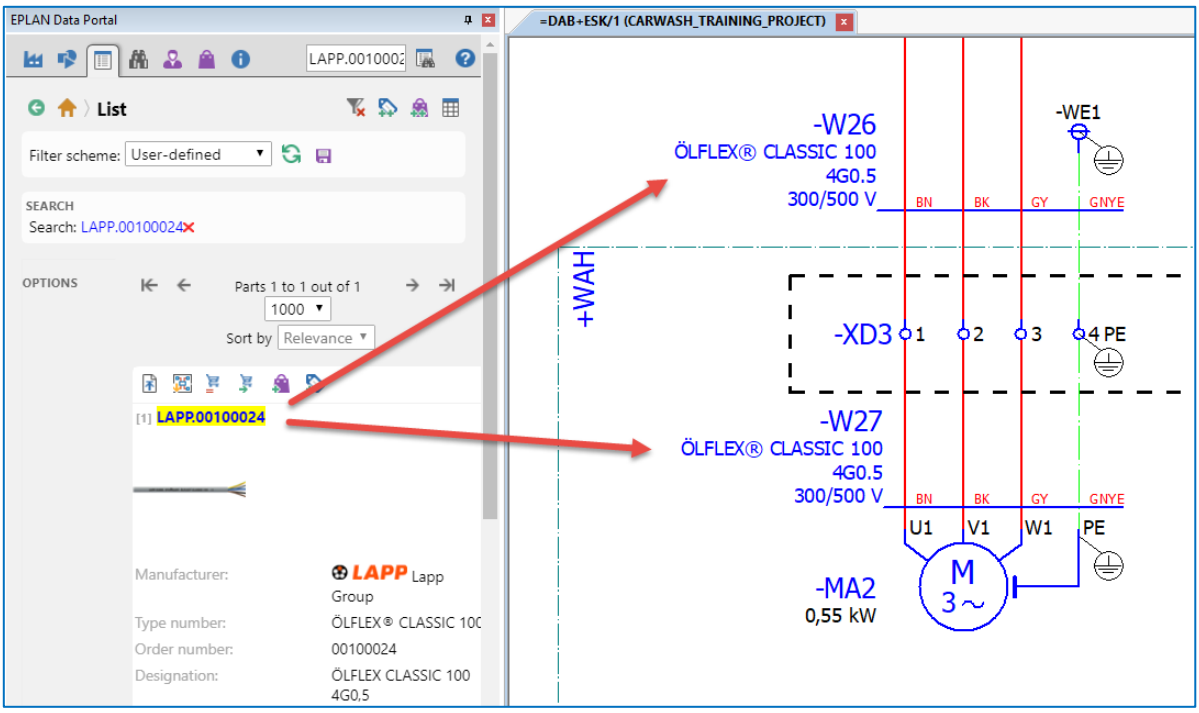


1. The parts management database can be populated from the EPLAN Data Portal. Data includes devices with their technical properties, macros, and documents necessary for schematic engineering.

2. All the device information is imported into the device by placing the devices directly from the parts management on the schematic pages. It can be used for reporting and check project functions.

3. Component manufacturers providing customers with device data available in EPLAN format make the design simpler. Component selection is simplified enormously for the user.

EPLAN Data Portal and Cables

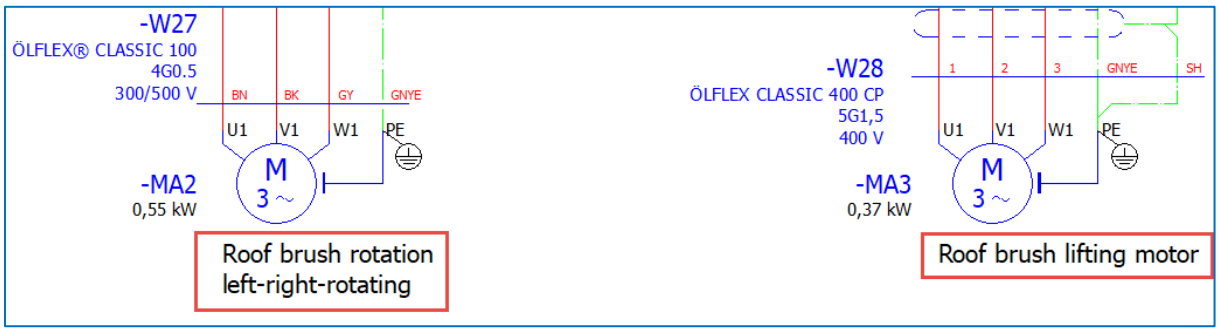


1. EPLAN Data Portal and a device-oriented workflow allow the easy placement of conductor information on the cable cores.

2. Existing products are used already; for example, the type of the cable part can be easily changed by replacing the exiting cable with the other one available in EPLAN Data Portal.

3. Customers can be reassured that the parts in the EPLAN Data Portal are made available by the manufacturer, obsolete data is reduced, and replacements can be substituted. Error reduction as these old parts can often be missed until purchased.

Texts and Function Texts

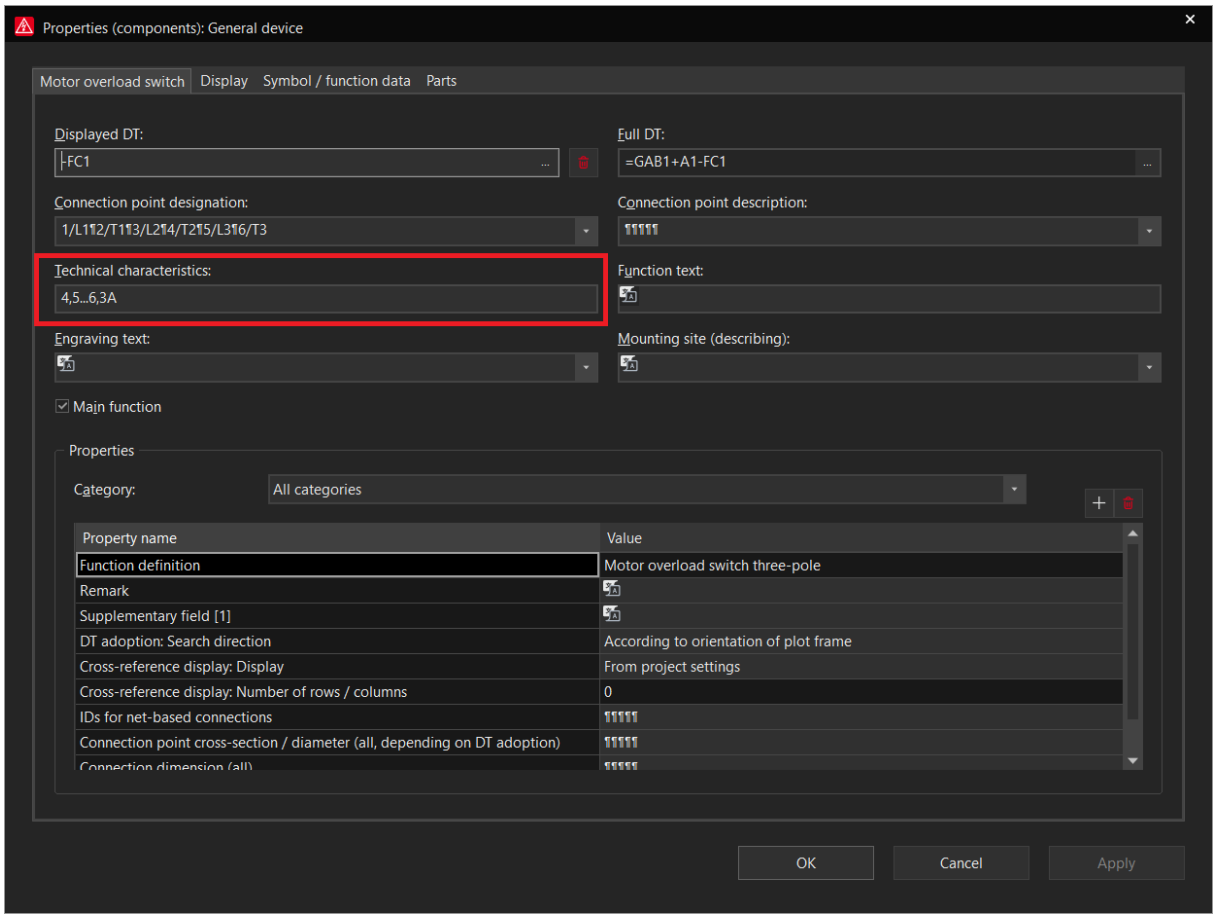


1. Function texts are intelligent texts, which are linked with the device, and are used for describing devices within the automatic reports. For example, in the reports, such as the device lists, the function texts as in the example above “roof brush rotation left-right-rotating” and “roof brush lifting motor” will stand next to the device name MA2 or –MA3. Clear, informative automatic reports are produced for manufacture or client documentation.

2. Function texts can also provide quick identification of individual schematic elements, a description or a statement.

3. In addition to the function texts, there exist “normal texts”. Those texts provide information on the schematic page and are not linked intelligently with the device. They are used for short explanations like notes on a certain schematic page.

Technical Characteristics of the Devices

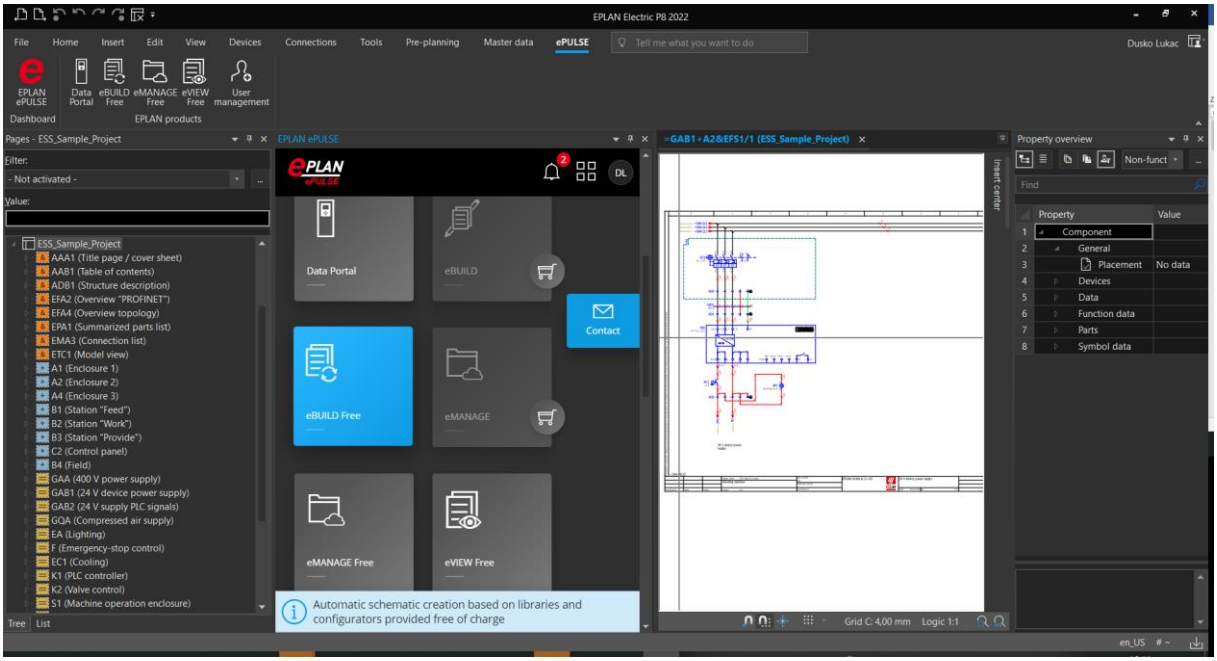


1. Technical characteristics of the device are assigned automatically from the parts. This saves time and reduces human error or missing data if the engineer has to source it.

2. The device's properties are made available from the part and do not have to be entered manually.

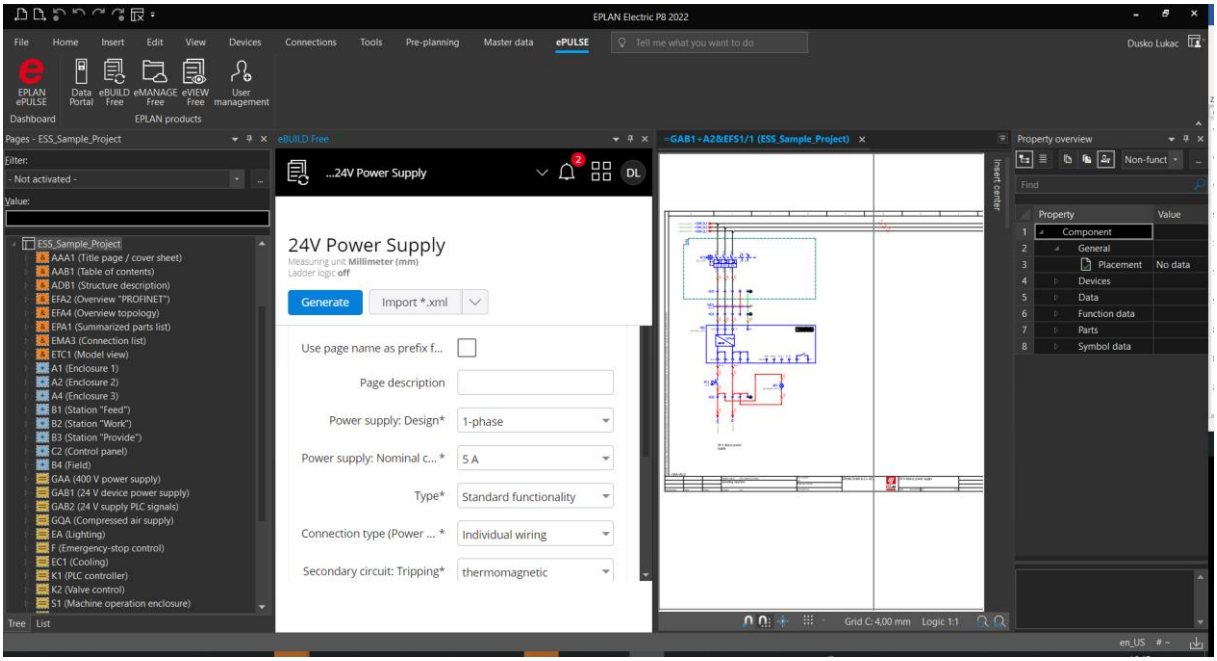
3. For the case where technical properties have been manually inserted in the “technical characteristic” field (please see the picture above), the data is read from the parts management database and will overwrite those manually entered values automatically, linking the correct manufacturer information directly to the device.

EPLAN eBUILD (Free)



1. EPLAN eBUILD Free is available in most Platform languages. It is accessible after the registration process under EPLAN Cloud (https://identityservice.epulse.com/epulse/signup).
2. EPLAN eBUILD Free user interface is based on the EPLAN Platform's user interface, and therefore customers do not need to become accustomed to a new graphics environment.
3. Based on the templates, the user can be guided through the system, enter data, and select options via an intuitive interface following rules from quick and easy selectable menus.

EPLAN eBUILD Designer and Project Builder

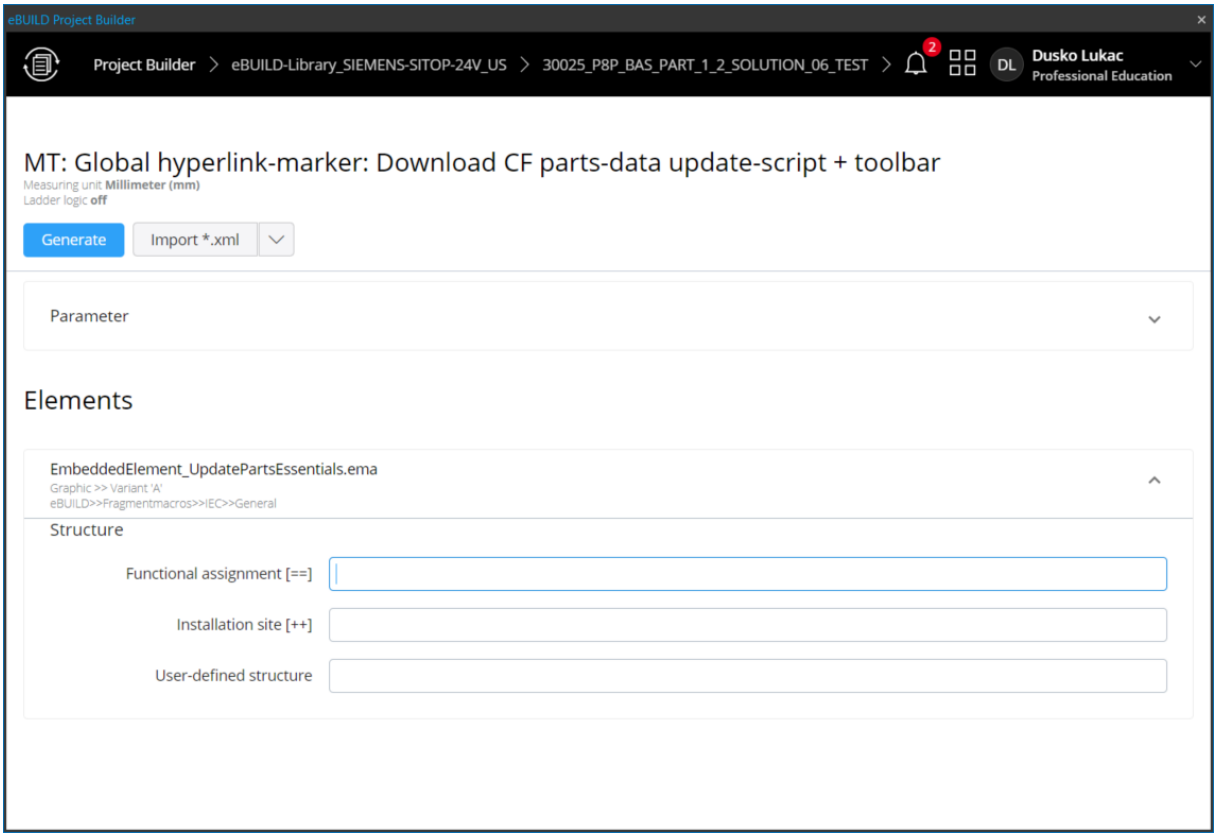


1. EPLAN eBUILD Free consists of two program sections: Designer and Project Builder. These can be clearly separated so tasks can be carried out parallel by users or key users.

2. In the Designer, rules are created on the basis of EPLAN macros, also based on which configuration interfaces are automatically created in the Project Builder, entire EPLAN projects or partial circuits can be generated at the push of a button.

3. Professional programming knowledge is not required at any point.

EPLAN eBUILD Functions

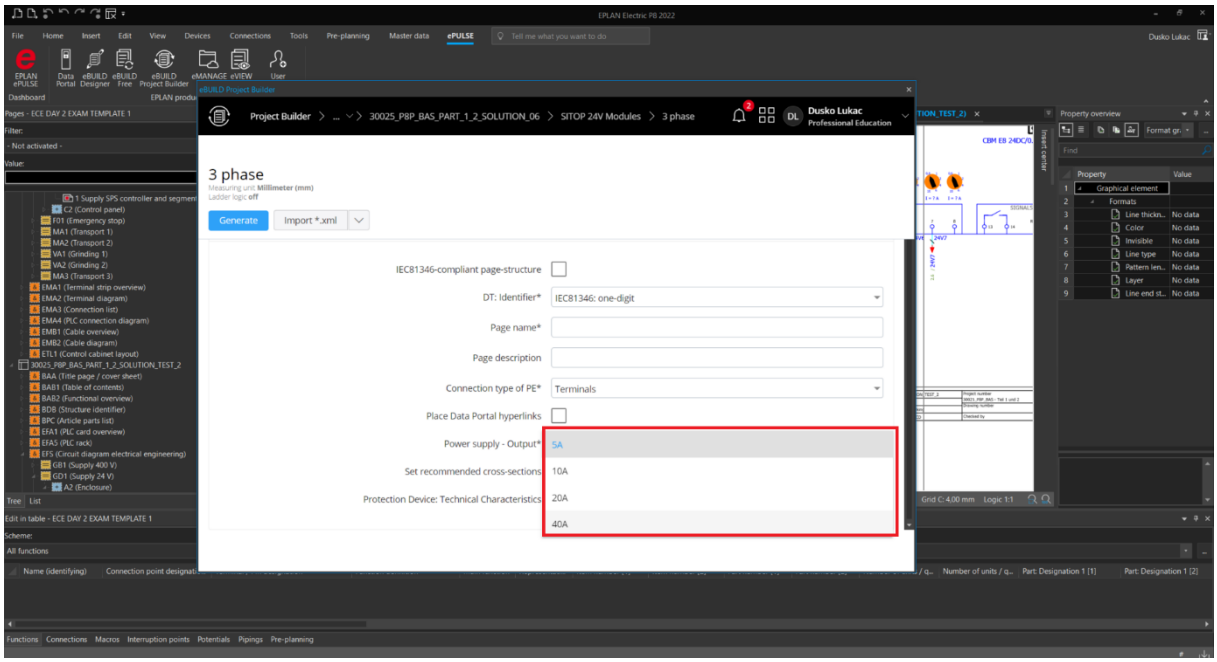


1. Many single EPLAN Electric P8 functions such as page description or function texts can easily be defined during the design process, eliminating lots of manual entry tasks.

2. Projects can be easily expanded at the touch of a button. The desired project characteristics are to be selected for it.

3. Professional programming knowledge is not required making configurations easy to create.

Configuration Variables

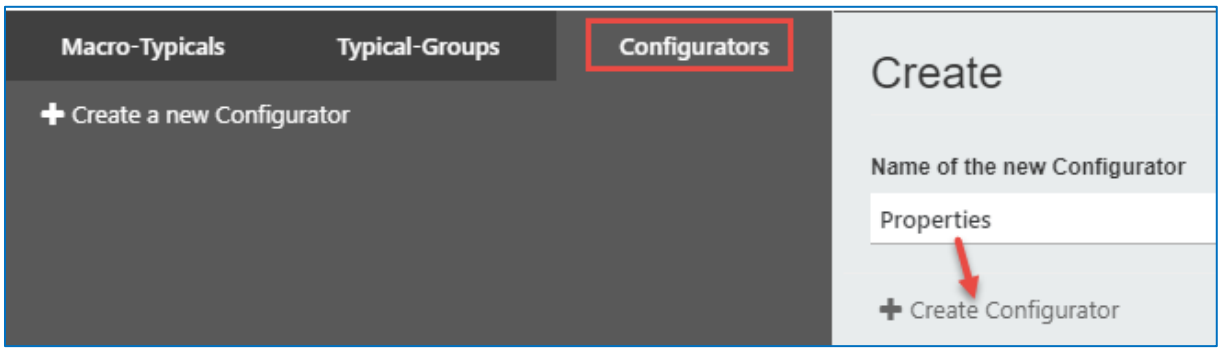


1. Configuration variables allow the comfortable selection of the desired names.

2. EPLAN EBUILD Free not only produces electrical but could also generate fluid schematics.

3. Designers can create rules, models, and kits based on "normal" EPLAN macros, thus providing users with managed options for configuration.

EPLAN eBUILD Libraries

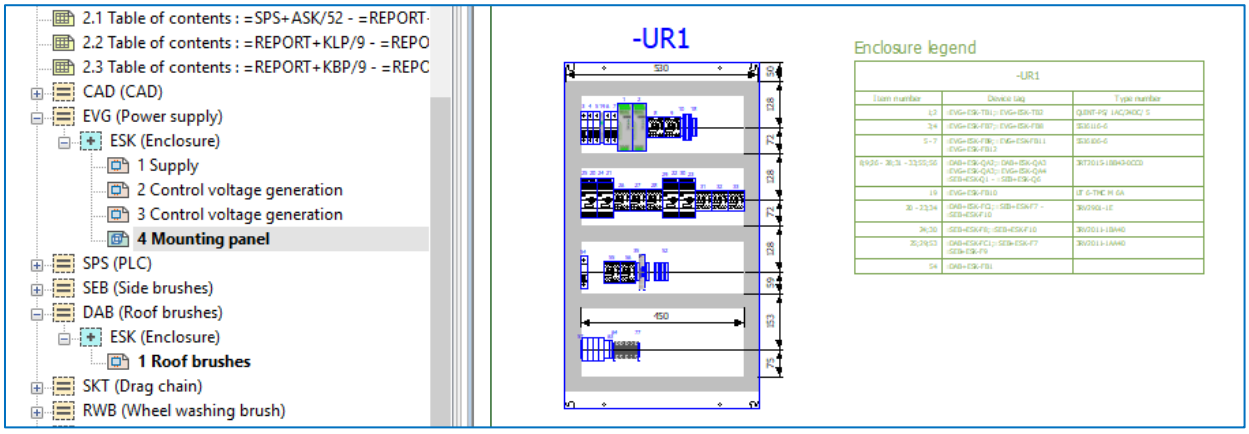


1. Using EPLAN eBUILD, the user can complete a detailed library of macros based on existing projects, with which they can automatically create standardized schematics or mini (partial) circuits with just a few mouse clicks.

2. New configurators, individual devices, entire schematic pages, or even complete EPLAN projects can be generated easily at the push of a button.

3. An extensive sample library of macros is provided to help clarify the potential use of configuration-based schematic automation.

2D Mounting Panel

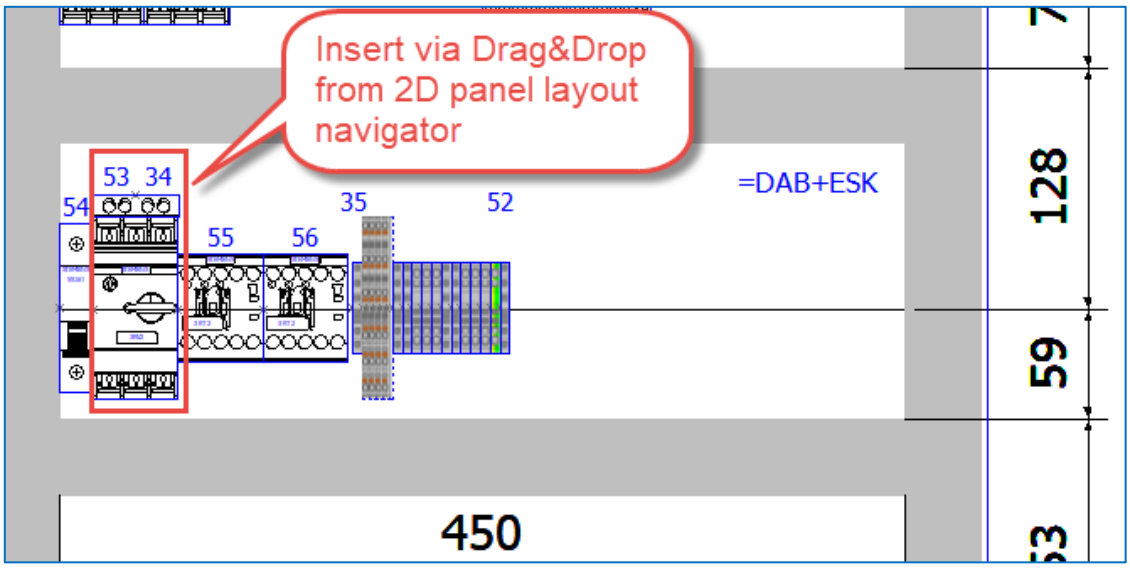


1. Even while working with 2D Mounting panel functionality, the user can benefit from the consistent integration of 2D mounting panel pages within the same EPLAN Electric P8 project without changing the working environment.

2. The 2D panel layouts enable the customer to draw a simple, intelligent enclosure design with intelligent linking to the schematic components.

3. 2D footprint Macro information is utilized from the parts management database and can visualize and construct a layout even without a schematic circuit.

Message Management Function and 2D Mounting Panel

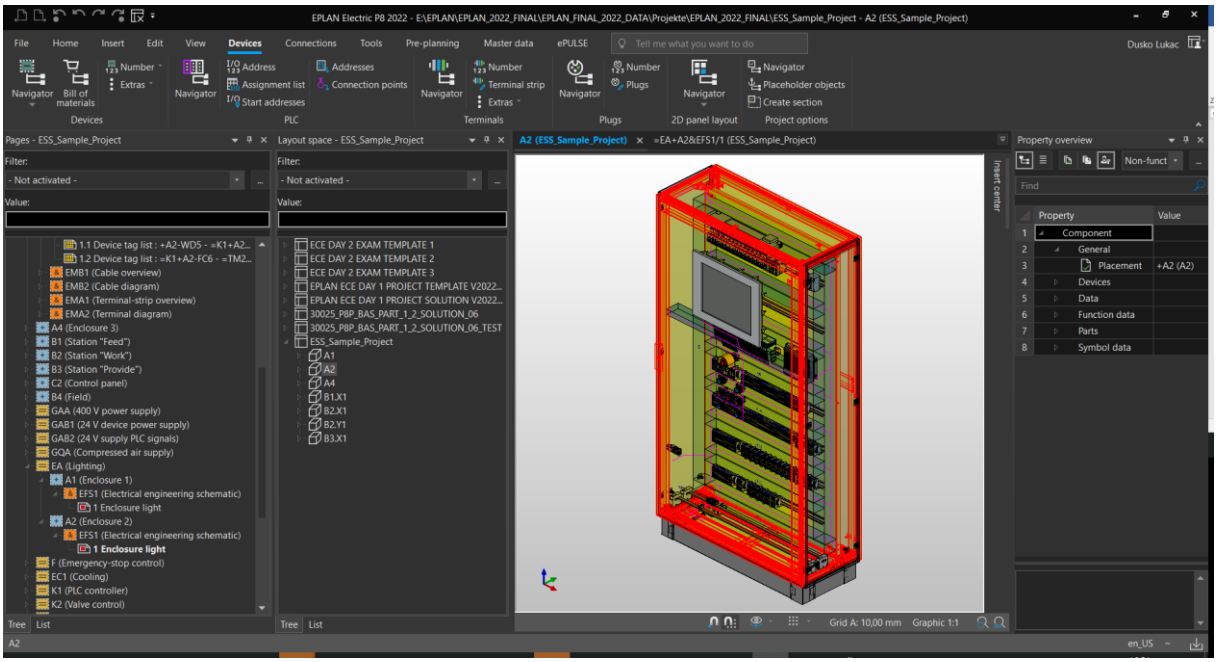


1. Project Checking with the message management function of EPLAN Electric P8 is also applicable to the 2D mounting panel devices.

2. A 2D view of the mounting plate with all intelligent components can be generated in EPLAN Electric P8.

3. A control cabinet report (legend list) can be generated for the 2D mounting plate, containing all the devices which are placed on the mounting plate, doors, or cabinet surfaces.

EPLAN Pro Panel - 3D Mounting Panel

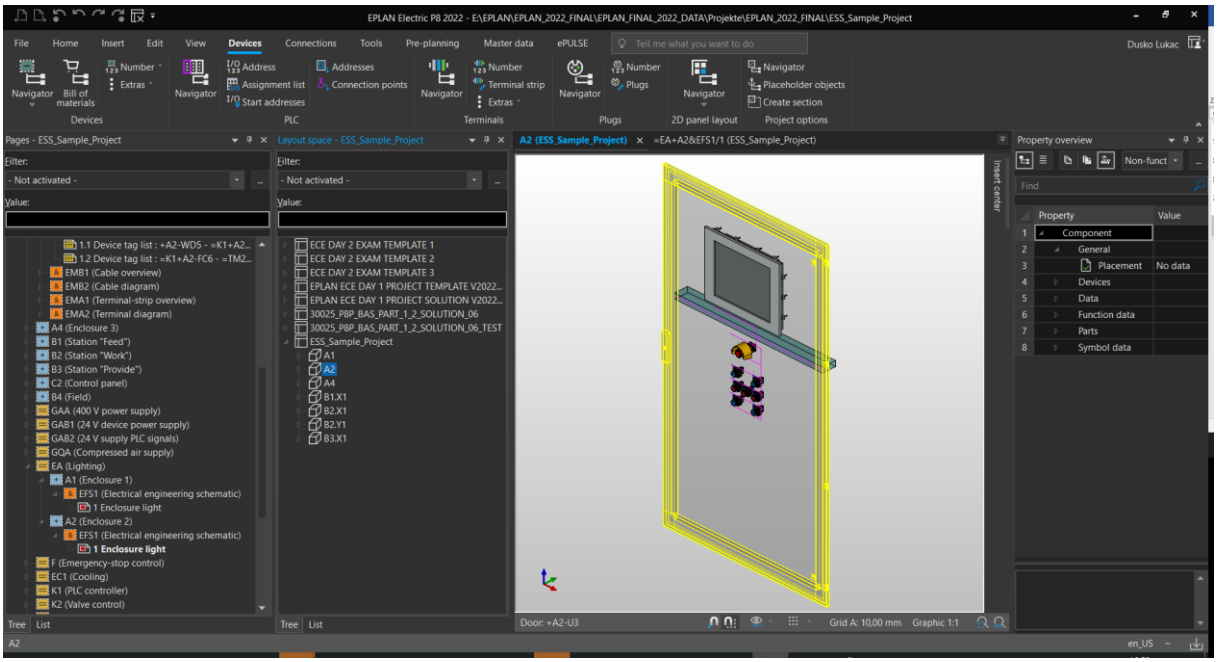


1. With EPLAN Pro Panel the 3D design and layout of the control cabinets, switchgear enclosures, and power distribution systems for the energy market are possible.

2. Designers previously had to search in manufacturer catalogs; now, they can take advantage of web-based configurators. With the new 'Rittal Configuration System', Rittal offers an online configurator for a range of its enclosures such as VX - as well as for its small housing range. The data from the 'Rittal Configuration System' can be transferred directly to EPLAN Pro Panel.

3. The imported data is the basis for the electromechanical design of the control cabinet in 3D and the provision of the complete manufacturing documentation for the workshop, such as drill holes and various layout viewpoints.

EPLAN Pro Panel Functions

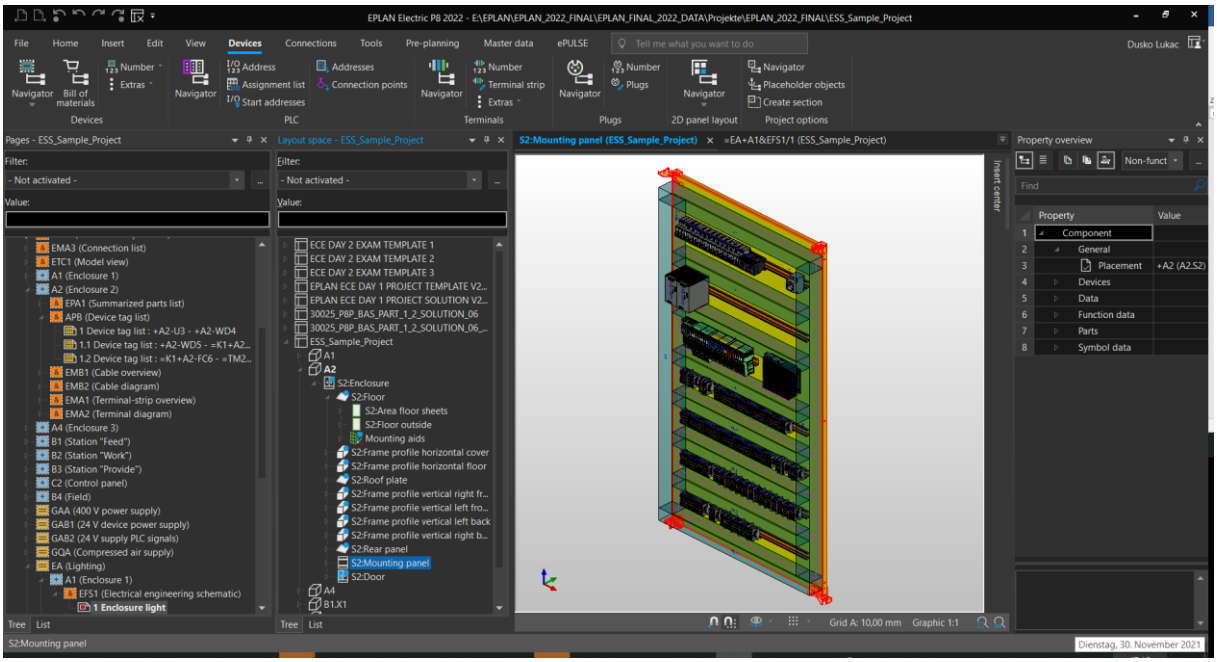


1. EPLAN Pro Panel is the technologically leading CAE solution for 3D engineering of switch cabinets and switchgear.

2. EPLAN Pro Panel provides the 3D assembly structure for control cabinets' electrical and fluid engineering project planning.

3. EPLAN Pro Panel can also provide virtual 3D wiring through the layout and construct flexible copper bars in 3D for power distribution systems. This data can then be exported automatically for manufacturing in data for wire assembly or the mechanical processing of components on production machines.

EPLAN Pro Panel and Reporting

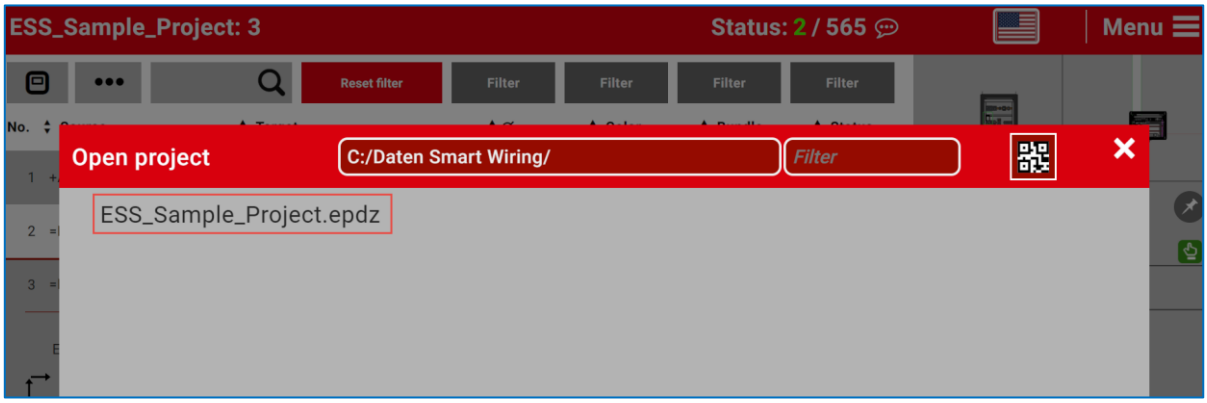


1. EPLAN Pro Panel produces individual project-based reporting, drawings, and exports relevant to production and assembly. This includes the data necessary for automated machines to help process the construction of cabinet components such as copper bars and cable and wire assembly, the automated assembly of terminal strips, and the robot-assisted wiring of equipment.

2. EPLAN Pro Panel – allows Project Processing data from external programs (e.g., third-party CAE systems, ERP systems, Excel lists, etc.) can be imported into an EPLAN project. Reading a parts list and build your 3D layout.

3. EPLAN Pro Panel supports DXF / DWG formats to M-CAD or other E-CAD systems or directly exports to Rittal Automated Systems - Perforex machining systems.

EPLAN Smart Wiring and 3D model in EPLAN Pro Panel

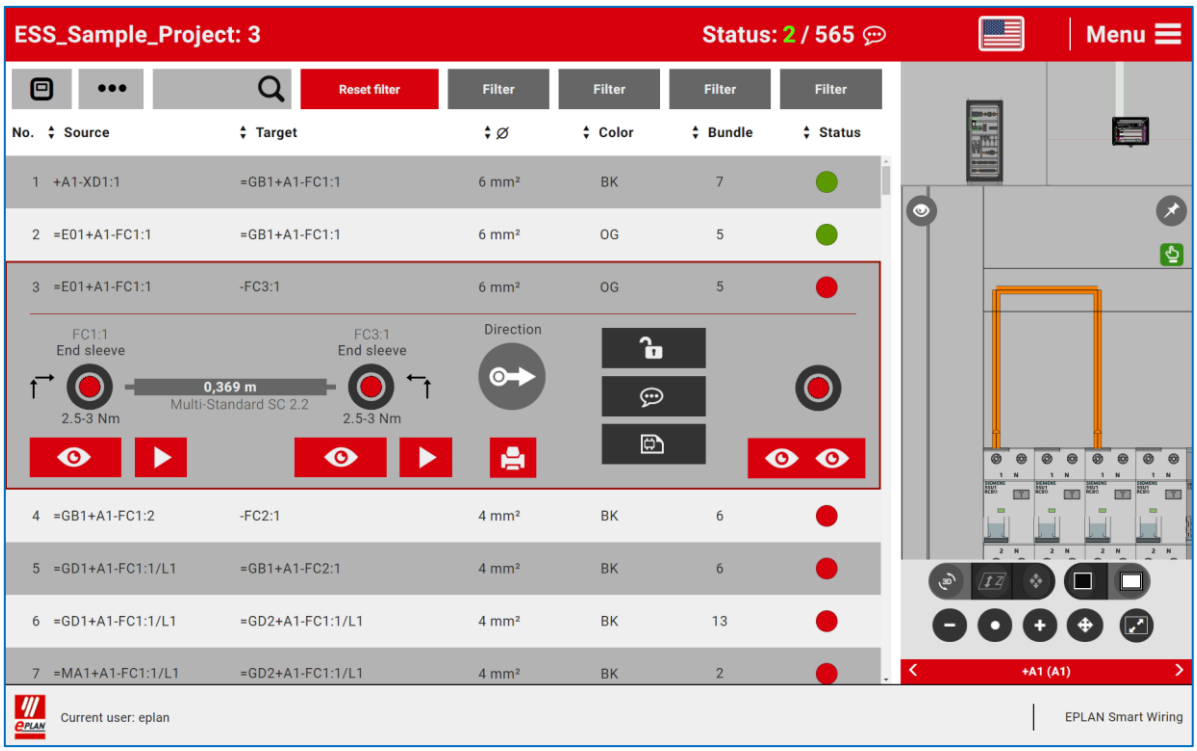


1. EPLAN Smart Wiring makes panel wire production more efficient because the EPLAN Smart Wiring's digital representation refers directly to the virtual 3D model in EPLAN Pro Panel.

2. EPLAN Smart Wiring can be utilized to enhance productivity even without a 3D layout. As an example, Excel lists with all the required connection information can be imported into the program. It helps with as-built panels that require modifications of new wires or ones to be removed.

3. The core functionality of EPLAN Smart Wiring is its easy visual method to simple supported wiring of switchgear enclosures. The software, which previously could only be used locally on a client device, can also be used on a central web server with client applications for all connected users. This allows project data to be made available centrally, edited, saved, and archived.

EPLAN Smart Wiring Functions

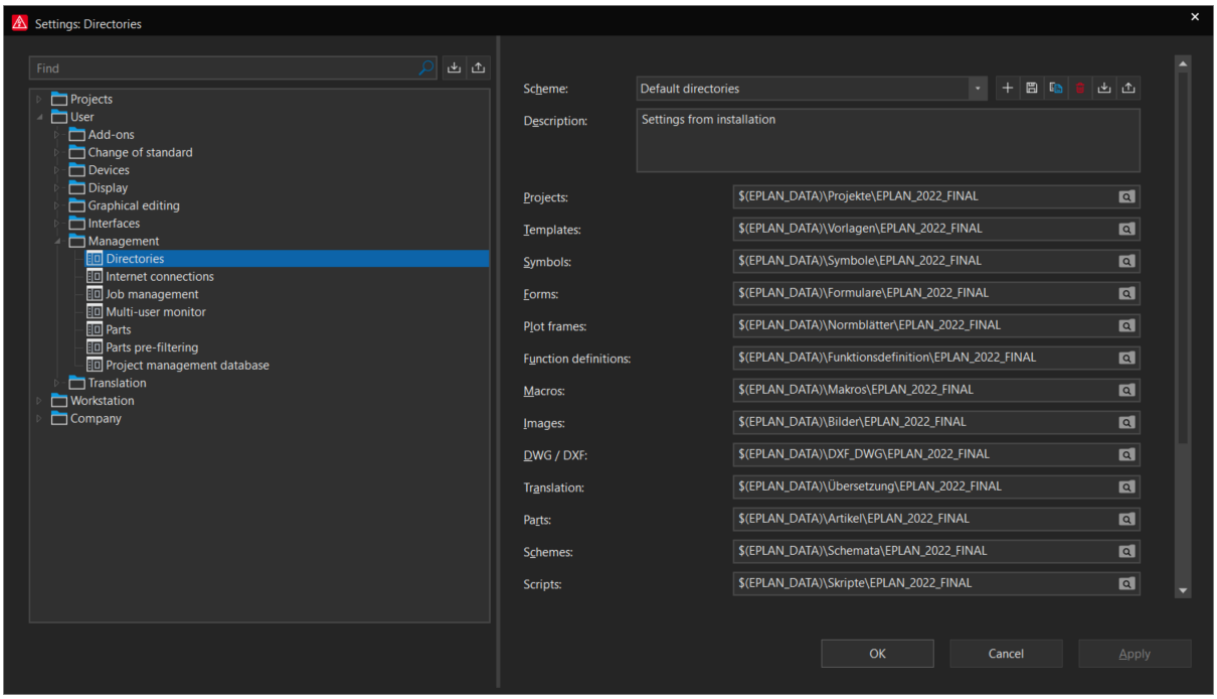


1. EPLAN Smart Wiring visualizes the wiring and makes available all the necessary 100% digital data. Users benefit from a significant drop in the error rate and substantial time savings. This applies to last-minute changes, mainly as the software handles the often complex task of comparing a project's new status with its old state.

2. EPLAN Smart Wiring provides source and target descriptions, cross-section, color, connection point designation, conductor termination processing, and routing track.

3. If the EPLAN Smart Wiring Client connects to the webserver, the settings and project data last defined by the user are automatically loaded. The project information is now provided with QR code support. The user scans a provided QR code with information about the project and location on the server.

Master Data

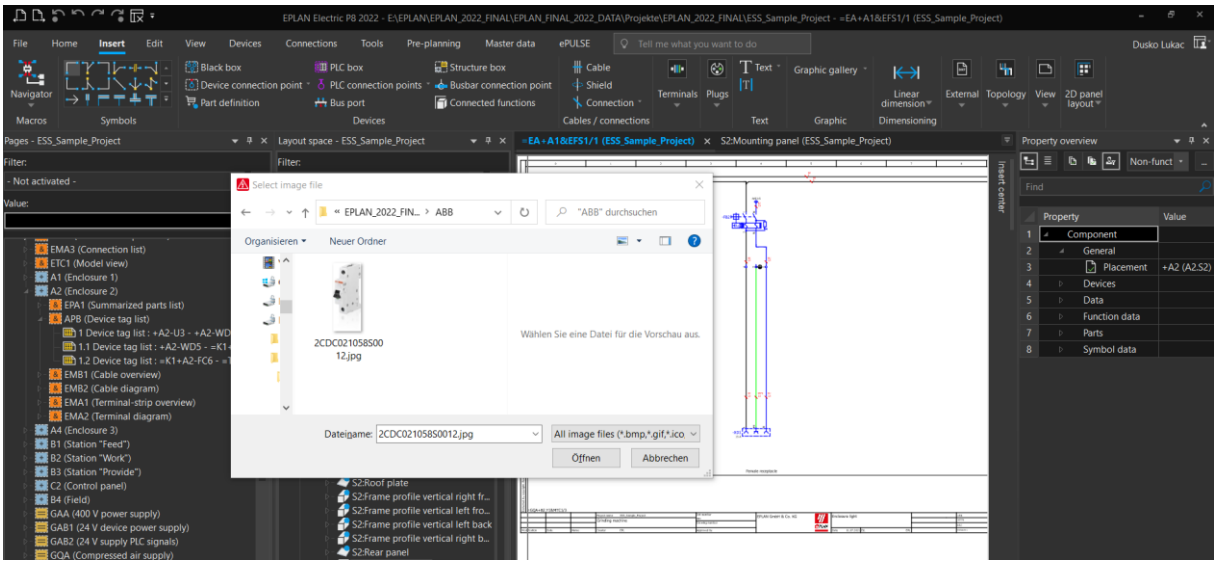


1. All the Master data that is inserted into a project configuration are copied from the central server master data of the customer (e.g. projects, forms, standard sheets, symbol libraries...). All the necessary master data is then stored in the project, allowing a project to be worked on away from the central system or external to the office.

2. If the data inside the customer ID directory is changed, the copy in the project is no longer current. In this case, where current Master data is necessary, customers can use the master data comparison feature to update individual data or all outdated data.

3. Suppose the customer wants to use the Master data out of the project for further projecting purposes. In that case, it is also possible to copy Project master data into the System master data, which is then available for all projects, such as using data from an external client in its environment.

Master Data and Templates

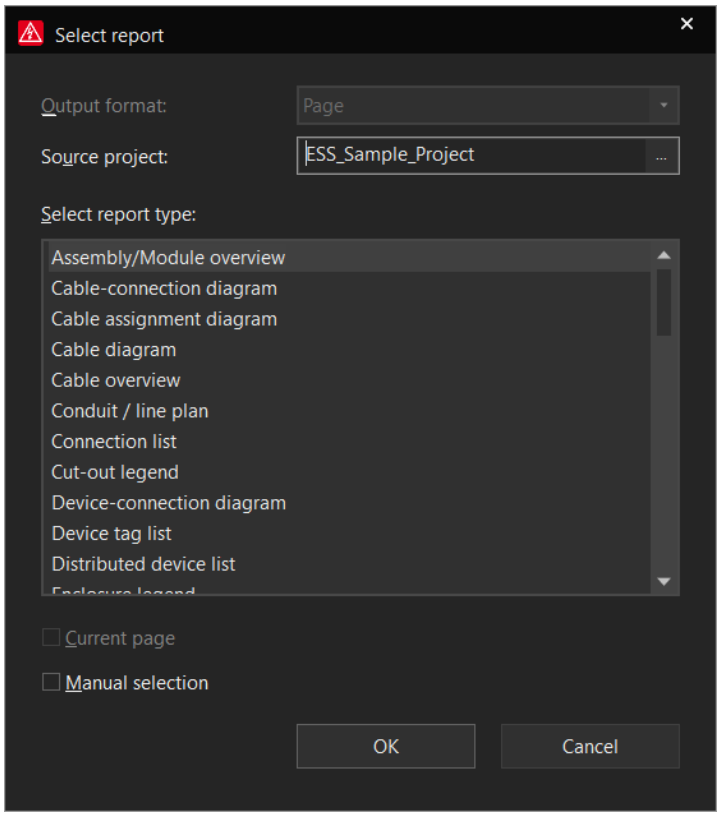


1. Customers can freely change the master data if desired without programming; for example, the drawing border or plot frame may require the insertion of the company logo.

2. Master data, for example, the plot frame are files, which can be simply exchanged and shared easily by exchange applications such as e-mail.

3. Master data can also be integrated into the EPLAN project and also stored inside a project template. This is stored as a basic project template. With this methodology, master data, such as plot frames or title pages, are available on the external client PCs because they are part of the project. Consistency is maintained if you have to use external design services

Reports

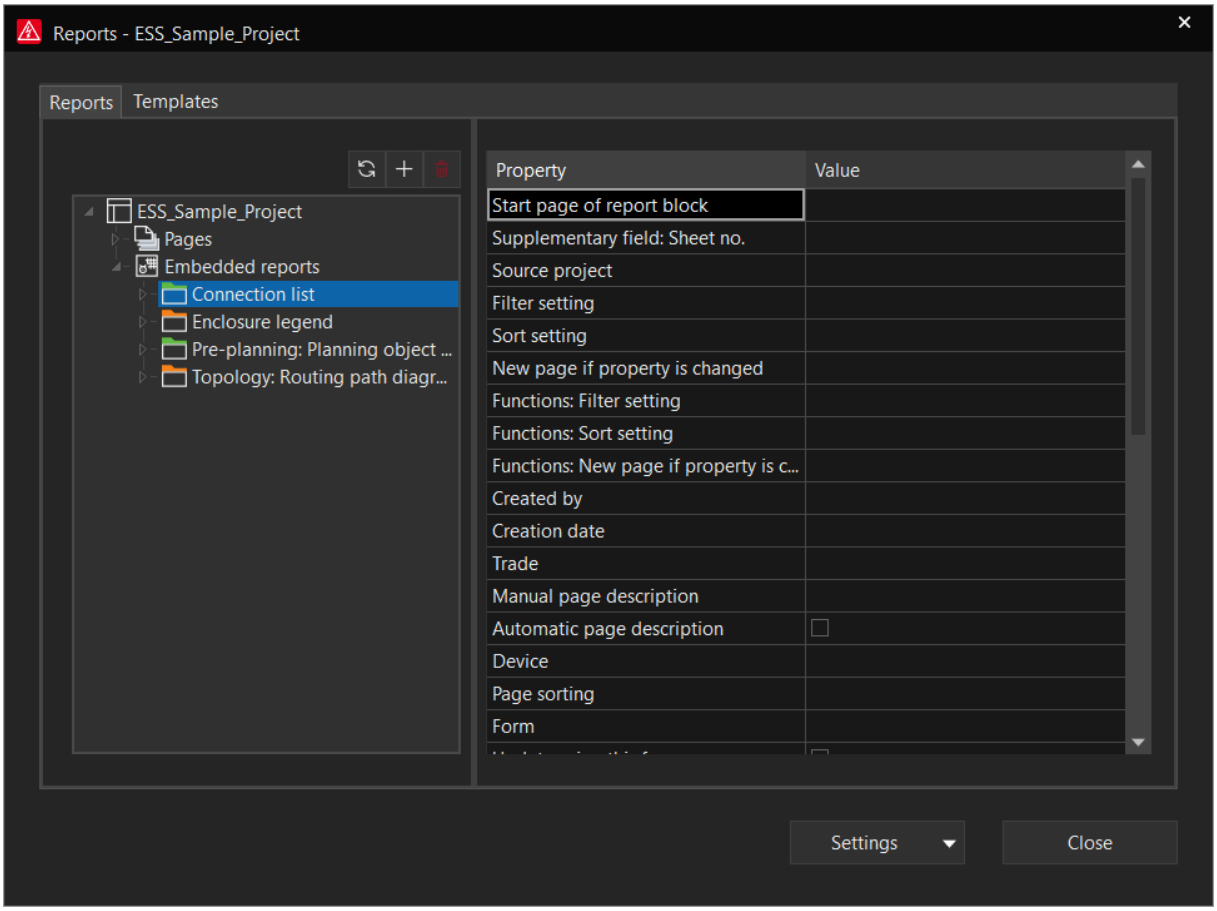


1. EPLAN Electric P8 offers a wide range of reports, which can be generated automatically from the project data, e.g. the overview of cables or terminals used in the project.

2. Customers can use the predefined templates for reporting and make the reporting procedure much more customized, comfortable and efficient.

3. Generated reports can also be inserted onto the existing schematic page as an additional information source to the schematics. By using this function, customers can place their reports directly next to the control cabinet mounting plate to describe which devices are used in the control cabinet.

Reporting Functions

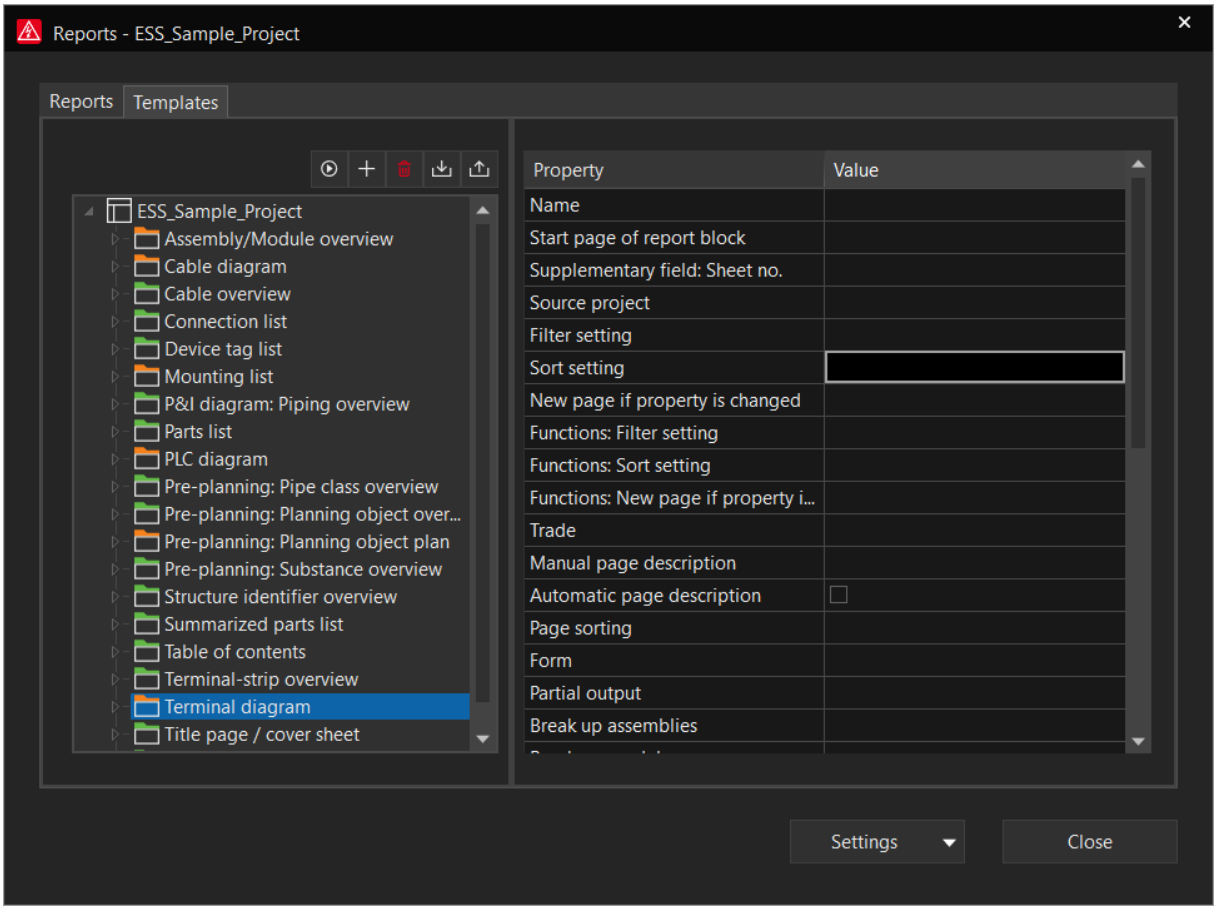


1. EPLAN Electric P8 reporting functions allow the customers to utilize filters, e.g., to filter on specific devices generated in the reporting lists. The inbuilt option means external post-processing is no longer required.

2. With the EPLAN Electric P8 reporting function, it is possible to generate the PLC card overview. Therefore in a simple way, it is possible to have an overview of the PLCs used in the project and show their available free connections.

3. Information reported on the reports can also be sorted by specific criteria, like in the order form from the smallest to the most significant value, like quantity. Therefore, specific filter functions are available.

Labelling Functions in desired Formats

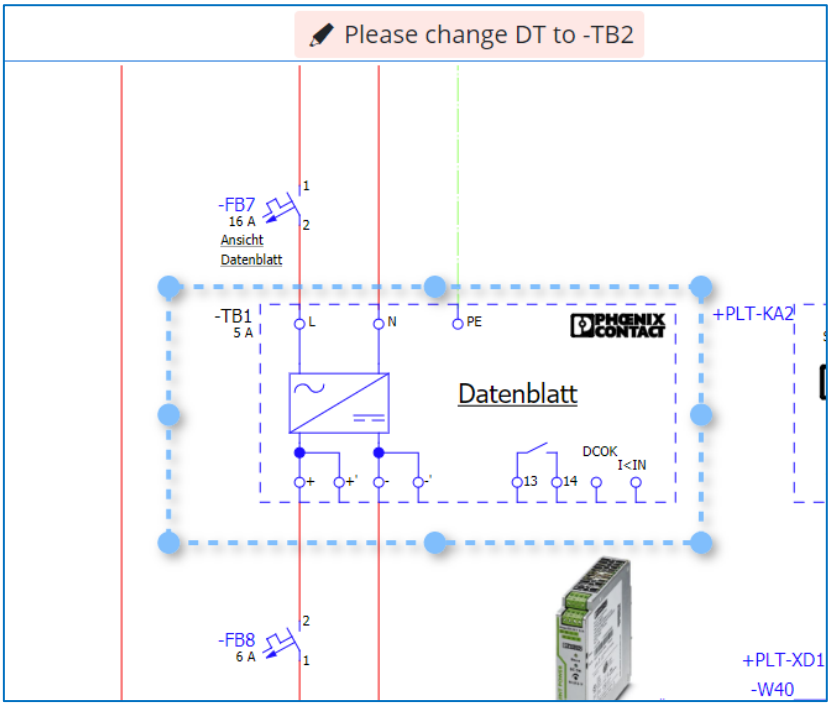


1. EPLAN Electric P8 has integrated export functions for labeling and external data purposes.

2. Every type of report can also be exported in the formats such as xml, text, or Excel. This export file allows the usage of exported data as an input data file to populate labeling machines or populate existing test reports or Parts templates in the company processes.

3. The data which can be exported can be customized by the customer so that tailored customer-specific data can be extracted out of the project.

EPLAN eVIEW



1. EPLAN eVIEW is a free tool under EPLAN Cloud that supports the redlining process. A continuous redlining process supports communication between the engineering team and commissioning members and service teams on site. With a simple method, users of the EPLAN eVIEW can efficiently comment inside the project uploaded in the cloud.

2. EPLAN eVIEW supports the greenlining process. Comments you make with a redlining tool can be edited by others using a status. Comments that you make with the greenlining tool cannot be assigned a status and can therefore not be edited.

3. All project participants have the option of storing comments and change information in the project.

Multiple Choice Questions

The following multiple-choice questions are designed to reflect what you have learned or to learn more about EPLAN products. The task is to circle the correct answer. One or more questions may be correct.

EPLAN Electric P8 Professional

1. Please name the most important functionalities and advantages of EPLAN Electric P8
   - EPLAN Electric P8 offers innovative possibilities for project planning, documentation, and management of pneumatic and hydraulic projects.
   - EPLAN Electric P8 offers the possibility to check the documentation with configurable test runs against defined quality requirements.
   - EPLAN Electric P8 has an integrated IEC, NFPA, GOST and GB symbol library.
   - EPLAN Electric P8 has integrated project, revision and rights management.

2. Which functionalities and advantages does EPLAN Electric P8 offer in case of proper use?
   - Fast and reliable schematic creation, reducing development times and costs.
   - Creation of a digital twin of a control cabinet in 3D.
   - All project participants work with the current data.
   - High-quality documentation and optimization of product quality.

3. What industries do you typically associate E-PLAN Electric P8 users with?
   - Company with main tasks in the field of hydraulics and pneumatics.
   - Companies with main tasks in the field of electrical design.

- Users from industries such as plant and mechanical engineering, automotive, food and beverages, control and switchgear engineering, energy management.

4. Please name the important functionalities of EPLAN Electric P8 that contribute to the improvement of workflows in electrical design:
   - Auto-connecting function, which automatically enables logical links between devices in the circuit diagram.
   - Automatic creation of evaluations, such as parts lists and terminal diagrams.
   - Provision of NC data for mechanical processing on a Rittal Perforex machine.
   - Support of current international standards.

5. What is the characteristic feature of EPLAN Electric P8?
   - With EPLAN Electric P8, electrical engineers design and document their projects quickly and consistently.
   - The data stored in the EPLAN project forms the basis for the automated completion of the machine and plant documentation.
   - The EPLAN project contains all the information for downstream processes in materials management, production, commissioning, servicing and maintenance.
   - EPLAN Electric P8 is often requested by well-known OEMs and operators as the standard for electrical documentation of machines and plants.

EPLAN Pro Panel

1. Which statements about EPLAN Pro Panel are true?

- EPLAN Pro Panel is used to design and document control cabinets, switchgear and power distribution systems for power supply in 3D.
- EPLAN Pro Panel is used to describe a digital twin of a control cabinet completely in 3D.
- EPLAN Pro Panel is used for planning and describing control cabinets with electrical and fluid power components and connections.
- The necessary bending and welding information for the fabrication of Rittal enclosures can be derived from EPLAN Pro Panel.

2. Which functionalities and advantages does EPLAN Pro Panel offer in case of proper use?

- In an EPLAN Pro Panel project, the designer can provide all the data required for downstream processes, material management and enclosure production.
- EPLAN Pro Panel was specially developed for the series production of enclosures in large quantities.
- EPLAN Pro Panel can be used to determine the optimum routing paths and the required wire lengths. The determined wire lengths form the basis for automated wire assembly.
- In addition to the wiring information, EPLAN Pro Panel provides all the data for the NC machining of flat parts and enclosures, for cutting cable ducts and top-hat rails to length or for the machining of terminal strips.

3. What industries do you typically associate EPLAN Pro Panel users with?

- Companies with main tasks in the field of design of a power supply in switchboard construction.
- Companies with main tasks in automation and control technology for mechanical and plant engineering, control cabinet construction, switchgear construction and manufacturers of flexible energy distribution systems for power supply.

- Companies from the fields of plant and mechanical engineering, automotive, food and beverages, control and switchgear construction or energy industry.

4. What characterizes EPLAN Pro Panel when used properly?

- The use of EPLAN Pro Panel is worthwhile from batch size "1".
- Throughput times in enclosure and switchgear construction are significantly reduced by using EPLAN Pro Panel, and costs are sustainably lowered.
- The digital twin of the enclosure described in EPLAN Pro Panel is the basis for the automation and industrialization of production in enclosure and switchgear manufacturing.
- By providing the schematic, EPLAN Pro Panel ideally supports the manual programming of machines for the mechanical processing of enclosure housings and flat parts such as mounting panels.
- The consistent and high-quality description of the enclosure in EPLAN Pro Panel contains all the information required to provide the necessary data for engineering, materials management, fabrication, commissioning, operation and maintenance of the enclosure.

EPLAN Smart Wiring

1. Which statements about EPLAN Smart Wiring are true?

- EPLAN Smart Wiring is a software-based wiring tool for supporting processes in manual control cabinet wiring.
- EPLAN Smart Wiring supports the wiring engineer equally in manual assembly and in the routing and precise linking of wire connections in the control cabinet.
- EPLAN Smart Wiring can be used to determine and document the optimum routing paths for wires and cables in the enclosure for the subsequent processes in production.
- EPLAN Smart Wiring supports quality management at audits to check the correct and professional execution of wire connections in the enclosure.

2. Which functionalities and advantages does EPLAN Smart Wiring offer in case of proper use?

- Automatic project comparison through centrally stored data and parallel production of identical control cabinets lead to significantly reduced throughput times and costs.
- Wiring information is always up to date.

3. In which companies and industries is EPLAN Smart Wiring used?

- In companies whose value creation includes control cabinet construction.
- In companies with branches in machine and plant construction, the food and beverage industry or in control and switchgear construction.
- At service providers specializing in electrical design and project planning for automation projects and in the preparation of electrical circuit diagrams in the context of mechanical and plant engineering.
- For machine and plant manufacturers who have to provide their suppliers from the switchgear cabinet and control system construction industry with information for the wiring of the switchgear cabinet.

4. What important functionalities does EPLAN Smart Wiring offer and how do customers use it to improve their own workflow?

- EPLAN Smart Wiring provides step-by-step instructions for routing and correctly connecting the connections without a circuit diagram.
- The processing sequence is defined in EPLAN Smart Wiring. This means - a defined workflow for all wiring requirements.
- EPLAN Smart Wiring provides information about the project status and about the connections already installed with real-time access.
- Last minute changes are automatically compared to the current project status by EPLAN Smart Wiring. The time-consuming manual comparison of old and new project data is no longer necessary.

EPLAN Data Portal

1. Which statements about the EPLAN Data Portal are true?

- The EPLAN Data Portal is an internationally available parts data platform for the worldwide provision of manufacturer data.
- With the EPLAN Data Portal, the prices of individual components can be compared across manufacturers.
- With the EPLAN Data Portal component manufacturers can provide their customers with up-to-date, standardized, intelligent and internationally valid online device data.
- EPLAN users can use the EPLAN Data Portal to quickly and easily find device data and use them in their EPLAN projects.

2. Please name some advantages that the EPLAN Data Portal offers!

- Fast productive implementation of the device concept through maximum data integration.
- The EPLAN-compatible data reduces the effort required to create and maintain master data to a minimum.
- Considerable time savings in project planning thanks to standardized, EPLAN-compatible data.
- Increased quality in documentation and support for interdisciplinary processes.
- The EPLAN Data Portal allows the user the comfortable and web-based administration of self-created part and device data.

3. For what kind of companies and industries is the EPLAN Data Portal suitable?

- For companies operating exclusively in the field of electrical engineering.
- For companies active in the fields of electrical and fluid engineering, automation technology, control and switchgear engineering, and measurement and control technology in process engineering.
- For industries such as plant and mechanical engineering, automotive, food and beverage, control and switchgear engineering, and power supply.

4. Which important functions does the EPLAN Data Portal have and how does it improve the workflow in daily project planning tasks?

- Device data from renowned component manufacturers is provided free of charge around the clock and kept up to date by the manufacturer itself.
- Intelligent search and filter functions make it easier to find suitable components for the engineering task in question.
- Data from the EPLAN Data Portal no longer needs to be converted and EPLAN-compatible data no longer needs to be prepared. If required, the data can be transferred to the EPLAN engineering environment by dragging and dropping the data from the EPLAN Data Portal into the EPLAN Data Portal.
- In service and maintenance scenarios, the EPLAN Data Portal enables easy comparison of prices and delivery conditions of different manufacturers in order to determine cost-effective, alternative components.
- Existing standardized parts data with information to support the processes in engineering, material procurement, production, commissioning, operation and service sustainably increase the quality of the plant documentation.

EPLAN eVIEW

1. Which statements about the EPLAN eVIEW are true?

- EPLAN eVIEW makes EPLAN projects available in the cloud in *.zw1 format.
- The data generated and enhanced in the EPLAN platform is available and transparent for all project participants along the entire value chain - from engineering, manufacturing and assembly to service and maintenance.
- EPLAN eVIEW allows users to view and comment on changes from anywhere via an Internet browser. The software easily and intuitively guides users through the redlining process, allowing them to view and comment on changes to the project. s using an internet browser from any location. The software quickly and intuitively leads you through the redlining process. You can view and comment on changes to the project.

2. Please name some of the advantages offered by EPLAN eVIEW!

- With EPLAN eVIEW, changes can be made to all functions used in the EPLAN project.
- With EPLAN eVIEW, the user can communicate securely and transparently with different departments, suppliers and service providers.
- Clearly definable access rights in EPLAN eVIEW ensure data security.
- EPLAN eVIEW is completely paperless, the data comes directly from the cloud.

3. What type of companies and industries is EPLAN eVIEW suitable for?

- EPLAN eVIEW is suitable for OEMs only.
- EPLAN eVIEW is suitable for all industries where communication and collaboration across projects, disciplines and companies is important.

4. What are the important features of EPLAN eVIEW and how do they improve the customer's workflow?

- A continuous redlining process supports the communication between the engineering team and the commissioning and service team on site.
- EPLAN eVIEW supports the user in the revision of EPLAN projects. All revision statuses of a project can be called up.
- EPLAN eVIEW allows access to specific data statuses in the EPLAN project at any time. No additional software needs to be installed: an Internet browser is sufficient.
- From cloud to cloud: EPLAN eVIEW can also be connected to other in-house cloud solutions.

EPLAN eBUILD

1. Which statement about EPLAN eBUILD is true?

- EPLAN eBUILD generates electrical and fluid power schematics using information from macros and placeholder objects.
- EPLAN eBUILD also generates complete enclosures, switchgear and power distribution systems for power supply in 3D.
- Predefined component properties in EPLAN eBUILD can be transferred to the functions within a macro with just a few clicks.

2. Please name some of the advantages offered by EPLAN eBUILD!

- Neither expert knowledge, programming skills nor extensive training are required to use EPLAN eBUILD.
- EPLAN eBUILD is conceived and designed in such a way that completely intuitive operation is possible at the function level. EPLAN eBUILD is therefore an effective tool for occasional or frequent users.
- EPLAN eBUILD offers flexibility in workflow for function and machine-based approach.
- Classic "Copy & Paste" - problems are avoided with EPLAN eBUILD. As a result, and by using a stored set of rules, the customer maximizes his project quality.

3. Who are the target customers and for which industries is EPLAN eBUILD intended?

- EPLAN eBUILD is suitable for OEMs only.
- EPLAN eBUILD is suitable for all industries in which a high degree of automation is to be achieved.

4. What are the important functions of EPLAN eBUILD and how do they improve the customer's workflow?

- The macro creation is done automatically by EPLAN eBUILD.
- EPLAN eBUILD is operated via two navigators: the "De-signer" for defining the rules for the configuration and the "Project Builder" for selecting the desired configuration and generating the project.
- The "Designer" offers several configuration variables for selection in order to define various dependencies.

EPLAN eMANAGE

1. Which statement about EPLAN eMANAGE is true?

   - EPLAN eMANAGE is integrated from the EPLAN platform, version 2.9 SP1. In addition, you can access it via an Internet browser in a current version;
   - EPLAN eMANAGE is currently optimized for Google Chrome, Mozilla Firefox and Microsoft Edge.
   - EPLAN eMANAGE is available in two versions: free version and full version.

2. Please name some of the advantages offered by EPLAN eMANAGE!

   - EPLAN eMANAGE provides a cloud-based environment for sharing projects while enabling easy interaction by supporting other EPLAN solutions such as EPLAN eVIEW.
   - EPLAN eMANAGE enables fast and secure data exchange with selected stakeholders, with enhanced security; allowing users to share the right data with the right people and improve collaboration.
   - The full version of EPLAN eMANAGE offers you, beyond the features of the Free version, practical functional extensions as well as additional memory. For more descriptions of the extensions, see the product page.

3. Wer alles kann EPLAN eMANAGE nutzen und welche Voraussetzungen müssen dafür erfüllt werden

   - Anyone who is registered on www.epulse.com can use EPLAN eMANAGE Free.
   - The requirement to use eMANAGE is that at least one EPLAN version is installed on the computer.

4. What are the important functions of EPLAN eMANAGE and how do they improve the customer's workflow?

   - With the EPLAN eMANAGE license, customers acquire functions such as the provision of the EPLAN project backup (*.zw1) in older EPLAN versions, the synchronization and sharing of master data, and more memory.
   - With EPLAN eMANAGE the provision of the EPLAN project backup (*.zw1) in older EPLAN versions is not possible.

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