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Design Optimization with EPLAN

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Abstract

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ERIKKILA OY, a Finnish company specializing in lifting and handling solutions, aims to enhance its engineering design and documentation processes. The project focuses on integrating EPLAN Pro Panel, which provides advanced graphical representations of control cabinets through 2D and 3D images, and EPLAN Electric P8, a strict planning and documentation tool. The primary goal is to improve efficiency, reduce errors, and enhance project management.

The integration process involved examining the planning phase, comparing the functionalities of both software systems, and exploring their applications within ERIKKILA OY. The study assessed the impact of the software on design accuracy, scheduling, and overall operational efficiency.

The results demonstrate significant improvements in design precision, workflow efficiency, and error reduction, highlighting the value of integrating EPLAN Pro Panel and EPLAN Electric P8. The findings underscore the importance of continuous training and deeper utilization of these tools for fostering organizational learning and innovation. The study concludes that ongoing education and sustained integration of EPLAN software will be crucial for future productivity gains and the development of innovative solutions at ERIKKILA OY.

Keywords: EPLAN Pro Panel, EPLAN Electric P8, design optimisation, ERIKKILA OY, electrical engineering, CAD software

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ERIKKILA OY, suomalainen nosto- ja käsittelyratkaisuihin keskittyvä yritys, pyrkii parantamaan suunnittelua ja dokumentaatioprosessejaan. ERIKKILA OY:n hanke keskittyy integroimaan kaksi suunnittelutyökalua: EPLAN Pro Panelin ja EPLAN Electric P8:n. EPLAN Pro Panel mahdollistaa ohjauskeskusten parannellut ja monipuoliset graafiset esitykset 2D- ja 3D-kuvien avulla, ja EPLAN Electric P8 on tarkka suunnittelu- ja dokumentointityökalu. Ensisijaisena tavoitteena on lisätä tehokkuutta, vähentää virheitä ja tehostaa projektinhallintaa.

Tämä opinnäytetyö keskittyy EPLAN Pro Panel- ja EPLAN Electric P8 -ohjelmistojen integrointiin ERIKKILA OY:n suunnittelun ja dokumentaation parantamiseksi. Työssä tarkastellaan suunnitteluvaihetta, tarjotaan vertaileva analyysi molemmista ohjelmistojärjestelmistä ja tutkitaan niiden käytännön sovelluksia yrityksen toiminnassa. Tutkimuksessa arvioitiin ohjelmistojen vaikutusta suunnittelutarkkuuteen, aikataulutukseen ja toiminnan kokonaistehokkuuteen.

Tutkimus osoittaa merkittäviä parannuksia suunnittelun tarkkuudessa, aikataulutuksessa ja kokonaistehokkuudessa EPLAN Pro Panelin ja EPLAN Electric P8:n käyttöönoton jälkeen. Tulokset korostavat organisaation oppimisen ja luovuuden edistämisen tärkeyttä jatkuvan koulutuksen ja työkalujen syvemmän hyödyntämisen avulla. Lopputulemana nostetaan esiin, että EPLAN-ohjelmiston käytön jatkaminen ja jatkuva oppiminen ovat ratkaisevassa asemassa tuottavuuden parantamisen ja innovatiivisten ratkaisujen kehittämisen kannalta ERIKKILA OY:n tulevaisuudessa.

Avainsanat: PLAN Pro Panel, EPLAN Electric P8, suunnittelun optimointi, sähkötekniikka, CAD-ohjelmisto

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List of Abbreviations

CAD: Computer-Aided Design. Engineers and architects use software to create precision drawings or technical illustrations.

ECL: Electric Control Logic. A Definitive Standard.

EPLAN: Electronic Planning. Software for electrical engineering design and documentation.

ERP: Enterprise Resource Planning. Integrated management of primary business processes, often in real-time and mediated by software and technology.

PLC: Programmable Logic Controller. An industrial digital computer has been ruggedised and adapted to control manufacturing processes.

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1 Introduction

Kito ERIKKILA OY is a manufacturer of light crane solutions, jib cranes, and portal cranes. ERIKKILA has been selling vertical jib cranes, aluminium profiles, light cranes, steel profile high-quality cranes, lifting equipment rollers, and related equipment for decades. The company offers construction, production, transport, and energy services. ERIKKILA has over one hundred partners in 40 countries around the world; the Kito ERIKKILA employees are 60 people, and the factory area is 4600 square meters. The company's focus remains on delivering engineering solutions that emphasize reliability and efficiency while also sales services. With a well-established reputation, ERIKKILA OY consistently meets industry demands by providing advanced lifting technology tailored to various operational requirements across diverse industries.

1.1 Purpose Of Thesis

This thesis aims to analyse the Project design process and design software usage within ERIKKILA Company, focusing on EPLAN Pro Panel and EPLAN Electric P8. This thesis will explain the relevance of these software solutions in enhancing efficiency, productivity, and project outcomes within the company's operations. This thesis aims to explain the differences between EPLAN Pro Panel and EPLAN Electric P8 software. Analysis and case studies will be used to reach this objective. The project process, different approaches to project management, and the qualities of the software tools will all be investigated in the thesis to illustrate the practical applications and benefits of the software tools in real-world situations. Furthermore, the thesis aims also to improve company documentation and expedite the design process by utilizing EPLAN Pro Panel and EPLAN Electric P8. By streamlining tasks such as designing project components, plot forms, titles, and tables of contents, this approach enhances the quality and efficiency of project documentation, reducing design time.

1.2 ERIKKILA OY History

Kito Crosby, a well-known producer of lifting and securement equipment solutions with 4000 employees around the world, owns a heritage, reaching over 250 years. ERIKKILA, a subsidiary of Kito was established in 1912 in Vyborg, Finland, and it then relocated to northwest Finland in 1917 due to the political unrest in Europe. 1933, the company was established in Helsinki and concluded its first agreement with Heinrich de Fries to

represent cranes. In 1976, the equipment and lifting services became the company's focus, and it implemented innovative techniques and crane development. The Pro System light crane systems were the pioneers of this area. It has been several years since ERIKKILA pioneered the design of a bridge structure for light crane systems on a global scale. Also, they did an overload indicator for the Pro System light crane system, which makes it safer. The factory and the company's office were relocated to Masala, Kirkkonummi, in 1995. 2018, the company co-opted with the Kito Group. In 2023, the Crosby Group and Kito Corporation consummated the business amalgamation and were formed as Kito Crosby. (ERIKKILA 2024). Current corporates name is illustrated in Figure 1 and Figure 2 below:

Figure 1: *Kito ERIKKILA building view from a drone (Kito ERIKKILA 2024)*

Figure 2: *Kito ERIKKILA manufacturing facility with heavy machinery (Kito ERIKKILA 2024).*

1.3 Overview of EPLAN Pro Panel and EPLAN Electric P8

EPLAN Pro Panel is CAD software specialising in electrical engineering and designing and documenting Electrical Control Logic (ECL) of control systems. It offers options for developing 2D plans and 3D representations of control cabinets to help assess layouts and obstacles to the workspace in the cabinets. EPLAN Electric P8 is another CAD software designed to help create electrical engineering documents and designs. It is also project management software with an easy-to-use interactive interface and many tools for comprehensive project organisation and control. As shown in Figure 3, the overview of the updated version of the EPLAN Pro Panel highlights the key features and improvements introduced in this update.

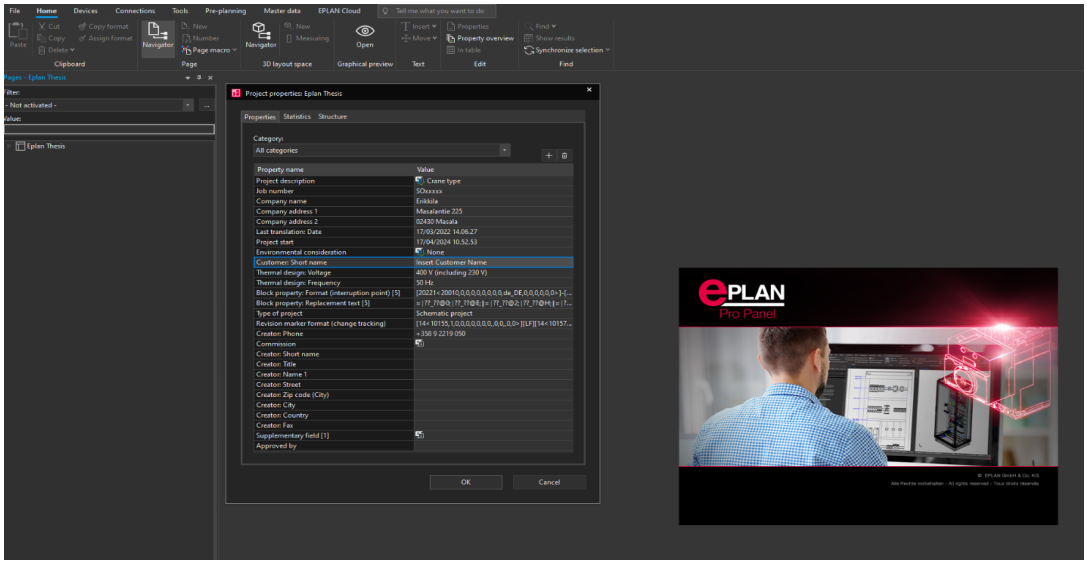


Figure 3: *Overview of the New Version of EPLAN Pro Panel*

When connected with EPLAN Electric P8, EPLAN Pro Panel is a comprehensive solution for electrical engineering design and drafting, helping to reduce the complexity and time required to design electrical systems. As illustrated in Figure 4, the EPLAN Pro Panel creates both 2D schematics and 3D control cabinet models (Mielty 2020). Additionally, Figure 4 provides a 3D model of an electrical cabinet designed using EPLAN Pro Panel software, a computer-aided design (CAD) program used for electrical engineering. This software enables engineers to design, document, and create electrical control systems (Kallinen 2022).

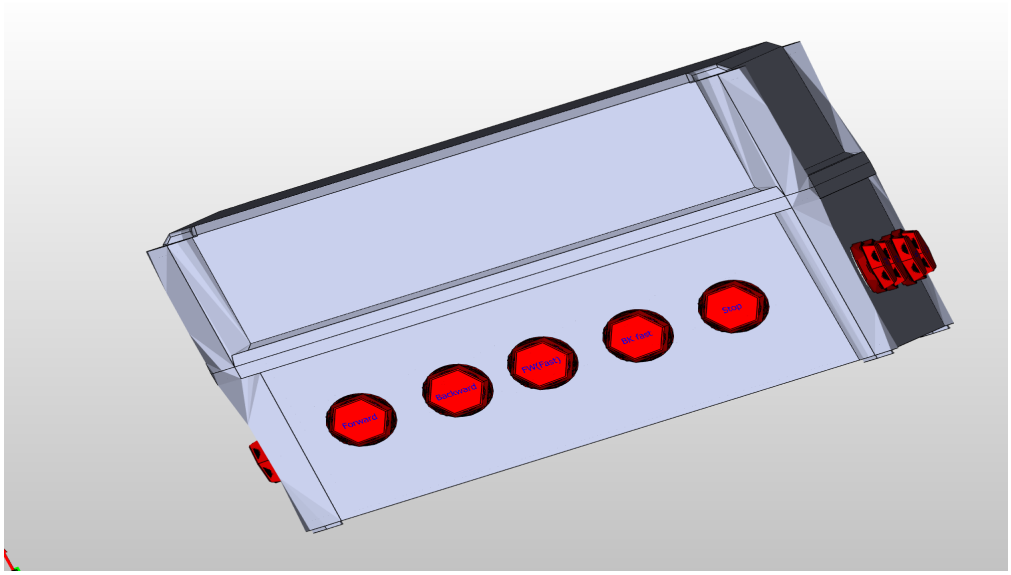


Figure 4: *EPLAN Pro Panel creates 2D schematics and 3D control cabinet models (Mielty 2020).*

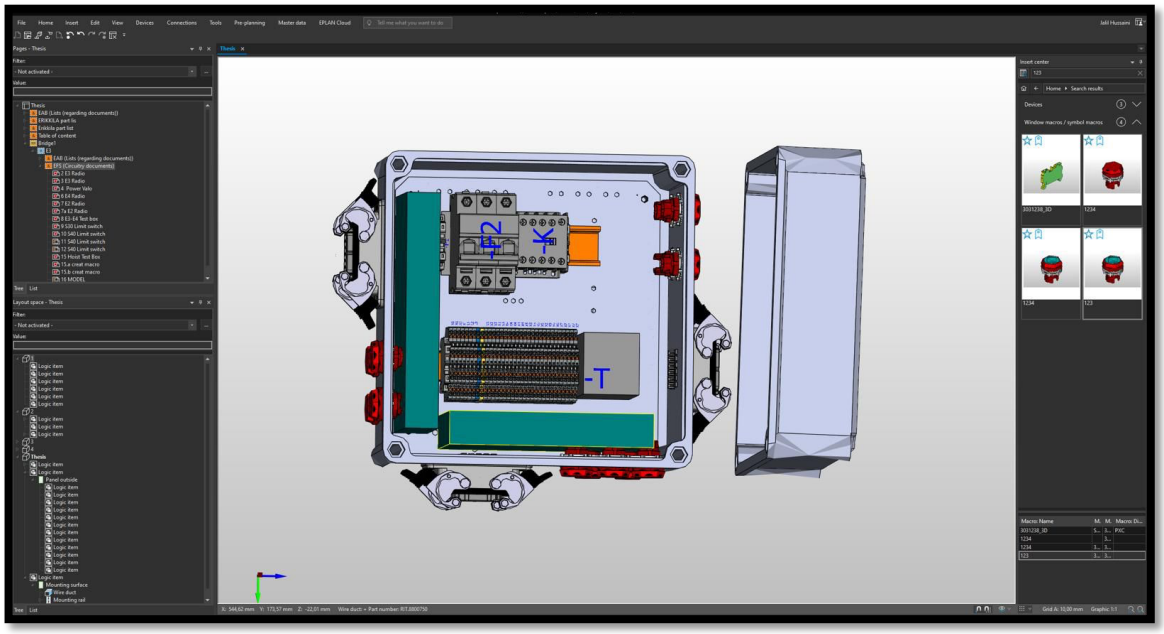


Figure 5: *A 3D model of an electrical cabinet designed using EPLAN Pro Panel software. EPLAN Pro Panel is a computer-aided design (CAD) program used for electrical engineering. It allows engineers to design, document and create electrical control systems. (Kallinen 2022.)*

1.4 Integration of EPLAN Pro Panel software with EPLAN Electric P8 software

Due to intuitive design, Pro Panel Electric P8 and EPLAN Pro Panel are useful for generating circuit diagrams and visually appealing layouts, accessible to individuals with a basic understanding of electronics and schematics. Utilising EPLAN Electric P8, personnel from multiple departments can transfer data to the appropriate engineering file in a streamlined manner while collaborating effectively (Kokhanevych 2023). This capability is facilitated through the rapid exchange of files among team members, thereby augmenting overall efficiency. Programming languages will become increasingly integrated into conventional electrical circuits.

This integration will automate and simplify the documentation of stations and modules for engineers and designers. This panel will be able to analyse the challenges the assessors face during the product development phase. Most of the cognitive processes involved in this point have been excluded to show a user-friendly and uncomplicated system, the underlying concept of which does not need explicit instruction. One of the EPLAN Pro Panel's impressive characteristics is its ability to allow engineers to manipulate the layout and wiring of a panel as if they were physically assembling and connecting it. This is especially important because their usage is meticulously planned, not just via space management systems but also by frequently accepted industrial practice standards.

2 Comparative Analysis of EPLAN Pro Panel and EPLAN Electric P8

2.1 EPLAN Electric P8

EPLAN Electric P8 is a software encompassing all the essential features electrical engineers require. Engineers have developed a user-friendly interface that ensures precise execution of all planning, documentation, and management duties for the electric scheme programme. This guarantees error-free results and eliminates the need for redundant chores. The software may be found in an interface known for its user-friendly interface. Therefore, the limited duration does not impede the transition between modules or their use in several ways. Electrical engineers may easily modify their change requests by replacing drawings and modifying the schematic with a simple drag and drop

of components. This streamlined procedure accelerates the design and iteration process. Furthermore, integrating robotic technology into the project will be closely linked with software design, making it a significant contributing factor (Kallinen 2022). This point indicates that the task will be carried out by an automated system that will execute all the functions of cable identification, verification, and numbering with absolute precision, guaranteeing consistency. The system database should include all project information, including components, symbols, and drawings. This may be achieved by using a centralised shared database constructed meticulously, ensuring that the gathered data is accurate and reliable for all the designs. Therefore, the schematic software in EPLAN Electric P8 software may replace other software used for the whole process development (Koponen 2022). Furthermore, these software programs can generate various documents, such as bills of materials, schematics, and cable lists. Additionally, with just one click, they can produce a comprehensive report that encompasses all the electrical installation details, including wiring, protection, lighting, and terminals. Modularity is a crucial feature of EPLAN, as it enables the programme to be used consistently across many jobs, ranging from small to medium-sized firms to large-scale production. As shown in Figure 9, an overview of EPLAN Electric P8 is presented, highlighting the key features and functionalities of the software. (EPLAN. n.d. EPLAN Electric p8.)

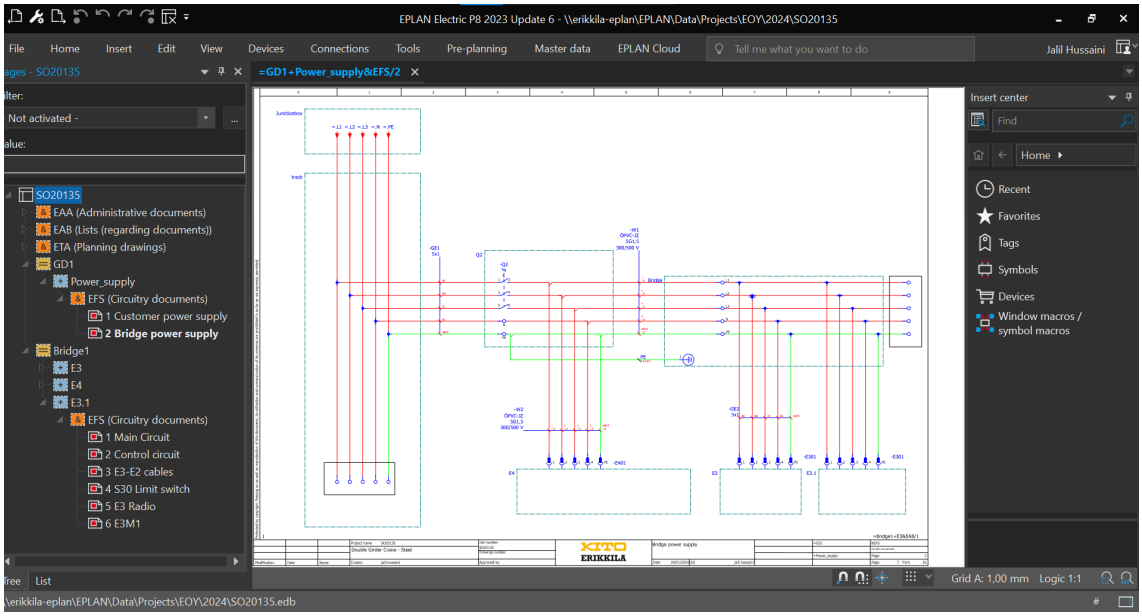


Figure 6: *EPLAN Electric P8 Overview*

2.2 EPLAN Pro Panel

EPLAN Pro offers an interface allowing easy panels and switchgear creation. During the last phase of the concept generation process, known as the "playing" stage, ensuring that the design stage is flexible enough to accommodate any unforeseen challenges is crucial. The software significantly eliminates manual design process requirements when all the blocks must be drawn by hand (Mielty 2020, pp. 1-4). As a result, the design time may be significantly minimised. EPLAN Pro Panel allows engineers to enhance visualisation standards using its 3D feature. This will enable engineers to design the panel layout visually and get a virtual image of the panel assembly. EPLAN Pro Panel stands out from other comparable solutions due to its methodical integration of manufacturing processes. Consequently, the engineers will much appreciate having comprehensive and accurate production documentation. This indicates that the process operates seamlessly, and that the production procedure is consistent. The software will perform schematic creation tasks, including generating a component list, wiring diagram, design layout, and other related functions (Akgul and Kutucu 2022, pp.78-89). Consequently, with all the necessary information, the assembly of the room panels will be straightforward due to the availability of the essential equipment and expertise. Similarly, the EPLAN Pro Panel system, a crucial ERP system component, may create either a purchase order or a material demand. As depicted in Figure 8, an overview of the EPLAN Pro Panel is provided, showcasing the main features and capabilities of the software. (EPLAN. n.d. EPLAN Pro Panel.)

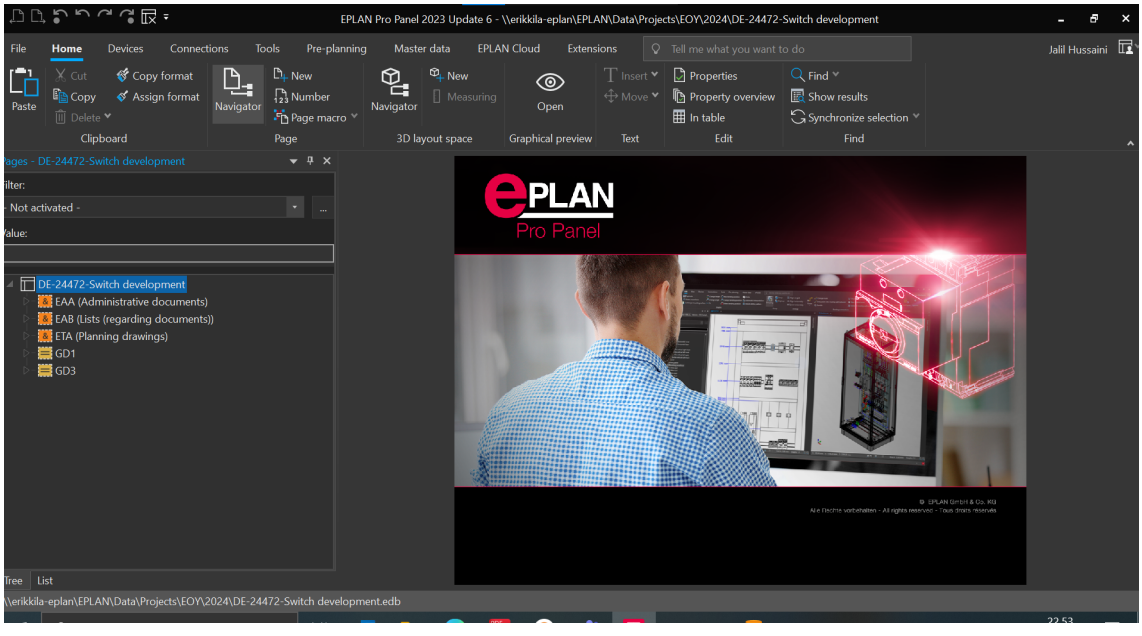


Figure 7: *EPLAN pro panel overview.*

2.3 Feature and Key benefit of the EPLAN Pro Panel and EPLAN Electric P8

EPLAN Pro Panel and EPLAN Electric P8 are widely used in electrical engineering and control panel design projects due to their advanced capabilities and user-friendly interfaces. These tools offer significant benefits throughout the project lifecycle, from initial design to final production. EPLAN Pro Panel is primarily used in projects for the 3D design and virtual prototyping of control cabinets and switchgear systems. Engineers use this tool to create detailed 3D models of panel layouts, allowing them to visualise the spatial arrangement of components and optimise the use of space within the enclosure. The software supports the automatic routing of wiring and cables, reducing manual errors and saving time during the design phase. It also generates accurate manufacturing documentation, such as assembly drawings, drilling templates, and wiring lists, essential for efficient production and assembly processes. This ensures that the physical construction of panels is accurate and efficient, minimising rework and material waste.

EPLAN Electric P8 is used in projects for electrical schematic design and documentation. This tool allows engineers to create detailed electrical schematics, control diagrams, and wiring plans for installing and maintaining electrical systems. One of the critical benefits of EPLAN Electric P8 is its ability to maintain data consistency across all project documents, ensuring that changes made in one part of the project are automatically reflected elsewhere. This reduces the likelihood of errors and discrepancies, leading to higher-quality documentation. Additionally, the software's error-checking and automated cross-referencing features help identify potential issues early in the design process, preventing costly errors during production or installation. (EPLAN. n.d. EPLAN Electric p8.)

In summary, EPLAN Pro Panel and EPLAN Electric P8 enhance project efficiency and accuracy by providing comprehensive design, documentation, and production tools. Their integration capabilities and automation features allow for streamlined workflows, improved collaboration, and reduced project timelines, resulting in cost savings and better overall project outcomes.

3 Project Process at ERIKKILA Company

This part discusses the introduction of the project process, at ERIKKILA company. The chapter emphasizes the importance of utilizing Odoo enterprise resource planning software and incorporating EPLAN software into their operations at ERIKKILA OY company to facilitate the completion of design projects, across stages.

3.1 Overview of the Project Process at ERIKKILA OY

In ERIKKILA OY, the project management process combines Odoo and EPLAN to improve efficiency and ensure accuracy, in tasks performed. Odoo serves as an open-source enterprise resource planning (ERP) software that merges business applications onto a platform. With modules catering to areas such as accounting, inventory management, sales, HR, and customer relationship management (CRM) Odoo's adaptable design enables companies to tailor and broaden features according to their requirements, making it suitable, for businesses of all sizes. Odoo assists-, in overseeing the project journey. Starting from the planning and budgeting stages to scheduling and monitoring progress and efficient resource distribution. This system consolidates project information to guarantee that all team members can access up-to-date data, instantly fostering teamwork between departments.

The EPLAN software is a tool tailored for engineering tasks and is used for electrical design purposes. The software aids in developing comprehensive designs, for systems and components which helps in minimizing errors and ensuring alignment, with industry regulations. By combining Odoo with EPLAN ERIKKILA OY manages a process that ensures project completion by meeting client demands and fostering advancements in electrical solutions.

3.2 Integration of Odoo software with company operations at ERIKKILA OY

ERIKKILA team uses Odoo software as ERP system to manage internal processes efficiently (see Figure 7). Specifically, Odoo serves as the platform through which handle Sales Order (SO) tasks related to crane design, facilitating communication and collaboration across departments. This section outlines the workflow involved in managing SO tasks within the team, from initial task assignment to project completion. When a sales team member completes a crane sale, they initiate a task in Odoo, requesting specific technical documentation or imagery from the Electrical Department to fulfil client specifications. Upon receiving this task, ERIKKILA team members access Odoo and navigate to the application section, which opens a dedicated window containing the necessary tools and information. Within this interface, the Electrical Department relies heavily on two main modules: Project and Purchases. These modules are essential for monitoring project tasks and verifying any project-specific items or special equipment procured for a particular assignment. The Project module allows team

members to confirm if any SO tasks require immediate attention, while the Purchases module provides access to information about materials or products acquired for the project.

Design Workflow Stages: The Engineering window in Odoo displays a series of workflow stages essential for the design process. These include:

- Design Requests: Initial stage where design specifications are collected.
- Requires More Information: A stage indicating that additional details are needed to proceed with the design.
- SO Main Task: The primary task associated with the Sales Order, central to the project.
- Next in Design: Tasks that are in the pipeline for the design team to address next.
- Sales Review: A stage where the design undergoes review by the sales team to ensure it aligns with customer requirements.
- Done: The final stage indicating task completion.

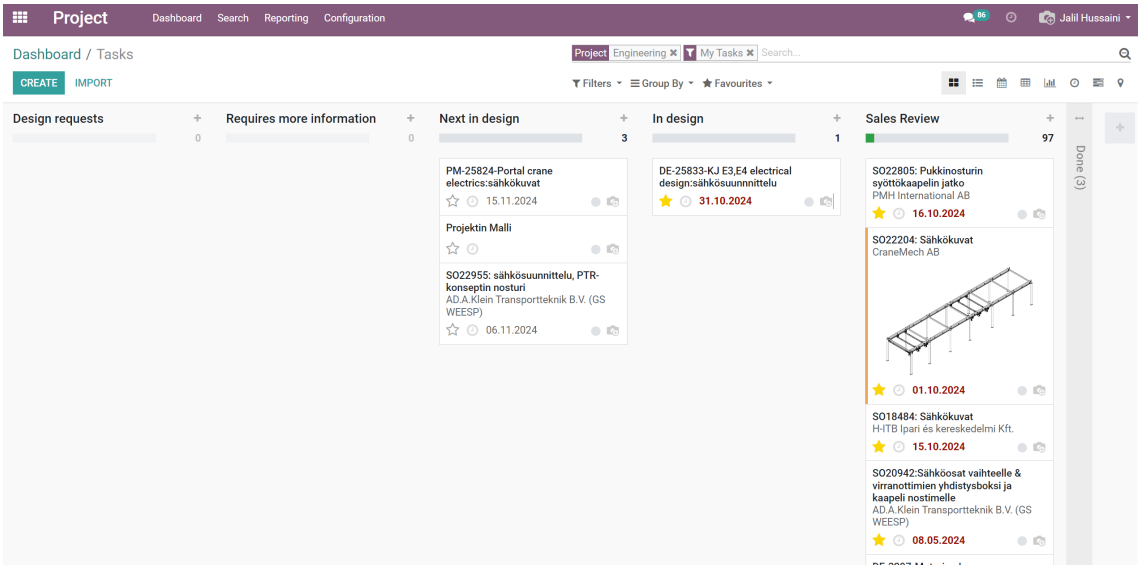


Figure 7: *Project Dashboard in Odoo – Task Management Overview*

Next, provide a brief description of each stage of a typical EPLAN design project at ERIKKILA OY company (see Figure 8).

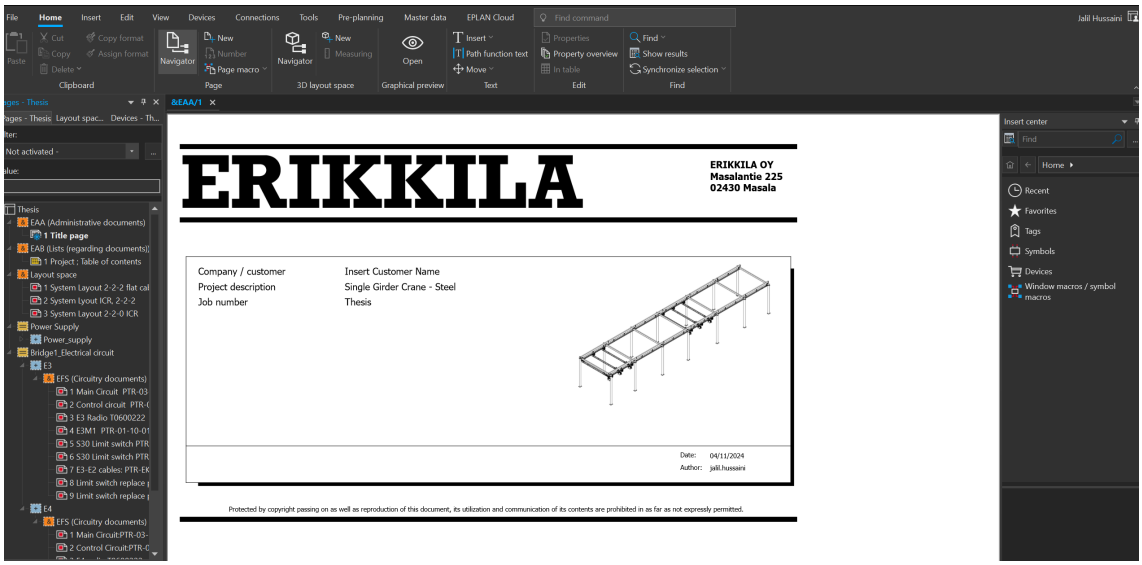


Figure 8: *Overview of the Design Process in EPLAN at ERIKKILA OY*

3.3 Initiating the Project Design in EPLAN

To begin, open the EPLAN and create a new project, which automatically opens a dedicated workspace. The first page generated is the title page, which includes critical information such as the customer's name, order number, and the type of crane specified. The second page, generated automatically by EPLAN, serves as a table of contents. This feature eliminates the need for manual entry, ensuring consistency across projects.

3.4 Automated Table of Contents Generation in EPLAN

The Table of Contents page is crucial in any document as it provides a summary of the sections of the document for easy navigation purposes. In EPLAN software specifically enhances this process by creating an outline based on the project's design structure. Once set up properly the template, for the contents page can be used across projects, which helps in maintaining consistency and efficiency in documentation. This automated feature reduces work. Guarantees precision since any changes made in the projects structure are immediately updated in the table of contents. EPLANs automated creation of a Table of Contents does not speed up the design process. EPLAN also minimizes the risk of mistakes, by humans and enhances the quality and credibility of the documentation produced. It highlights EPLANs significance in engineering and automation design by aiding in project management and documentation procedures.

3.5 Layout Project Design With EPLAN

The third step in the project involves the design of a detailed layout of the electrical system, providing a clear guide for team members, particularly electricians. Typically, 2D layouts are used for simplicity, though 3D layouts are occasionally needed to provide a more detailed spatial understanding. EPLAN software plays a crucial role here, offering an extensive library of components available in both 2D and 3D formats, enhancing flexibility based on project needs. In 3D layouts, ERIKKILA use 3D component models for realistic visualizations, while in 2D layouts, ERIKKILA employ EPLAN's macro formats for simpler component representation. EPLAN's dual capability for 2D and 3D layouts, coupled with its rich component library, improves design efficiency and accuracy, ensuring a uniform understanding across the team. This reduces installation errors and supports standardized documentation critical for project management and maintenance. EPLAN thus not only enhances visualization but also facilitates long-term project compliance and troubleshooting.

3.6 Electrical Circuit Design With EPLAN

The layout phase being complete, the electrical circuit design stage should then be proceeded to. In this phase, ERIKKILA develop both the primary and control circuits, integrating all components specified in the customer's requirements. This involves creating detailed schematics and technical drawings that depict the full electrical configuration for the project.

During the design process of the control box—whether for the main circuit, control circuits, cabling, radio modules, pendants, or other components—the use of EPLAN software proves highly effective. EPLAN's "Insert Center" feature allows users to efficiently search for and select symbols by name or category. For instance, by clicking on the symbol text, a menu opens offering options such as "Special," "IEC_Symbol," "IEC_Single_Symbol," and "Graphics." Selecting the appropriate category reveals a comprehensive library of symbols, which can be seamlessly incorporated into our schematics as needed.

Additionally, EPLAN offers a "Smart Connection" tool, which significantly enhances the efficiency and accuracy of the design process. This feature enables automatic

connections between inserted symbols, accelerating workflow and reducing the likelihood of errors. Consequently, EPLAN not only expedites the design process but also supports higher accuracy and reliability in circuit configuration, saving valuable time.

3.6.1 Testing and Validation

After completing the circuit designs, testing and validation are conducted to ensure the system functions according to specifications. For instance, if the crane is designed with dual-speed control (forward and backward), These functions are verified to operate seamlessly. If the customer requests a basic single-speed function, parameter adjustments are tested to confirm compatibility.

In cases where the customer has requested specific features or a unique crane configuration, the ERIKKILA company review the specifications to assess feasibility within existing system. If feasible, additional steps include ordering any specialized components, integrating them into the design, and performing tests to confirm that the modifications work as intended and comply with safety standards.

3.6.2 Final Export and Documentation Customization for Internal and Customer Use

In the concluding phase of design process within EPLAN, generate two distinct PDF files, each tailored to address the needs of different stakeholders. One document is intended exclusively for internal use within ERIKKILA OY, while the other serves as the control documentation provided to the customer. Structurally, both files are similar, containing largely the same information. The main difference lies in the part list section: while the customer's document includes a parts list relevant to their operations, the internal version contains a proprietary parts list specific to ERIKKILA OY. This distinction safeguards proprietary information and ensures that only necessary and relevant data is shared with the customer to enable proper operation and comprehension of the design. This export process generally marks the final stage in the design workflow, which is typically standardized across projects. However, unique project requirements or conditions may occasionally require adjustments or deviations from the standard procedure. Despite these variations, the export phase generally serves as the standard endpoint of the design process.

3.7 Traditional Planning Methods vs. EPLAN Software

In ERIKKILA, the Project design process previously relied on basic techniques, methodologies, and systems that were only partially interconnected. As a result, inefficiencies arose, leading to a higher risk of errors. The reliance on extensive paperwork and the need for elaborate communication among design teams caused project delays and increased the design time. For example, the old software, *Drift sight-*, presented significant challenges, particularly in documentation. Creating documentation required the use of additional tools like Excel and Microsoft Word, which was both time-consuming and cumbersome. However, the introduction of EPLAN software has addressed many of these issues. EPLAN has streamlined documentation processes and significantly accelerated the design phase.

Automation of Documentation: EPLAN offers powerful automation features that streamline the documentation process by automatically generating essential project components, including project titles, tables of contents, Layout and bill of materials (BOMs). These automated functions significantly reduce the time and manual effort typically required to produce professional documentation, allowing engineers to focus more on design and analysis rather than administrative tasks. By automating repetitive tasks, EPLAN not only improves documentation consistency but also ensures that critical information, such as parts lists and project structures, is accurately represented without extensive manual input. This approach enhances both productivity and accuracy, leading to a more efficient design workflow and high-quality documentation that meets professional standards with minimal human intervention.

Improved Design Capabilities: EPLAN offers advanced tools for creating detailed wiring diagrams, wire numbering and precise layout plans, which significantly improve design accuracy and reduce implementation errors. By enabling designers to visualize complex electrical systems and component placements, EPLAN minimizes the risk of mistakes during installation and operation. These features not only enhance the quality of the design but also streamline the workflow, as accurate representations of electrical layouts and wiring ensure clearer communication across teams and more efficient troubleshooting. Consequently, EPLAN’s design capabilities support higher standards of project reliability and contribute to overall efficiency in the engineering process.

Integration and Customization: It can be integrated with other preexisting systems and provides superior customisation features, making it possible for ERIKKILA to tailor it to

suit clients. This flexibility is essential and desirable in effectively delivering customised solutions.

Efficiency and Productivity: The software has an easy-to-use graphical user interface and a powerful toolbar that allow engineers to perform tasks effectively and accurately within the shortest time. This results in high efficiency and decreases required time for planning and executing the plan.

3.8 Summary

The integration of EPLAN software at ERIKKILA OY has optimized the company's project management and electrical design processes. EPLAN’s automation and precision reduce manual tasks, making documentation and planning more efficient. Combined with the Odoo ERP system, EPLAN helps ERIKKILA manage each project stage, from sales to task completion, by centralizing information and enhancing team collaboration. The design workflow in EPLAN includes initial project setup, automated table of contents generation, detailed layout creation, and electrical circuit design, each streamlined by EPLAN’s component libraries and connection tools. Additionally, EPLAN supports extensive customization, aligning with ERIKKILA’s unique requirements and client needs. This approach minimizes errors, improves quality, and ensures that ERIKKILA meets industry standards. Compared to traditional methods, EPLAN's automation and accuracy significantly boost productivity and enable the efficient delivery of high-quality electrical design solutions, supporting ERIKKILA’s innovation and service goals.

4 Examples of EPLAN Electric P8 Implementation in ERIKKILA Company

4.1 Example 1: Using EPLAN Electric P8 for Component Standardization and Integration

An example is the use of EPLAN Electric P8 in creating and storing frequently used components like the Altivar Machine ATV320 inverter. The engineers at ERIKKILA use EPLAN Electric P8, which allows them to program subassemblies that include the exact points of attachment and text path for the Programmable Logic Controllers (PLCs). These are then saved as macros under the EPLAN database, enabling reuse on other projects but, at the same time, reducing our timelines massively. These capabilities save engineers time by automating repetitive activities and guarantee standardisation across designs so they can consistently deliver work of great accuracy without compromising on productivity.

However, it goes further than the design orientation since EPLAN Electric P8 presents integration capabilities throughout the product cycle. Another feature of the macros is that part numbers, descriptions, and other vital information can be enclosed within macros to integrate with ERP systems cohesively. This integration facilitates seamless contract and project management. Also, it helps to ensure that all relevant departments are informed and ‘on the same page’ during the project's life cycle. In the case of ERIKKILA’s projects, the macros in EPLAN Electric P8 are a crucial design aid that helps avoid project implementation problems. Templates allow ERIKKILA to accomplish assignments more efficiently and accurately, improving customer satisfaction.

The following Figure 9 indicates how EPLAN Electric P8 can be used to develop and administer sample and window macros for a project to ensure its efficient execution. This picture supports the thesis claim and underscores the role of adopting and maintaining the software in managing workflow effectively. It also points to ERIKKILA's contribution to achieving the desired goal of promptly delivering projects with enhanced quality. Figure 9 illustrates creating and managing sample and window macros using EPLAN Electric P8, emphasising its role in efficient project execution.

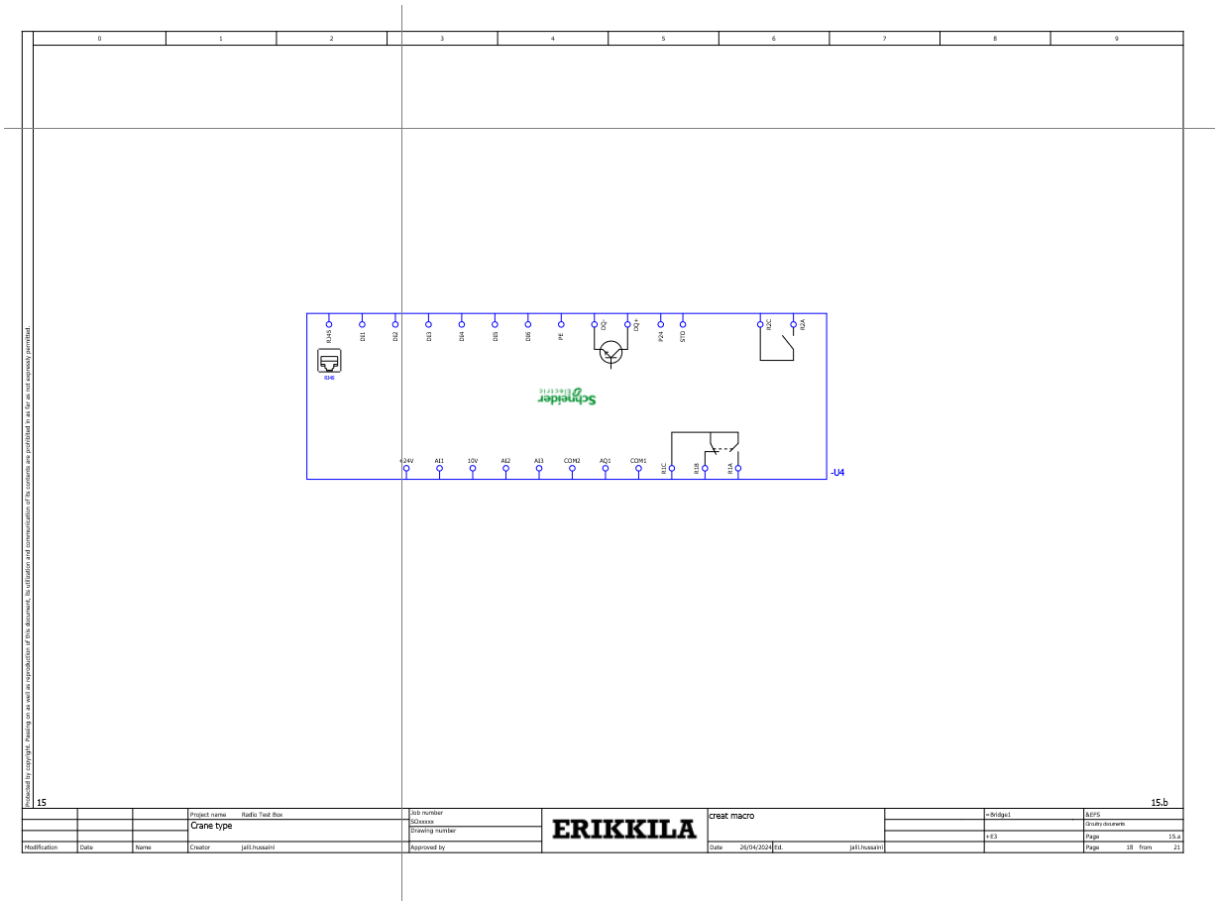


Figure 9: *Creating and managing sample and window macros using EPLAN Electric P8 for efficient project execution.*

4.2 Example 2: Title Page Generation and Document Standardization

Documentation is one of the essential components ERIKKILA considers when managing projects, and EPLAN Electric P8 helps deliver professional, consistent, and easy-to-follow project documents. In each design project intended for ERIKKILA, the title page is developed. It contains the project's title, the buyer's name, the order number, the date of creation, and the name of the engineer who worked on the project. The engineers can efficiently and promptly create these title pages through EPLAN Electric P8. EPLAN Electric P8 provides templates which can be altered to suit specific project characteristics. Engineers can work within predefined templates or customise the title page from scratch to match project branding and communication strategy. After one is developed, it can be revised and used in other projects where very minimal changes are required to the information about the project.

Besides generating title pages, the second package offers more comprehensive formats, such as project number and specification, schematics, and bill of materials. It also helps in formatting documents in a professional way, which makes it easier for team members and clients to read. Essentials of standardised documentation save engineering professionals time, who would otherwise spend their time formatting and categorising these documents according to the levels of detail. In addition, recurrent documentation improves cooperation among the teams and with clients because everyone understands the format and organisation of the project documentation. ERIKKILA's situation has been enhanced through standardised documents, and there has been a better flow of communication within the organisation. The company has minimised the chances of miscommunication and mistakes by standardising the format of all its documents. As shown in Figure 10, the generation of title pages using EPLAN Electric P8 is demonstrated, highlighting the steps and features involved in this process.

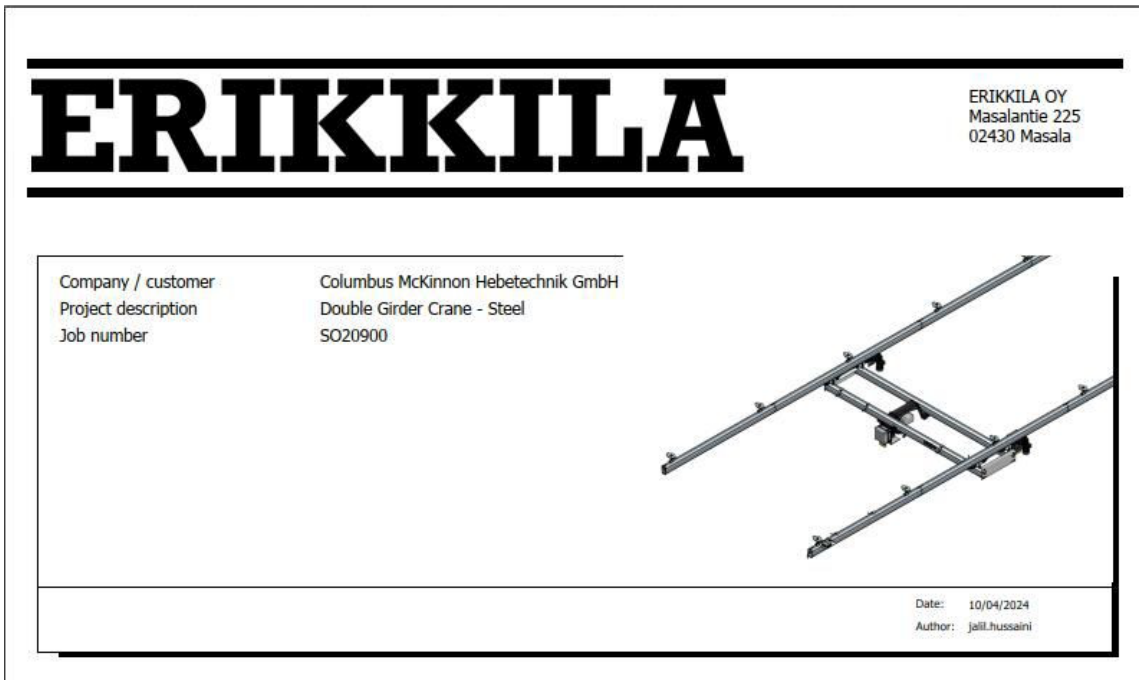


Figure 10: *Generation of Title Pages using EPLAN Electric P8*

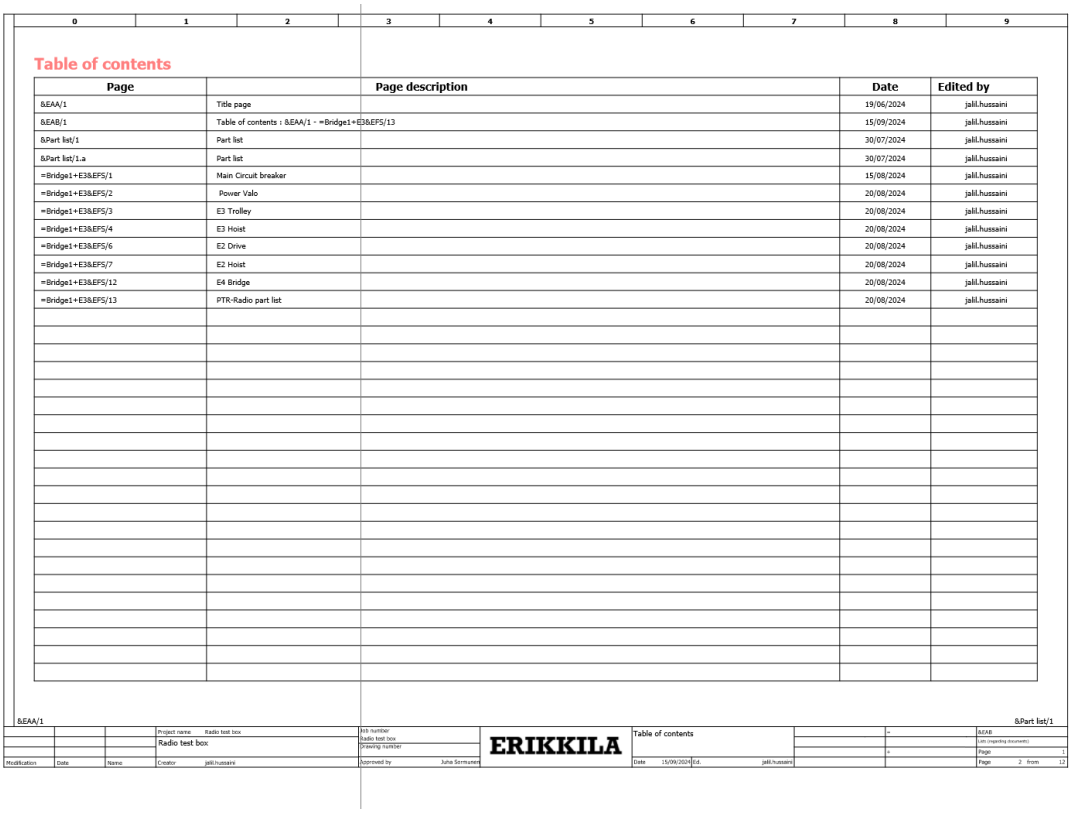
4.3 Example 3: Automated creation of table of contents

Coordinating numerous papers in a project is one of the most demanding tasks since it is filled with many details. EPLAN Electric P8 makes this more accessible as it can customise the production of the table of contents for all the project documents. Since EPLAN Electric P8 saves all files used in an engineer's project, the application also

monitors the project's structure based on sections, subsections and even the individual pages of the project. Accordingly, EPLAN Electric P8 can generate the table of contents with the numbering of sections and the corresponding page numbers. Such options are somewhat helpful in creating the first level of table of contents (TOC), as it takes much time to do this work manually. A person with a background in engineering can quickly generate a correct table of contents in the least time possible, helping in the general organisation and easy navigation of the document.

EPLAN Electric P8 also allows for the creation of a table of contents. The table of contents can be positioned according to the engineering project and the document's style. For example, a brief description of a section or stress that the particular section is essential for the given project can be added. This customisation allows the table of contents to be more than just a locating tool; it is also informative and increases the page's usability.

One of the advanced features that enhances the usefulness of documents used in projects at ERIKKILA is an automated table of contents. Users of various standing—clients and employees—can obtain vital information quicker than is needed to comb through lengthy documents. This has enhanced the general effectiveness of project review and approval, accelerating project completion. As depicted in Figure 11, the production of the table of contents using EPLAN Electric P8 is illustrated, showcasing the process and tools utilised for this task.



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&EAA/1	Title page	19/06/2024	jalil.hussaini
&EAB/1	Table of contents : &EAA/1 - =Bridge1+E3&EFS/13	15/09/2024	jalil.hussaini
&Part list/1	Part list	30/07/2024	jalil.hussaini
&Part list/1.a	Part list	30/07/2024	jalil.hussaini
=Bridge1+E3&EFS/1	Main Circuit breaker	15/08/2024	jalil.hussaini
=Bridge1+E3&EFS/2	Power Valo	20/08/2024	jalil.hussaini
=Bridge1+E3&EFS/3	E3 Trolley	20/08/2024	jalil.hussaini
=Bridge1+E3&EFS/4	E3 Hoist	20/08/2024	jalil.hussaini
=Bridge1+E3&EFS/6	E2 Drive	20/08/2024	jalil.hussaini
=Bridge1+E3&EFS/7	E2 Hoist	20/08/2024	jalil.hussaini
=Bridge1+E3&EFS/12	E4 Bridge	20/08/2024	jalil.hussaini
=Bridge1+E3&EFS/13	PTR-Radio part list	20/08/2024	jalil.hussaini

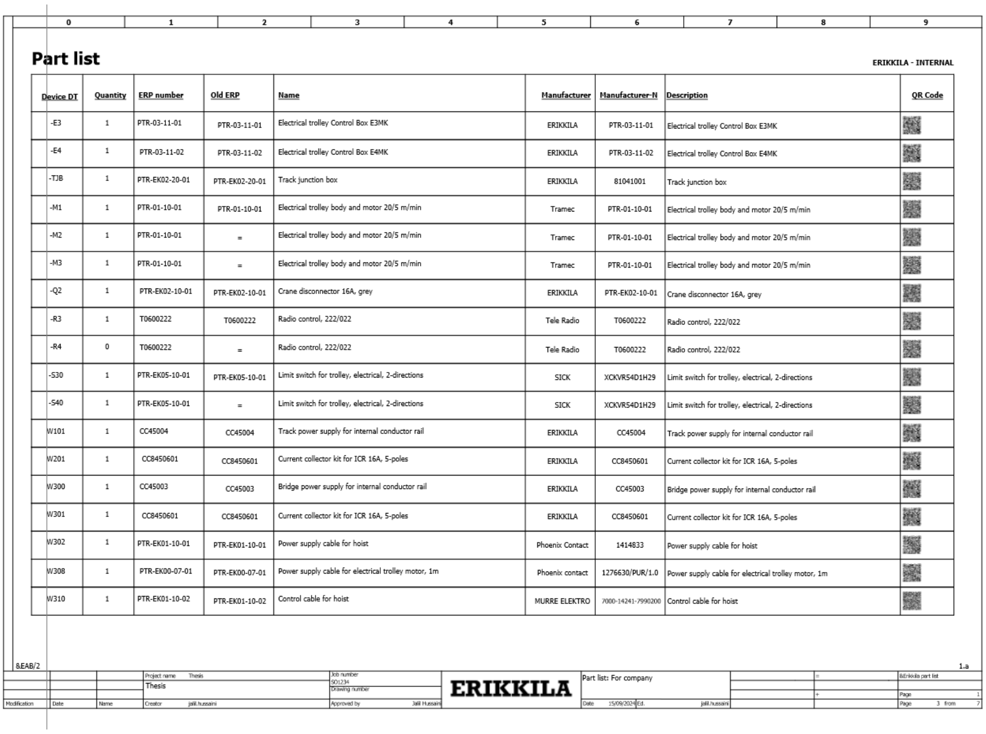
Figure 11: *Production of Table of Contents using EPLAN Electric P8*

4.4 Example 4: Design Files and Bill of Materials Creation

EPLAN Electric P8 makes it easy to produce a highly detailed Bill of Materials that addresses all required components. EPLAN Electric P8 creates a list of all components used in the project as engineers develop electrical systems. This list includes part numbers, descriptions, quantities, manufacture, manufacture number and ERP numbers, among other information. When the design option has been attained, the software creates the best possible Bill of Materials for procurement and manufacturing departments. This means that extensive data entry is eliminated, and there is always an assurance that all the components that have gone into the makeup of a product will be well documented. It also helps increase design efficiency as engineers can easily create a Bill of Materials and immediately continue with the next part of an engineering project.

As with the Bill of Materials generation, the capabilities offered by EPLAN Electric P8 do not stop during the design phase of a project. ERIKKILA's procurement system will be integrated into the software, and all the raw materials and components necessary for product assembly will be easily ordered. For instance, after the generation of a Bill of Materials, some information flows to the procurement system and is used to order from

suppliers. Such integration also ensures that those needed for production are ordered and delivered as planned so that there are no hitches that a delay in the delivery of particular parts may occasion. Creating a correct bill of materials integrated with procuring and production processes has significantly affected ERIKKILA's production. Some benefits of improving material supplies include reducing the production lead times so clients' projects are delivered on time. As shown in Figure 12, the design files and part lists (Bill of Materials) are produced using EPLAN Electric P8, highlighting the software's capabilities in managing these critical project components.



Part list

ERIKKILA - INTERNAL

Device DT	Quantity	ERP number	Old ERP	Name	Manufacturer	Manufacturer-N	Description	QR Code
-E3	1	PTR-03-11-01	PTR-03-11-01	Electrical trolley Control Box E3MK	ERIKKILA	PTR-03-11-01	Electrical trolley Control Box E3MK	
-E4	1	PTR-03-11-02	PTR-03-11-02	Electrical trolley Control Box E4MK	ERIKKILA	PTR-03-11-02	Electrical trolley Control Box E4MK	
-TJB	1	PTR-EK02-20-01	PTR-EK02-20-01	Track junction box	ERIKKILA	81041001	Track junction box	
-M1	1	PTR-01-10-01	PTR-01-10-01	Electrical trolley body and motor 20/5 m/min	Tramec	PTR-01-10-01	Electrical trolley body and motor 20/5 m/min	
-M2	1	PTR-01-10-01	=	Electrical trolley body and motor 20/5 m/min	Tramec	PTR-01-10-01	Electrical trolley body and motor 20/5 m/min	
-M3	1	PTR-01-10-01	=	Electrical trolley body and motor 20/5 m/min	Tramec	PTR-01-10-01	Electrical trolley body and motor 20/5 m/min	
-Q2	1	PTR-EK02-10-01	PTR-EK02-10-01	Crane disconnector 16A, grey	ERIKKILA	PTR-EK02-10-01	Crane disconnector 16A, grey	
-R3	1	T0600222	T0600222	Radio control, 222/022	Tele Radio	T0600222	Radio control, 222/022	
-R4	0	T0600222	=	Radio control, 222/022	Tele Radio	T0600222	Radio control, 222/022	
-S30	1	PTR-EK05-10-01	PTR-EK05-10-01	Limit switch for trolley, electrical, 2-directions	SICK	XCKVR54D1H29	Limit switch for trolley, electrical, 2-directions	
-S40	1	PTR-EK05-10-01	=	Limit switch for trolley, electrical, 2-directions	SICK	XCKVR54D1H29	Limit switch for trolley, electrical, 2-directions	
W101	1	CC45004	CC45004	Track power supply for internal conductor rail	ERIKKILA	CC45004	Track power supply for internal conductor rail	
W201	1	CC8450601	CC8450601	Current collector kit for ICR 16A, 5-poles	ERIKKILA	CC8450601	Current collector kit for ICR 16A, 5-poles	
W300	1	CC45003	CC45003	Bridge power supply for internal conductor rail	ERIKKILA	CC45003	Bridge power supply for internal conductor rail	
W301	1	CC8450601	CC8450601	Current collector kit for ICR 16A, 5-poles	ERIKKILA	CC8450601	Current collector kit for ICR 16A, 5-poles	
W302	1	PTR-EK01-10-01	PTR-EK01-10-01	Power supply cable for hoist	Phoenix Contact	1414833	Power supply cable for hoist	
W308	1	PTR-EK00-07-01	PTR-EK00-07-01	Power supply cable for electrical trolley motor, 1m	Phoenix contact	1276630/PUR/1.0	Power supply cable for electrical trolley motor, 1m	
W310	1	PTR-EK01-10-02	PTR-EK01-10-02	Control cable for hoist	MURRE ELEKTRO	7000-14241-7990200	Control cable for hoist	

&EAB/2 1.a

Project name Thesis — Thesis — Job number SO1234 — Drawing number — ERIKKILA — Part list: For company — &Erikkila part list

Modification — Date — Name — Creator jalil.hussaini — Approved by Jalil Hussaini — Date 15/09/2024 Ed. jalil.hussaini — Page 1 — Page 3 from 7

Figure 12: *The Design Files and Part Lists (Bill of Materials) using EPLAN Electric P8*

4.5 Example 5: Special Tasks with Special Components

The products used in many projects at ERIKKILA are mainly off-the-shelf items. However, there are various customer-specific requests where the norms cannot be the answer to the questions and problems that are arising. As for particular tasks that involve flexibility in component placement and a vast selection of components, they can only be done with EPLAN Electric P8. In the case of a project with special requirements for the elements, ERIKKILA's engineering department employs EPLAN Electric P8 to lay out and implement the elements within the system. Conveniently, the software contains many predefined electrical symbols and components with which the engineers work or

develop new symbols, if necessary. For instance, if a customer is in a fix of requiring a particular inverter with certain performance specifications, the engineering team can design the inverter by making use of EPLAN Electric P8, where they can also come up with wiring diagrams of the inverter and integrate a specific component into the system. Another feature is the capacity to simulate electrical circuits, which allows engineers to try custom designs before making them.

Special tasks usually call for advanced consulting across the specialised divisions, such as the sales, engineering, and procurement departments, aiming to decode and fulfil the customer's needs. EPLAN Electric P8 helps achieve this as all the teams can access the current design information from the single source and custom components. Another aspect of this software is compatibility with systems like ERP and project management tools that improve communication and collaboration across different departments. This makes it possible for all the teams to be on the same level and work in the set direction, especially when working on sensitive and complex projects.

The opportunity to design and incorporate individual parts into the system with the help of EPLAN Electric P8 has expanded the range of projects ERIKKILA can work on and raised the company's competitiveness. This has helped ERIKKILA improve the quality of its products and open more marketing channels, thereby increasing the number of customers it gets to serve.

5 Cases and Success Stories

5.1 Case: Improved Efficiency in Control Panel Design

The designs of control panels incorporated in some of these machines are far more efficient than those commonly seen in industries today.
One of the most notable works in this field was when a large manufacturing client required the design and installation of control panels. Some of the main benefits of using EPLAN Electric P8 at ERIKKILA included the following regarding the design process. Firstly, the software can cut the design time by a few percent more than conventional methods. This significant efficiency enhancement was realised due to the design automation solutions offered by EPLAN, which increased efficiency and limited the amount of intervention required by the engineer. They could quickly draw detailed mechanical diagrams and maps, which enhanced their efficacy and was not prone to human errors. The versatility of the software allowed the team to develop designs that were efficient and applicable to the client’s strategy.

Besides, it was clear that the documentation standard created when operating in EPLAN Electric P8 was far superior to the previous standards. Recording all aspects of a project and ensuring detail and accuracy is valuable in developing a mutual understanding among all stakeholders. This software helped in the generation of comprehensive and easily retrievable documentation that helped in the flow of information between designers and other teams involved in a project. These improvements in documentation also helped minimise misunderstandings and miscommunications, which in turn served as an additional factor for the project's final success.

Further, it also led to savings of as much as a few percent on parts as they are better positioned and used more effectively during a production cycle. With an efficient part management system in EPLAN Electric P8, engineers could choose and position parts much better due to systematic placement, eliminating time and money waste. Apart from reducing the costs, this approach of managing parts was also strategic in ensuring that the final product was of the best quality and standards per the client’s specifications.

5.2 Success Story: Streamlined Project Management

Project management is essential in large-scale automation projects to ensure that these projects are delivered effectively, within the stipulated timeline and budget and to the required quality per the client's requirement. The most significant difficulty that ERIKKILA

Company encountered in this particular business was how it could manage a gigantic automation project involving many different teams and complicated processes. To solve this challenge, ERIKKILA adopted EPLAN Pro Panel and EPLAN Electric P8 software to improve project management and general performance.

The EPLAN Pro Panel software was critical in addressing the project management issues because it was integrated with the company's Web-based ERP systems. This integration allowed project managers to have 'real-time' information about projects and make effective decisions when they are most relevant. Its modern functionalities helped the team monitor the project status, prioritise the resources, and anticipate possible obstacles before they become urgent problems. This approach ensured that the project flowed as planned and was accomplished within the time frame and costs set apart.

Another factor that helped to deliver the project was that the software enhanced the communication and cooperation between all participants. The EPLAN Pro Panel allowed team members to easily access current information and share files to work closely together. This level of transparency and communication impacted positively because all the stakeholders understood the project goals and objectives, hence minimising the formation of gaps. The mentioned software also permitted frequent meetings with the client to ensure their satisfaction was often considered and addressed throughout the project's development.

Also, the performance of using EPLAN Pro Panel for project management positively impacted the improvement of resource management. The software's encouraged features make it easier for project managers to assign resources, which directs much-needed attention to the various aspects of the project. This improved resource distribution helped minimise disruptions due to resource constraints, thus making workflow more efficient.

Lastly, in the case of this automation project, the use of EPLAN Pro Panel software shows its importance in managing the project effectively. Several factors, such as system integration, communication, and collaboration resource optimisation, created the basis for the success of this project. This is an excellent example of how cumbersome large-scale projects can be executed and finished using modern project management tools to satisfy all parties involved.

5.3 Enhanced Collaboration and Communication

The third success story shows how, in the case of ERIKKILA, the implementation of EPLAN software led to enhanced communication within the engineering department. It also meant that everyone was working in sync, so one member understood the other member's outdated information, which helped enhance project quality—implementing EPLAN enhanced team cooperation, project quality, and organisational effectiveness. This kind of linking was made easy by the EPLAN software and made the engineering team realise a new way of sharing ideas in their projects. Before the implementation of new working methods, communication in project work was a problem that arose due to a need for more accurate and updated information at the time of work. EPLAN software ensured that all information related to the project was stored and retrieved in real-time from a single source. This helped all team members use the most current and accurate data to do their jobs, limiting errors from poor data.

From my experience, improved communication through the EPLAN software made a significant impact on the way the team has to function. The software allowed engineers to exchange information such as ideas, insights, and updates and foster a culture of communication and collaboration. This approach not only enhanced the quality of the projects being delivered but also gave all the team members the chance to play their part and to bring their knowledge and skills to come up with better solutions, resulting in better results for projects. The utilisation of the EPLAN software was more comprehensive than that of the engineering department. The cooperation with other departments like purchasing and manufacturing allowed for coordination and alignment of all stakeholders and their functions to fit the project goals and objectives. The overall idea of this approach of integrating various teams eliminated silos for the works and enhanced project management coordination for timely delivery. These case and success stories are real-life examples of how easy it is to explain the importance of EPLAN software in projects and how it positively affects costs, efficiency and results.

6 Improving Company Design Processes with EPLAN Electric P8

6.1 Automated Documentation

Another advantage that will be spotted in aspects of this solution is documentation automation. In most traditional environments, engineers, among other project team stakeholders, devote a lot of time and energy to preparing papers that are associated with the project, leading to what is referred to as more paperwork and, consequently, more chances of having some elements of more or less adequacy. EPLAN Electric P8 handles this by automatically creating extensive and updated documentation. This feature not only accelerates the work but also provides a better result in document preparation and, at the same time, increases their standardisation.

The software guarantees that all project documents are up to date and, thus, leverages all engineering outputs in a homogenised manner. This uniformity is essential for those works in which the accuracy and synergy of operations have specific and constantly high requirements. Further, automated documentation also reduces human errors and, therefore, improves the quality of the documentation. For instance, in a recent Control Panel System Redesign project, the team noticed that through the automated documentation feature, one can swiftly create circuit diagrams, a list of parts, and many other documents. This made the design reviews faster and communicated the most current design information to all the team members.

6.2 Integrated Project Management

The management of projects is also well handled because EPLAN Electric P8 integrates with ERP (Enterprise Resource Planning) systems. Through this integration, an organisation can effectively monitor project progress and efficiency and enhance collaborative effort among departments to deliver projects on time and within the agreed budget. Integrated Design Processes Integrated processes with EPLAN Electric P8 give project managers real-time information on the status of various linked business processes, including the design processes, and updates on resource utilisation and project design bottlenecks. This openness enables one to predict future occurrences and make decisions earlier. At the same time, the other allows one to make the necessary adjustments to the changing needs of projects. ERIKKILA, in a large-scale automation project, used EPLAN Electric P8 to export its design data into Odoo. This integration allowed the project managers to closely track the occurrence of project milestones, and

the usage of the resources assigned to the projects. This decreased the time needed to complete a project by a whopping a few compared to conventional modalities.

6.3 Enhanced Collaboration

Integration is always essential in engineering projects, which is why, with EPLAN Electric P8, data of the projects are centralised, improving collaboration. With this, many people can access and modify the information required in a project in one go, providing the most current information to all the software users. This is because issues that would result in misunderstandings are eradicated due to the existence of this centralised data repository, hence reducing cases of design errors and eventual production delays. Moreover, when implementing the EPLAN Electric P8, the flow of information is improved, and general teamwork is encouraged. A practical example of the feature discussed is the effectiveness of ERIKKILA's engineering and manufacturing division. EPLAN Electric P8 enabled both teams to operate based on one data set, which contributed to better coordination, and thus, a subsequent fewer design change cycles were made.

6.4 Custom now Macros and Templates

One of the possible things in EPLAN Electric P8 is the definition of macros and templates, which can bring automation in the work and uniformity between one project and another. Such features enable engineers to use parts of previous projects in a new project, which saves time in producing new designs and ensures the projects are of high quality and are more or less similar. Special macros are valuable tools that let the engineer create simple procedures for usually executed tasks: setting up the layout of frequently used circuits or generating regular reports, for example. This automation relieves engineers of higher and more creative thinking, such as solving high-level mechanical design problems. To illustrate the improvements ERIKKILA’s design team made, one could design a series of similar projects using a set of macros created especially for the project, which cut the average design time by a quarter. This helped in increasing the efficiency of the teamwork so that it is possible for the team to take up other projects without compromising on the quality of work to be done.

6.5 Error Reduction

The ability of EPLAN Electric P8 to check for errors is essential because it enables the designer to correct the mistakes at the design stage. Its features identify some errors in the design stage or while still being produced, solving problems before they become expensive. In other words, EPLAN Electric P8 is trying to avoid design errors that would later require much time and money for correction. The error-checking feature improves the credibility of the designs prepared at ERIKKILA and increases the quality of the end products. For example, during an electrical design involving a complex electrical system, EPLAN Electric P8 discovered wiring errors. It could have caused the firm to experience many delayed productions and expensive costs if it had gone unnoticed. Due to detection, the engineering team was able to correct what was needed so as not to disrupt the flow of reaching the production level.

6.6 Summary

EPLAN Electric P8 can streamline most of ERIKKILA's detailed design activities and save costs while at it. The programs within the application allow ERIKKILA for effective and efficient documentation of activities, better project management, improved collaboration between the team and members, custom macros and templates that enhance the efficiency of its service delivery, and minimising errors that are likely to be made in the process thus ensuring the organisation maintains competitiveness in the industry. Importantly, insights and examples formulated in this chapter illustrate a positive change brought by EPLAN Electric P8 to ERIKKILA. With the help of this powerful tool that should bring additional enhancements to the design processes and the way projects are delivered in the future, ERIKKILA remains one of the leading companies.

7 Conclusion

Integration of EPLAN Pro Panel and EPLAN Electric P8 with ERIKKILA OY has dramatically improved the company's design and operation efficiency. Thanks to the capability of the EPLAN Pro Panel to proceed from 2D diagrams to 3D models, ERIKKILA OY can make a correct and efficient 3D visualisation and optimisation of control cabinet projects, improving the overall project outcomes. This smooth transition allows for the in-time identification of problems, which minimises rework and boosts productivity.
EPLAN Electric P8 has simplified ERIKKILA OY’s operations more with a friendly interface for illustrating complete electrical diagrams and documentation.

The software’s powerful features and user-friendly interface help reduce the time for design iterations and execute projects precisely, allowing for meeting project deadlines and maintaining high-quality standards—the documentation of comprehensive materials, like bills of materials and wiring diagrams, guarantees uniformity and correctness. Using both EPLAN Pro Panel and EPLAN Electric P8 is a vivid example of how modern design tools should be implemented in engineering. ERIKKILA OY's solutions help optimise internal work and provide a good foundation for delivering reliable, innovative, and practical engineering services, strengthening their market position. This approach emphasises technology as a catalyst of innovation, better performance, and ultimate achievement in engineering design and project administration.

References

Akgul, B. and Kutucu, 2022. An automated system for electrical power symbol placement in electrical plan drawing. https://doi.org/10.1080/00051144.2021.2008620. Accessed 12.07.2024.

EPLAN. n.d. EPLAN electric p8. https://www.eplan.fi/ratkaisut/eplan-electric-p8/. Accessed 12.08.2024.

EPLAN. n.d. EPLAN Pro Panel. https://www.eplan.fi/ratkaisut/eplan-pro-panel/. Accessed 01.08.2024.

ERIKKILA. 2024. Home. https://ERIKKILA.ERIKKILA.com/fi/. Accessed 12.06.2024.

ERIKKILA.finder.fi. 2023. ERIKKILA OY - ERIKKILA-tunnus: 0673563–0 - Yritystiedot, taloustiedot, päättäjät & hallituksen jäsenet. [online] https://ERIKKILA.finder.fi/Nosturit+ja+nostolaitteet/ERIKKILA+Oy/Masala/yhteystiedot/131888. Accessed 23.06. 2024.

Kallinen, K., 2022. Power Distribution Unit for a Lightweight FCT Platform. https://www.theseus.fi/handle/10024/749871. Accessed 24.08.2024.

Kokhanevych, T., 2023. Computer-aided design of industrial automation systems based on programmable logic controllers and microcontrollers. https://www.theseus.fi/handle/10024/750737. Accessed 02.08.2024.

Koponen, A., 2022. EPLAN Electric P8-suunnitteluohjelman optimointi yrityksen tarpeisiin. https://www.theseus.fi/handle/10024/748742. Accessed 12.09.2024.

Mielty, A., 2020. EPLAN Pro Panel-sähköasema suunnittelussa. https://www.theseus.fi/handle/10024/330188. Accessed 19.09.2024.