"WE NEED TO AUTOMATE TIME-CONSUMING ACTIVITIES AS QUICKLY AS POSSIBLE"

EXPERT INTERVIEW ON THE FUTURE OF ELECTRICAL CABINET ENGINEERING

Anyone who designs and produces cabinets wants to keep the production time and costs involved to a minimum. Despite the numerous automation functions offered by modern design programs, the proportion of manual work done by design engineers still remains significant. Alin Dragan, Product Manager at WSCAD GmbH, investigated this phenomenon and discovered some interesting relationships.

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Alin, you've been working with electrical CAD for many years and, before joining WSCAD, you also designed and commissioned control cabinets yourself. During this process, you automated recurring processes wherever possible. In your opinion, what trends are going to be relevant for electrical design in the future?

Using automation to optimise workflows is advancing relentlessly as a whole, especially in electrical design, and anyone who doesn't move with the times risks getting left behind. The most recent notable example is ChatGPT. If you have not only heard of it but maybe even tried it out, then you'll realise how far technology has already progressed through computer programs and artificial intelligence. I have seen examples where, in a matter of minutes, someone used this tool to turn a cool idea into a fully functioning app. After inspection and approval from the App Store, it was ready for people to download and use it. How quick is that?!

What exactly does that have to do with control cabinet design and production?

Today, when you design a control cabinet, produce it, and put it into operation on site, the whole procedure consists of an initial creative thought process, followed by a lot of high-precision and high-quality hard work.

No-one can replace creativity yet, so it will probably be the role of humans for a long time to come. However, a lot of what comes after can be carried out automatically. The basic message is to relieve people of tedious recurring tasks and let them be creative in the time they gain as a result; because that is what we do best and what distinguishes us from machines. In fact, computers can carry out repeatable tasks not only more quickly but with much greater precision and consistent quality too.

So, in the age of automation, the winners are the people who are creative?

Absolutely! When I see what an AI tool like ChatGPT is able to do today, it is immediately clear to me that we should let computer programs take over time-consuming cabinet engineering and electrical design activities as quickly as possible. Anyone who acts now will have a clear advantage. Creativity needs to be trained like a muscle and that doesn't happen overnight. For a long time, WSCAD's electrical CAD solution has increasingly had functions that allow users to automate routine tasks at the press of a button – some customers are already making use of this option, but a lot are still hesitant.

Do you know why that is?

There are both human and organisational reasons, namely chaos, unnecessary variations and old habits. Once these obstacles have been removed, all that is

needed is the right tool - namely an electrical CAD solution with sufficient functionality and freedom to map individual ideas and processes.

What does that mean exactly?

Anyone who designs and carries out projects in a chaotic manner, that is, alternating between different methods or adopting entirely customer-specific approaches, will find it difficult to recognise repetitions, rules and patterns. Without identifying these, automation won't work. Moreover, this can lead to the belief that processes can't be automated because everything is carried out somewhat differently each time. The only way to get out of this loop is by thinking through processes and designing clear structures. The projects themselves also follow a clear structure in accordance with EN 81346-1, i.e., taking into account the functional and local aspects of the products. In the field of building automation, it's also common to carry out structuring in accordance with AMEV – incidentally in the case of WSCAD, both identification systems can be displayed simultaneously within the same design. However, the structure of the schematics themselves is also an important consideration.

Standards are all well and good. But doesn't one cabinet then look just like any other?

Yes and no. The requirements are different and there will always be a degree of customisation. But there should not be too many deviations. Rules and patterns should remain as consistent as possible. Talking about unnecessary variations, they include, for example, switching to different product components because the purchasing department negotiated better discounts for them, or the sales department was unable to convey the advantages of a standard to the end customer. It might be that a designer keeps using different components because he likes to make his mark or simply always wants to use the latest

Alin Dragan, Product Manager at WSCAD GmbH, manages the automation of design processes and artificial intelligence.


For Alin Dragan, chaos, unnecessary variance and habits are among the obstacles to the automation of design processes.

components. Speaking from experience, the more uniformly electrical schematics and cabinet layouts are presented, the better. Only lists of approved products, clear standardisation and design guidelines can help here.

Besides chaos and variations, you also mentioned old habits. What impact do these have?

Once users discover certain functions, rules, and patterns, they tend to carry out tasks in an established way. One example of an ingrained habit for most software users is copy/paste, which is used because it's quick and easy. How-

ever, there is always a manual process behind it that cannot be automated. Deep product and project knowledge is then required each time. Component circuits and sub-schematics are not neutral and are hard to find in the overall circuit diagrams. In addition, copies are context-specific and need to be modified and edited. In doing so, something will then often be overlooked and forgotten in larger projects. Anyone wanting to establish automated workflows should definitely move away from copy/paste.
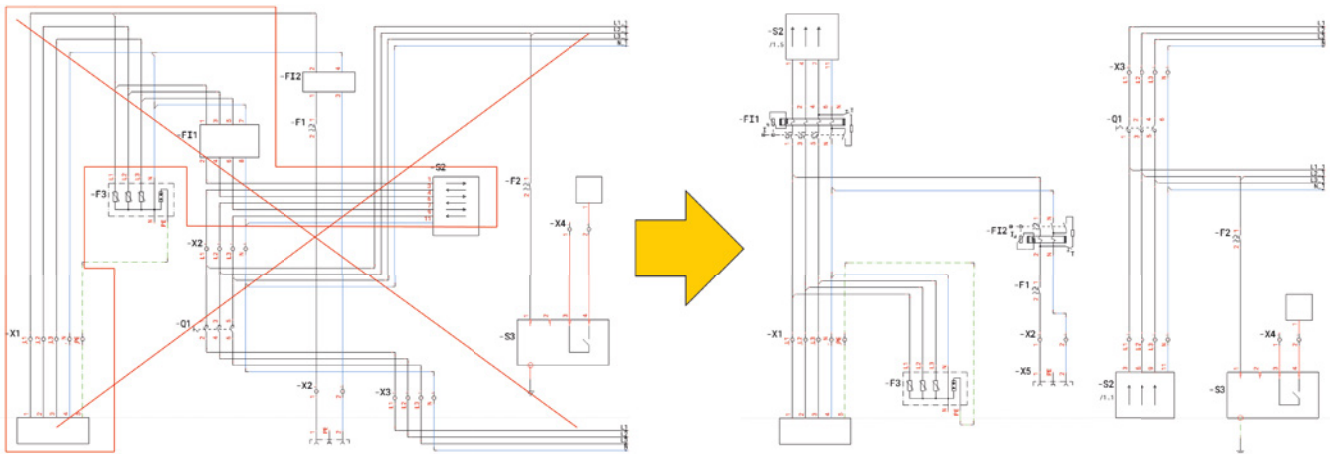
Macros speed up the design process and bring it up to a uniform and consistently high level company wide.

And how is automation carried out?

Frequently used component circuits or partial or even whole schematics pages are stored in the form of macros company-wide. Macros create a level playing field, regardless of the skills of different designers, making it easier for everyone to find functions thus balancing out different design speeds and paving the way for consistent quality in terms of results, with the motto being: "company-wide standards and design manuals". Therefore, anyone who uses variants as placeholders in the macros will be able to swap components quickly and securely across all sheets and designs later on at the press of a button, if required.

So, what are your recommendations for users of electrical CAD design software?

They should definitely look to automate routine tasks. Anyone who acts now will have a clear advantage. The structuring of projects leads to better results, regardless of whether they relate to machinery, equipment or building automation.

Designers should also use the macro libraries provided with our software and store individual macros in company-wide libraries. This will speed up the design process and bring it up to a consistently high level. With the help of our Project Wizard, anyone wanting to go one step further can combine frequently recurring component circuits in accordance with predefined rules and thus produce complete schematics in one go. Most importantly, all electrical design documents, including project documentation, can be created at the press of a button externally via our automation interface using individual product configurators or ones that are already available on the market. Some of our customers are already doing this successfully. Creating automated processes can help create optimised workflows that pay off in no time. Not only will you be able to deliver projects more efficiently, but it will also better prepare you for artificial intelligence driven technologies.
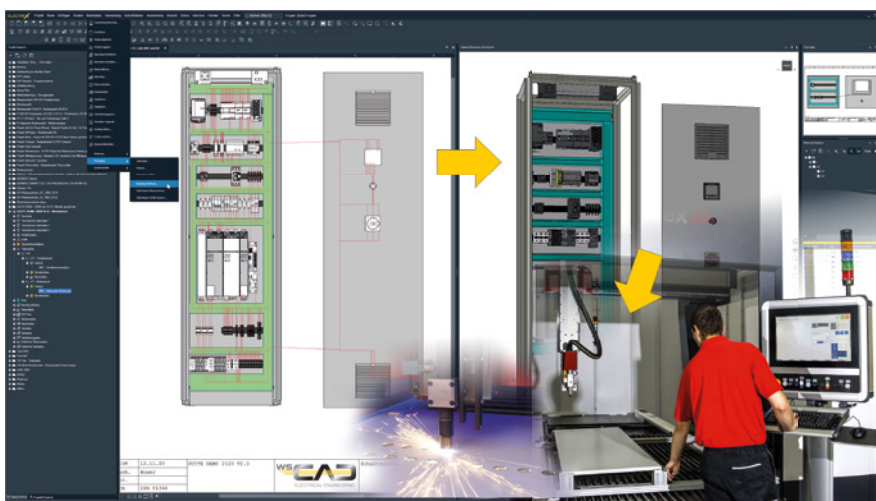
WSCAD Cabinet Engineering is one of the six modules from the WSCAD electrical CAD solution.

Automated cabinet production with WSCAD Cabinet Engineering

WSCAD Cabinet Engineering is one of the six modules from the WSCAD electrical CAD solution for schematic diagrams: cabinet engineering, piping and instrumentation diagrams, fluid engineering, building automation and electrical installation. It is available as a rental or purchase licence and it comes in three upgrade levels Lite, Advanced and Expert.

The full range of functions includes:

- Cabinet layout design with or without electrical schematic
- Uniform and fast design planning thanks to macro libraries and tools provided for the automation of processes
- Quick selection and easy exchange of components thanks to comprehensive part database provided
- Free access to the online part database www.wscaduniverse.com containing more than 1.4 million pieces of component data from more than 380 manufacturers in WSCAD, EDZ, DWG and 3D STEP formats
- Automatic routing of all connections at the press of a button
- Filling degree display for cable ducts – if full, components can either be placed elsewhere or different paths can be enforced
- Heat and climate calculations via interfaces, e.g., to ProClima
- Interfaces to PLM and ERP systems
- Photo-realistic 3D representation to give a better idea of space
- 3D collision test based on actual component dimensions
- Wire marking and label printing using devices from a wide range of manufacturers
- Preparation and export of data generated for the production of wires and wire sets via service-providers or on own NC machines from leading manufacturers – this function is included by WSCAD at no extra cost
- Export of data for producing cabinet housings, doors and mounting plates on NC machines from popular manufacturers (drilling, milling or laser-cutting centres). This function is also included at no extra cost
- Complete, multilingual and standard-compliant documentation in the form of intelligent PDFs with cross-references and branch addresses
- Includes Cabinet AR app for fast and safe cabinet wiring as well as for maintenance: service technicians on site scan control cabinet components and gain immediate access to all documentation, 3D views of components, part data and manufacturers' original data sheets. Includes "redlining," i.e., changes are recorded and sent back to the engineering department