NIEMANN GMBH

SUCCESS STORY

PROFESSIONAL CONTROL PANEL ENGINEERING WITH INTEGRATED MANUFACTURING

WS CAD
ELECTRICAL ENGINEERING

At a Glance:

Customer
- NW-Niemann GmbH, Vechta, Lower Saxony
- Panel Builder
- 70 employees

Situation
- Procurement of NC machines for the production of wires and cabinet housings
- Integrating engineering and manufacturing through a modern electrical CAD software
- Control of NC machines directly from the electrical CAD software

Used software
- WSCAD SUITE
  - Electrical Engineering
  - Cabinet Engineering Advanced

Benefits
- Continuous engineering using one platform
- Capture data once and use continuously
- Use of the data for production with no additional mechanical CAD software reqiered
- Faster with fewer errors

Highly specialized control panel manufacturers need to be equally proficient in both the technology and the skills of the trade. In addition to the appropriate machines for production, it is crucial that they also have the right CAD tools. Managing Director Holger Pawel from the NW-Niemann GmbH Elektrotechnik provides some insight into how he and his team have mastered the daily challenges.

The NW-Niemann GmbH develops and manufactures switchgear for complex control and low voltage distribution systems up to 4000 A. Over 60 employees are involved in the design, planning and production at two locations in the Lower Saxony district town of Vechta. Compliance with VDE regulations and EMC directives is the first and topmost quality commandment for the ISO-certified company. Customized test reports then build on this and underpin the excellent quality of products. The customers of NW-Niemann include renowned companies from the agricultural sector, mechanical engineering companies involved in machine and plant construction as well as heating/ventilation and air conditioning.

In order to manufacture efficiently and professionally, NW-Niemann has invested in Komax machines for the production of wires and wire sets and established its own sheet metal processing center with NC production equipment, a Perforex LC 3015.

It quickly became clear that a suitable CAD system was required in the next step. The demands of the planning and CAD design department are high: they need to be able to independently develop customized small controllers, schematics and ICA (instrumentation, control and automation) switching systems themselves. To build control cabinets, the NW-Niemann engineers must be able to accept data from other planning systems and to control the in-house production without detours. “In this context, we comprehensively analyzed and evaluated two well-known electrical CAD solutions within the framework of a test setup”, says Managing Director Holger Pawel. “Functionally there were no significant differences, but certainly in terms of price. When you add up the overall solution we need, including wire routing and manufacturing integration, WSCAD was more cost-effective by a factor of three. Even the annual maintenance costs have a significantly lower impact on our bottom line.”

Over 60 employees of NW-Niemann design, plan and produce switchgear for complex control and low voltage distribution systems up to 4000 A at two locations in the Lower Saxony district town of Vechta.

It quickly became clear that the business decision would fall in favor of the new electrical CAD system from WSCAD. But this was coupled with a drawback: at the time of the purchase, there was still no interface to control the Komax machine at NW-Niemann for the wire production. “The WSCAD sales engineer did, however, after consulting with management, promise to implement this important interface for us as soon as possible. And he kept his word “, recalls Holger Pawel. “The entire consulting and sales process was

Schematics are developed with the Electrical Engineering discipline from the WSCAD software. Cabinet construction with Cabinet Engineering follows seamlessly; schematics from other electrical CAD systems can also be imported.

extremely transparent and trusting." Already in the early summer of 2016, NW-Niemann could work with the promised interface, and by September, it was included by default in WSCAD SUITE.

work, saves time and increases quality. If the schematics and documentation are supplied by the clients, they go straight into the cabinet configuration. Regardless of the supplied electrical CAD format, the exported or

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NW-Niemann accepts the ICA schematics or individual customer requirements, outlines the structure of the switchgear equipment and calculates the pricing for offers. After receiving an order from their client, the associated schematics are created using WSCAD. "In the past, we used to create schematics with simpler electrical CAD software", says Holger Pawel. "Today, we develop them already with a view to the following cabinet construction with subsequent production – all on one platform and with a single software program." NW-Niemann thus avoids redundant

manually created materials list is read into WSCAD using a wizard. Matching with the part database during the import prevents redundant

More than 1.4 million parts and symbols for electrical CAD can be found via free access to wscaduniverse.com.

data. If a required part is not available locally, it can be easily found via the free access to wscaduniverse.com, which is included with the maintenance contract of the electrical CAD software. "Part vendors had already confirmed to us prior our procurement of WSCAD that they prefer to make the part data of their products available on wscaduniverse.com because, in contrast to other providers, they are not charged for the presentation here. For us as users, this increases the probability of finding more and, most importantly, the latest data immediately. We do not have to go on a cumbersome third-party search."

In the next step, the experience and expertise of the designers come into play: If the cabinet structure is not specified, they estimate its size and determine how the mounting rails, power supply and other components should be arranged. They then simply put this information into the drawing – a process that can be significantly accelerated using macros. By using macro variants, different manifestations of a macro can be created. This enables a 25A feed, for example, to be easily changed to a 63A variant in all plans at a later date – a highly efficient time-saving and error-free method. The components planned or imported into the schematic via a materials list appear in the Materials Explorer and can also be dragged and dropped into the cabinet. The software supports this step with au-

For the production of wires and wire sets, the NW-Niemann GmbH has invested in an NC machining center from Komax – the data for this comes directly from the cabinet layout created with the WSCAD software.

tomatic left or right alignments and the snapping of components on the rail accurate to one tenth of a millimeter. If all components are green, this means that everything is in and nothing has been forgotten. Those who want better spatial awareness of the cabinet structure can simply switch to the 3D control view and immediately see whether the cabinet door can be shut.

"A very useful function for us is the wire routing", says Holger Pawel, while commending the next step with the WSCAD software. The information required for routing is either taken directly from the previously created schematic or is imported via terminal charts and connection lists that were exported earlier from third-party electrical CAD systems. A simple click on the "Routing" button is enough to make all the connections with the wire lengths already calculated. Even the current filling degree of the channels is indicated visually.

Red means "too full". Rerouting can then be optionally enforced via a setting or larger cable channels must be used.

This is followed by one of the most important steps for NW-Niemann GmbH: all the generated data is available for manufacturing at the touch of a button. For the production of wires and wire sets, the data is passed directly to the Komax machine without any detours. Those who do not have such a system can alternatively start the CadCabel application via a menu item and transfer all the necessary data to the service provider of the same name directly from within the WSCAD software. The machining of the mounting plates and cabinet doors is carried out at the NW-Niemann GmbH on a Perforex LC 3015. The selectable settings correspond to the capabilities of the respective machine. "Until now we had to use additional mechanical CAD software for this production step," explains Holger Pawel. "With WSCAD, we can now send the data directly to our laser machine. The previous parallel drawing in the mechanical CAD system has been eliminated." This too ultimately saves time and improves the quality. The costs for a possibly unnecessary software license are also saved.

Parallel to the manufacturing, all the components required for production can be procured on time project-specific material lists can be created and compared with the ERP system for this purpose. Then follows the assembly of the pre-machined components and their wiring in the main assembly. The specialists at NW-Niemann pay particular attention to the subsequent electrical and technical quality control: visual checks, measurements based on previously created protocols, one last final inspection and test results created individually for the system complete this step. The automatically generated documentation is typically in the form of intelligent PDF files. In other words, installers and service technicians on site do not need any special viewers and can instantly switch by clicking on a cross-reference from the cabinet layout to the schematics other plans in the associated disciplines of the WSCAD software. Work-

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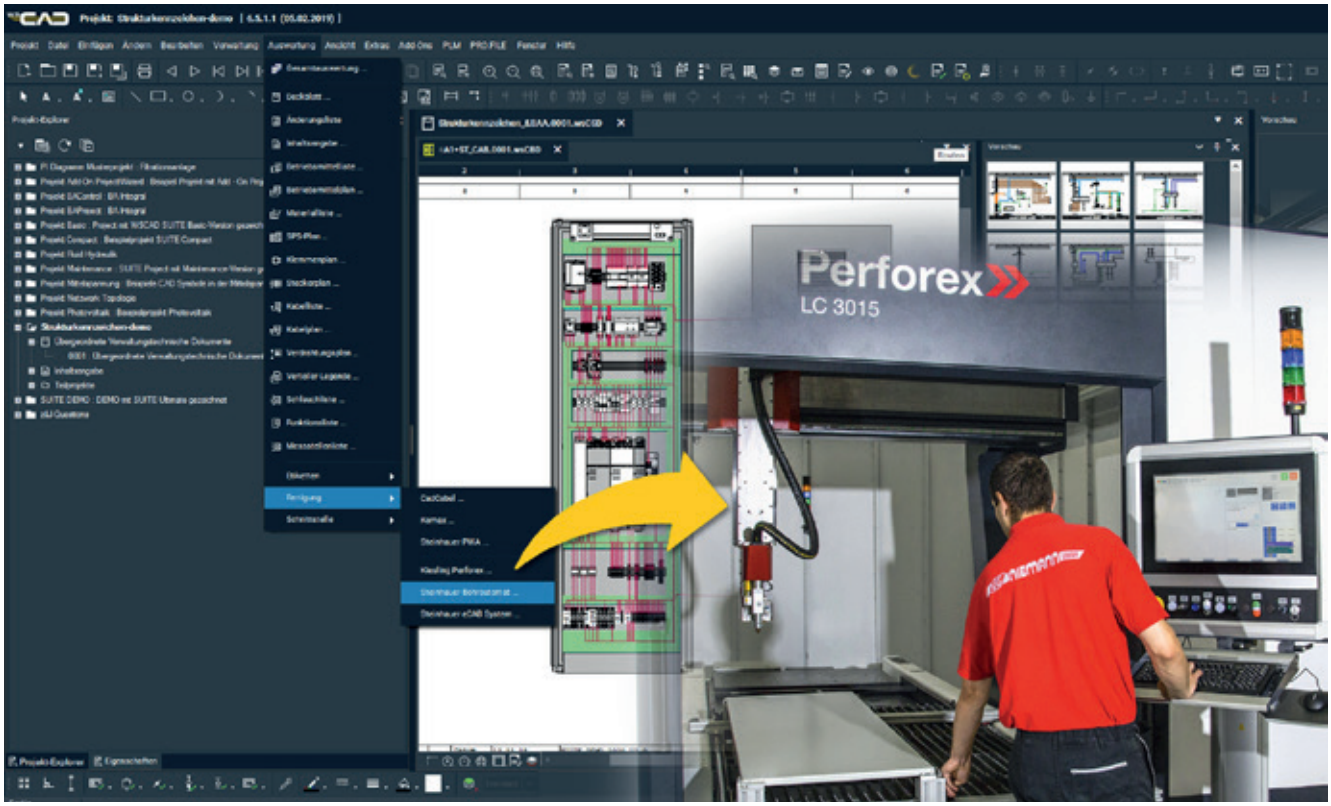
Compliance with VDE regulations and EMC directives is the highest quality commandment for the specialists of NW-Niemann when installing and wiring the switchgear. Customized test reports underpin the excellent quality of the products.



Doors and mounting plates are made at the NW-Niemann GmbH under NC control on a Perforex LC 3015 – with data from the WSCAD software. The previously required additional M-CAD software is no longer needed.

ing with the WSCAD software makes it possible to handle the entire development, planning and documention on a single platform and with part data from a central database across the disciplines of electrical engineering, control cabinet construction, process and fluid engineering, building automation and electrical installation. The PLM/ERP Integration facilitates comparisons with data from other systems, and mechanisms to automate engineering processes accelerate the work of several weeks down to just a few days and possibly even a few hours. With 30 years of experience and a comprehensive range of services from the portfolio of their Global Business Services, WSCAD provides invaluable assistance in the implementation, operation and optimization of the WSCAD application and efficient development processes. The overall procurement and maintenance costs of the WSCAD solution are about half to two-thirds lower than other solutions on the market.

WSCAD is part of the Buhl group with more than 800 employees. WSCAD has been developing electrical CAD solutions for three decades. Customers include medium-sized companies, international corporations and engineering service providers. More than 35,000 users rely on WSCAD software as their electrical CAD solution. The software is based on one core platform that covers six engineering disciplines: Electrical Engineering, Cabinet Engineering, Piping and Instrumentation, Fluid Engineering, Building Automation and Electrical Installation. Any change made to a component in one discipline immediately reflects in all the other disciplines. WSCAD methodologies for standardization, reuse and automation significantly reduce engineering time from several weeks to just a few hours or even minutes. At the same time, these practices also ensure a much higher quality of work.

wscaduniverse.com is by far the largest electrical CAD data library on the market offering over 1.4 million parts from more than 380 manufacturers. It is the only digital library that supports both WSCAD and Eplan* users alike as well as 3D CAD data. Use and provision is free of charge for all users and manufacturers of components and equipment. Maintenance engineers and service personnel are now able to scan devices and components within a control cabinet by using the WSCAD Cabinet AR App on their smartphones or tablets. This provides them instant access to the schematics, device tags, part data, 3D views and even the original data sheets from the manufacturers.

The WSCAD portfolio is completed by eleven seamlessly integrated service offerings from WSCAD Global Business Services such as: engineering and migration checkups, consulting and training, digitization of paper documents and conversion of third-party electrical CAD formats.

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