

## CNC SOLUTIONS LLC

DEVELOPING ELECTRICAL SYSTEMS FOR MANUFACTURING  
MACHINERY FASTER WITH SOLIDWORKS ELECTRICAL 3D



With the improved collaboration between electrical and mechanical designers facilitated by SOLIDWORKS Electrical 3D software, CNC Solutions has realized substantial time savings and a more efficient, integrated approach to controls and process machinery development.



### Challenge:

Streamline the development of electrical cabinets and control systems for manufacturing machinery to save time, reduce costs, and boost throughput.

### Solution:

Add SOLIDWORKS Electrical 3D software to the company's SOLIDWORKS mechanical design installation.

### Benefits:

- Cut electrical design time by 50 to 75 percent
- Reduced BOM generation time from hours to minutes
- Enhanced quality, accuracy, and appearance of electrical schematics
- Improved mechanical/electrical design collaboration

CNC Solutions LLC designs, fabricates, and builds factory automation and tooling solutions for leading manufacturers. The company's core business is electrical and mechanical systems integration and automation for a variety of original equipment manufacturers (OEMs) and end users requiring quality industrial automation and manufacturing engineering services. CNC Solutions is especially adept at applying system integration technologies to provide quality plant automation solutions for both machine and process controls.

With more than 70 years of combined experience in machine tool automation and integration, CNC Solutions strives to keep abreast of the latest design, engineering, and manufacturing technologies in order to provide its customers with a strategic single-source partner for automation integration. The company has utilized SOLIDWORKS® mechanical design software for several years, enjoying a range of productivity improvements. CNC Solutions sought to realize additional efficiency gains in electrical design, according to Controls Engineer Shawn Eckhardt.

"We were using AutoCAD® 2D tools to develop schematics for our electrical cabinets and control systems," Eckhardt recalls. "That approach was both tedious and time-consuming, so we decided to look at more current 3D solutions. In addition to accelerating electrical design and schematics development, we were interested in looking at our electrical cabinets in 3D to automate wire and cable routing, as well as streamline the generation of bill of materials [BOM] information and facilitate more effective collaboration between our mechanical and electrical engineers."

CNC Solutions evaluated 3D electrical design packages from Autodesk, EPLAN, and DS SOLIDWORKS before choosing SOLIDWORKS Electrical 3D design software. The company chose SOLIDWORKS Electrical because it's easy to use, fully integrates as an add-in to SOLIDWORKS mechanical design software, and provides automated wire and cable routing and BOM generation capabilities. "Working with a 3D electrical design application that's completely integrated with our SOLIDWORKS mechanical design system is certainly an advantage," Eckhardt notes. "However, the big thing was

having access to our manufactured parts library so we can more quickly see what we need in terms of control panel and cabinet size."

### SAVING TIME, INCREASING COLLABORATION

Since implementing SOLIDWORKS Electrical 3D design software, CNC Solutions has reduced electrical design time by 50 to 75 percent. The controls and process machinery manufacturer has also enjoyed better collaboration between mechanical and electrical designers—both of whom now work on a common platform—resulting in an improved, integrated approach to the design of its integrated automation systems.

"Implementing SOLIDWORKS Electrical 3D software has improved collaboration, increased efficiency, and allowed us to size our cabinets better," Eckhardt says. "We can now put actual components in the model instead of square blocks to fit a certain footprint. This provides a more accurate representation of the actual design, resulting in better-looking, more accurate schematics.

"We now can see how everything fits together in 3D and make decisions ahead of time," Eckhardt continues. "By completing electrical design faster, we can handle more projects, leading to accelerated production and increased throughput."



**"With SOLIDWORKS Electrical 3D, we've reduced BOM generation time from hours to minutes, and the BOM information that we output is more accurate."**

— Shawn Eckhardt, Controls Engineer

### COMMON ELECTRICAL SYMBOLS DATABASE

Before acquiring SOLIDWORKS Electrical 3D software and implementing its common electrical symbols database, electrical schematics for CNC Solutions machine designs lacked consistency in appearance, often requiring electrical engineers to manually track electrical schematic symbols from design through production. By providing a common set of electrical symbols and a complete manufacturing database, SOLIDWORKS Electrical 3D software helps the company improve the quality, accuracy, and appearance of electrical schematics, resulting in less rework in production, as well as speeding up the generation of BOM information.

"Automated BOM generation with SOLIDWORKS Electrical 3D is a huge timesaver," Eckhardt stresses. "Outputting BOM data used to require filling in a spreadsheet manually, which could take hours. Now, it only requires clicking a few buttons. With SOLIDWORKS Electrical 3D, we've reduced BOM generation time from hours to minutes, and the BOM information that we output is more accurate."

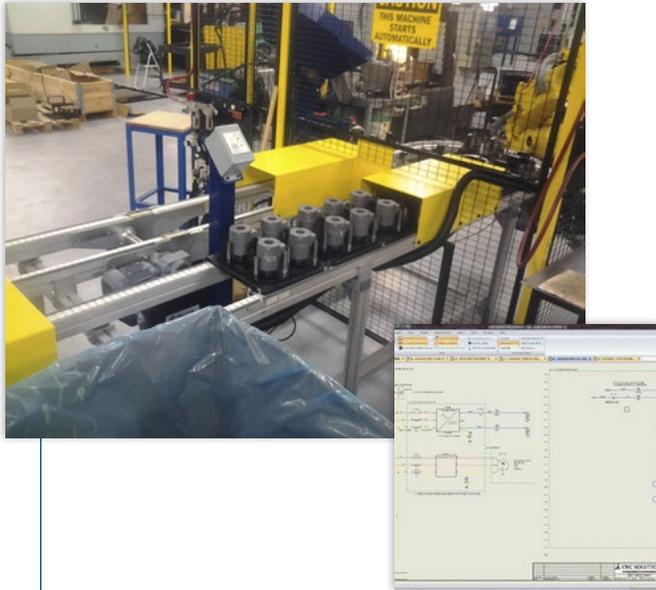
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Using SOLIDWORKS Electrical 3D software, CNC Solutions generates a single unified bill of materials [BOM] and utilizes a common electrical symbols database, helping the company improve the quality, accuracy, and appearance of electrical schematics; minimize production rework; and speed up the generation of BOM information.

## NEXT STEP: AUTOMATED CABLE ROUTING

CNC Solutions plans to further leverage SOLIDWORKS Electrical 3D software to automate the routing of wiring and cabling within its automation systems. “We’re planning on tapping the routing capabilities of SOLIDWORKS Electrical 3D to demonstrate how to route cables and wires for production,” Eckhardt says.

“Production personnel who assemble our machines often ask, ‘How do we route cables through this maze of mechanical components?’” Eckhardt adds. “Our goal is to use SOLIDWORKS Electrical 3D software to take the guesswork out of this process by visually showing the routings in 3D. The software’s wire and cable routing capabilities will also let us make sure that there are no interferences between motor and signal cables.”

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