



SANMINA

# VERTICAL INTEGRATION & SUPPLY CHAIN EXPERTISE ENABLE 10 DAY DELIVERY

A global industrial systems company was struggling to meet customer demand for their family of complex electromechanical controls.

Supply chain challenges included long component lead times and management of several system variants.

Sanmina redesigned their global supply chain to consistently achieve a 10 day system delivery.

## THE CHALLENGE

A tier one industrial controls OEM needed their complex systems built to order in lot sizes of one and consistently delivered within a 10 day lead time. The existing solution resulted in significant backlog of past due orders and on-time delivery issues. The supply chain was complex with over 1,200 components, more than 130 suppliers and cumulative lead times of 34 weeks. Multiple technologies including electronics, hydraulics, motors, pumps and valves were connected with more than 100 cables per assembly and tested using three phase power at up to 600V in systems weighing over 1,000 lbs. The supply chain, manufacturing and test process needed to be redesigned to achieve lead time objectives while meeting stringent safety and quality requirements.

## WHY SANMINA

During visits to Sanmina manufacturing facilities, the customer immediately recognized Sanmina's expertise with complex system manufacturing, in industries where safety and reliability are paramount. Sanmina's PCB, PCBA, cables, enclosures and system integration capabilities would greatly simplify supply chain complexity. Sanmina's proposed approach was compelling.



## SANMINA'S APPROACH

Sanmina established a cross functional customer focus team including program management, order management, materials, manufacturing process engineering, product engineering, quality engineering and test engineering. Sanmina solved the overall delivery and lead time problems with four solutions:

### Supply Chain Redesign

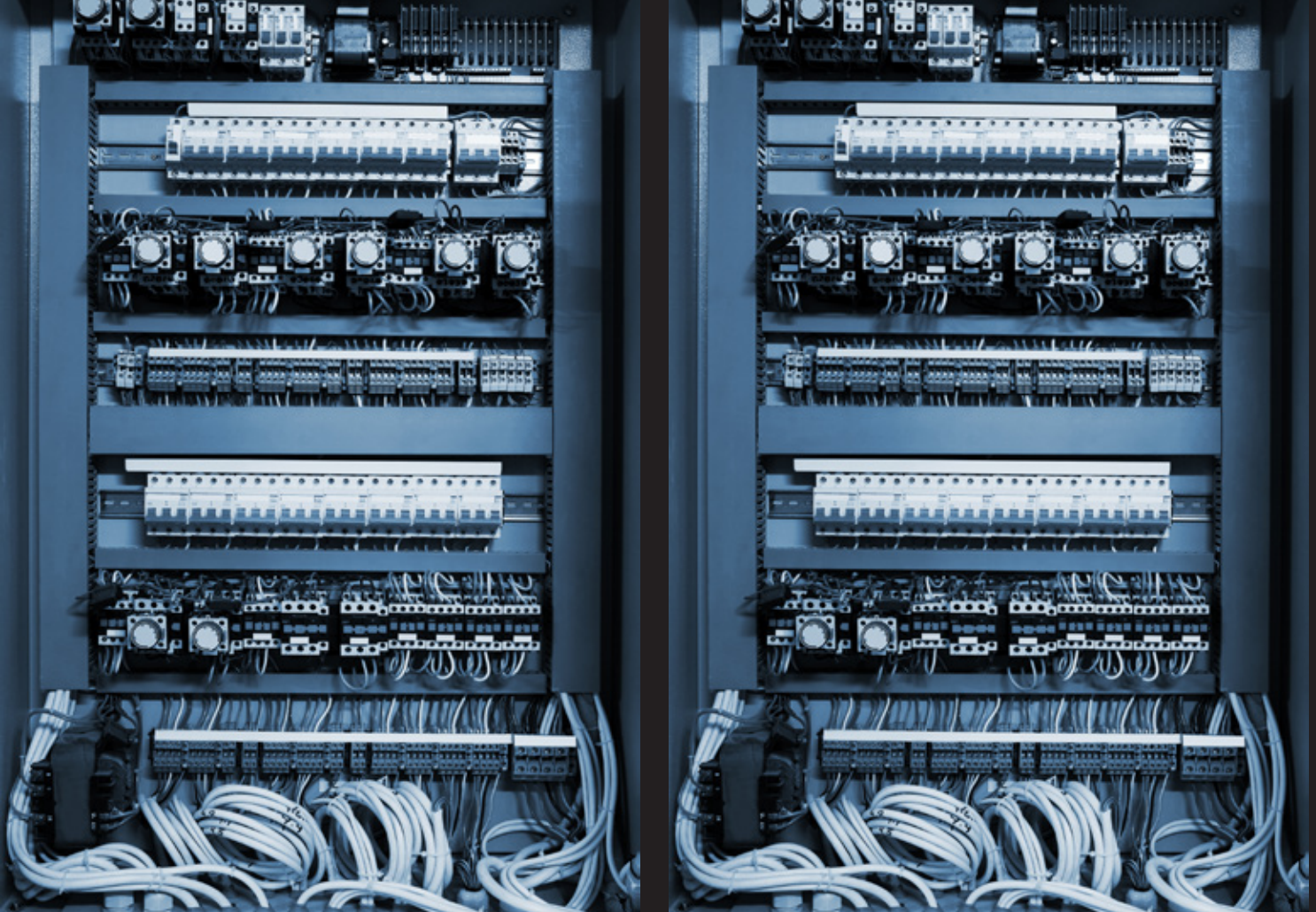
Projected forecasts and actual shipments were used to develop an accurate forecast for all discrete components. Availability of components to support the 10 day lead time was achieved by implementing a safety stock program based on the forecast analysis and historic component usage data. Enclosure fabrication, cable subassemblies, PCBA manufacturing and test were transferred to Sanmina facilities and local suppliers.

### Custom Order Management

Each order is unique. The Sanmina order management team provided new customer orders to the customer focus team. The manufacturing process engineer validates that the configuration can be built and works with the customer to resolve any issues. The product engineer develops all necessary documentation. Test engineers validate the custom test software for use during production.

### Configure-To-Order Manufacturing System

Originally each system was built to order with all components issued to the kit with no pre-assembly. Each component was installed one by one, every cable was routed and each pin connection individually terminated. This process was time consuming and made diagnostics and repair complex. The Sanmina Lean manufacturing configure-to-order approach used sub-assemblies corresponding to feature options that are pre-built and tested on a dedicated production line. On receipt of an order, the material is individually kitted with the exact configuration. A base option is populated with pre-tested sub-assemblies. This flow reduces manufacturing cycle time and greatly simplifies test diagnostics.



## Complex Testing

Three phase power and voltages as high as 600V are used during the functional test process. Certain control units are calibrated using valve adjustment to control speed and acceleration using stringent customer specifications. Functional tests are conducted using test programs provided by the customer. These tests simulate the field application work environments and the test technicians are trained to calibrate the systems in specific configurations. Sanmina also developed a fault tree analysis tool to streamline failure diagnostics.

## RESULTS

- 99% on time delivery with 10 day lead times.
- New supply chain and configure-to-order process enabled demand flexibility in excess of 20%.
- Subassembly approach greatly simplified system test and diagnostics.



## ABOUT SANMINA

Sanmina makes some of the most complex and innovative optical, electronic and mechanical products in the world. Recognized as a technology leader, Sanmina provides end-to-end design, manufacturing and logistics solutions, delivering superior quality and support to Original Equipment Manufacturers (OEMs) primarily in the communications networks, computing and storage, medical, defense and aerospace, industrial and semiconductor, multimedia, automotive and clean technology sectors.

More information regarding the company is available at <http://www.sanmina.com>.