

## CASE STUDY



SANMINA

# INTERCONNECT REDESIGN REDUCES MANUFACTURING COST BY 25%

A leading multinational power system company had to reduce product cost for a 4MW inverter. This complex system used more than 3 km of cable with over 1,400 connections.

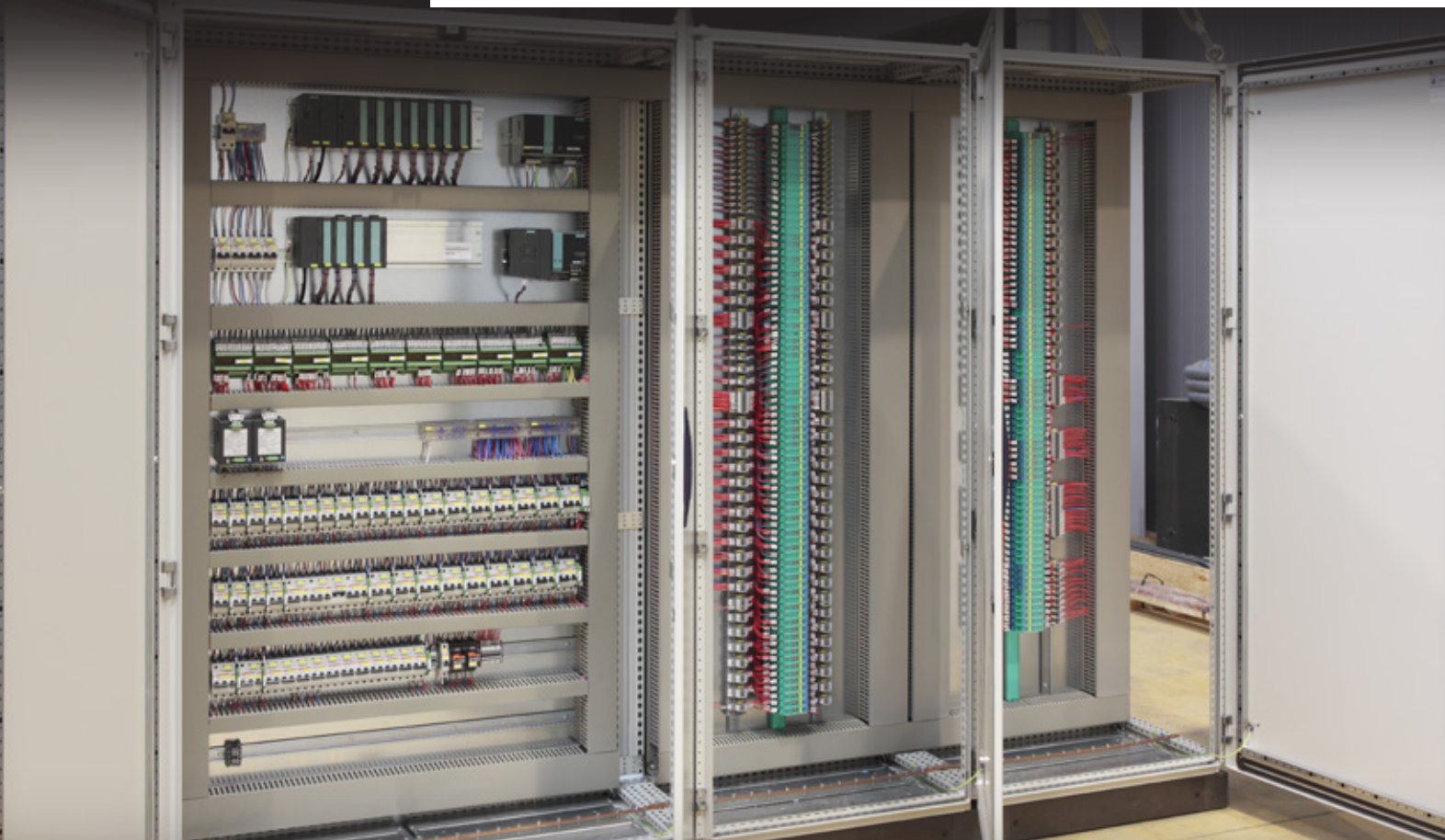
Together with our customer, Sanmina fundamentally changed the design and manufacturing approach from a labor intensive connection by connection process to a sub-panel fast connect / disconnect design.

## THE CHALLENGE

A major power system company needed to reduce manufacturing cost on its core product. The 4MW power inverter weighed 5 tons and had 1,200 components. The system used more than 3 km of cable ranging from 24 AWG to CMA 000. The complete system assembly required 1,500 labor hours to manufacture and test. Each component, connection pin, connector and cable were individually installed during system integration. 30 sub-panels had 1,400 point to point connections and took over 250 man hours to assemble.

## WHY SANMINA

Sanmina had proven experience in the design and efficient manufacturing of many similar complex power systems. The customer recognized that Sanmina understood the complexity involved when integrating the power sub-panels to help improve the manufacturing, assembly and test flow for a lower overall cost.



## SANMINA'S APPROACH

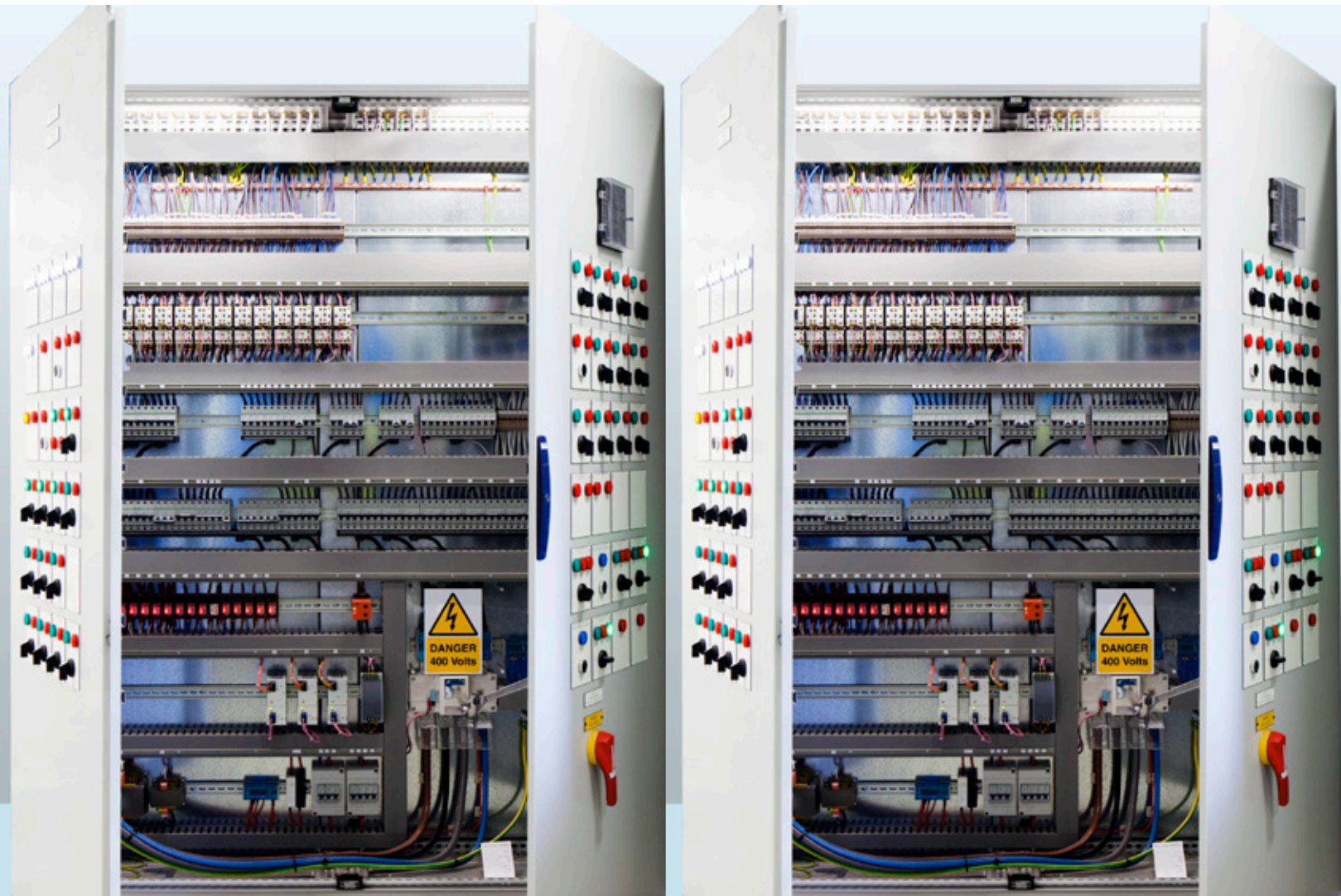
- A cross-functional team including manufacturing & applications engineer, manufacturing process engineer, labor / industrial engineer, engineering manager and production manager was assigned to ensure an integrated approach to the project.
- The highly experienced Sanmina design engineer was co-located on-site with the customer design team. Co-location ensured rapid implementation of engineering changes, enabled faster time to market and simplified the implementation of engineering changes.
- The team carefully analyzed the design specifications of all cables, components and 30 sub-panels.
- The Sanmina team collaborated with the customer on a radically different design and manufacturing strategy. Fully pre-tested sub panels replaced a process where each connection and cable were done individually.
- The team implemented a fundamental change in the assembly process from a design that depended on installation of each individual cable and connection to an efficient integration of each sub-panel as a fully pre-tested unit.
- Sub-panel layouts were designed and components positioned to enable efficient assembly, optimize cost and facilitate faster integration of the sub-panels into each system.
- Sanmina component engineers provided alternate component choices to reduce cost and minimize risks of obsolescence.



- Cable specifications, sub-panel and system thermal parameters were carefully modeled to understand the required temperature ratings for the cables. This enabled the selection of lower cost cables.
- Sanmina developed IPC and UL compliant standard manufacturing processes to deliver flexibility in meeting customer demand increases and robust product quality results.

## RESULTS

- Cost was reduced by 25% through component cost reduction, better design for manufacture (DFM) and turnkey manufacture in a low cost region.
- Customer system integration time was reduced by over 240 hours.



## 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 [www.sanmina.com](http://www.sanmina.com)