

CASE STUDY



SANMINA

OUTDOOR RATED ENCLOSURE FOR POWER INVERTER APPLICATION

Key to meeting a tight introduction schedule was basing the design on an existing Sanmina reconfigurable enclosure platform.

THE CHALLENGES

Rapid growth in the Clean Technology sector is driving up demand for custom power electronic enclosure solutions where time to market is key. Meeting this need can be challenging: from identifying appropriate standards and complying with NEMA, IP, Seismic and arc flash, to designing a cost-effective and complete solution. Total production and landed costs can increase depending on the enclosure's size, weight and shipping location, particularly for large enclosures and power systems. Finding an efficient engineering solution is also critical: over-engineering an enclosure can unnecessarily increase costs.

These were many of the obstacles faced by a leading energy systems company, who needed to find a custom enclosure solution for their utility scale power inverter. The enclosure would need to withstand harsh outdoor conditions and meet IP65 compliance standards. In addition to incorporating arc flash safety features, effective ventilation was critical to remove heat from system components. Since it would be installed in earthquake prone regions around the world, the enclosure also had to meet stringent seismic compliance standards.

The company needed a manufacturing partner with extensive enclosure engineering experience, proven expertise in seismic design and a global manufacturing footprint. They chose Sanmina.



SOLUTIONS

Leveraging 30 years of experience in industrial enclosure design, welded frames and sheet metal manufacturing, Sanmina developed a complete solution, from initial enclosure design to production. Key to meeting a tight introduction schedule was basing the design on an existing Sanmina reconfigurable enclosure platform. Sanmina delivered a fully-customized enclosure for a multi-mega-watt solar power inverter by:

- **Developing** a finite element analysis (FEA) to simulate the custom-cabinet's performance, distributing critical stress points and enhancing the enclosure's strength and rigidity
- **Creating** a virtual prototype, complying with earthquake zone 4 classifications, eliminating expensive hardware prototyping and testing
- **Performing** a portion of the compliance testing per the IP65 standard to prevent water and dust leakage into the enclosure
- **Incorporating** a unique scheme to dissipate arc flash energy
- **Developing** and validating a robust design which ensured UL50 safety compliance with a 6-inch-drop test, and isolation between low and high power domains



Sanmina designs and manufactures a broad range of enclosure and power systems, including this indoor power inverter

RESULTS

Sanmina delivered a fully customized outdoor enclosure for this solar power inverter, meeting critical time to market requirements. Using our pre-engineered and configurable platform, development and production costs were kept to a minimum. Sanmina's global footprint also allowed the company to build similar products for its customers in both Europe and North America. By partnering with a complete solution provider like Sanmina, the company was able to focus on its core competence of power systems design.

SANMINA'S ABILITY TO DELIVER

Sanmina is a global market leader for all types of indoor and outdoor enclosures, for demanding applications in clean energy, medical, communications & storage products.

Our full range of services and products include:

- Custom and proprietary enclosure products
- Engineering services (design, DFX)
- Highly integrated and complex enclosure systems
- Electro-mechanical design of indoor and outdoor enclosures
- Sheet metal, plastic injection molding and die-cast design and production
- Thermal design and structural analysis



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>.