

# GreenField Solar



## CUSTOMER

GreenField Solar's goal is to drive solar energy into mainstream adoption through lower costs, without subsidies. They have developed a radically different approach to solar energy, using a unique combination of proprietary cell technology and an innovative system design to develop a high intensity concentrated PV (CPV) system, the StarGen™ solar concentrator. Their technology was developed to be highly scalable, allowing them to increase production rapidly, at low cost. Unlike conventional PV arrays and even other CPV systems, the StarGen solar concentrator is able to provide both electric power and heat at the same time, providing the unique advantage of delivering two forms of valuable energy simultaneously.

*EWI's in depth knowledge of advanced materials and joining helped us streamline our production process."*

— Mico Perales, Vice President Business Development

## CHALLENGE

GreenField developed novel CPV technology, using a high voltage silicon vertical multi-junction (VMJ) cell known as the PhotoVolt™ solar cell. Once fabricated, GreenField attaches the PhotoVolt solar cells to a common bus bar for electrical connectivity, and mechanically to a cooling plate for thermal transfer, which forms a 4 by 4 array of solar cells on each module. The PhotoVolt cells were previously bonded with adhesives and hand-soldered to the bus bar. These processes were labor intensive and therefore costly.

## SOLUTION

With years of experience welding battery tabs and terminals, EWI applied their knowledge of electrical interconnects and material science to provide a welding solution using commercial, off the shelf equipment. The new solution allows for drastically reduced assembly times and significant improvements in reliability.

## RESULTS

Although the improved fabrication techniques are still being qualified prior to production, R&D results and prototyping show that the new process will dramatically improve product reliability as well as increase manufacturing throughput. The production of StarGen solar concentrators is expected to rise from 1-2 per week to 100 per week, amounting to a cost reduction of 3% to 4% per solar concentrator, and ultimately helping propel the technology into the marketplace, and create new jobs in Ohio.



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