



DELIVERING \$12.8M COST SAVINGS WITH LESS TRENCHING, FEWER ACCESS ROADS AND EFFICIENT CABLING DESIGN

TE Connectivity won a major contract with a top tier Engineering, Procurement and Construction Company EPC to build a 640+MW utility scale solar farm. TE's Customizable Trunk Solution CTS provided a comprehensive, reliable and high-performing Electrical Balance of System EBoS which catered to the unique requirements of this solar farm implementation and delivered significant cost savings.

The Challenge

The EPC was contractually required to provide a +/-5% DC/AC balance for each of the 133 inverter blocks. However, the traditional EBoS configuration of using fused trunk bus disconnect boxes at the end of each string row required 300 additional boxes. This made it difficult to balance the inverter load and added more complexity to the installation. What's more, the extra hardware and necessary trenching added substantial expense to the solar farm build.

Another important consideration was the placement of access roads for operations and maintenance which had originally been calculated at every 525 feet. This added further labor and material costs to the project, making it impossible to meet the developers' target budget. In addition, this solar farm was located in an area of extreme temperatures, requiring electrical components which could withstand the harsh environment.

Country

United States of America

Industry

Solar

Challenges

- 5% variance required to balance inverter load
- Optimize positioning of the disconnect boxes
- Construction of maintenance roads to comply with safety regulations

Solutions

TE's Customizable Trunk Solution CTS: E-W orientation

Key Figures

- 640+ MW solar farm across 3400 acres
- \$12.8M labor & material savings
- 67% installation time saving

The Solution

The customer selected TE's innovative, above-ground CTS solution for its quality design, competitive price, safety features, ease of installation and adjustability in the field. Furthermore, the CTS architecture made it possible to cluster disconnect boxes close to the inverter, reducing trenching to just a few feet. TE also pre-integrated shear bolts inside the disconnect boxes, delivering important labor savings due to their fast installation.

By deploying an East-West design with the trunk bus at the motor gap of the tracker, TE's engineers could use 10 AWG wire for the factory-made and tested harness assemblies. This required fewer string lengths, contributing to an important reduction in material costs.

The Outcome

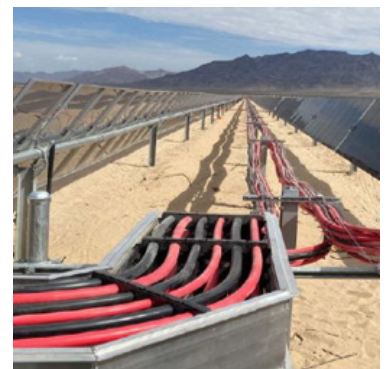
With the expertise and guidance of TE's engineers, the customer met all technical requirements of the solar farm, on time and on budget. This included DC load balancing, cable sizing and voltage drop. What's more, the distance between emergency access roads could be expanded from every 525 feet to every 1400 feet, which amounted to multimillion-dollar savings.

Key Highlights

- \$12.8 million savings in material and labor costs thanks to reduced trenching, fewer access roads and less cabling
- 67% time saving achieved thanks to simplified installation and minimal maintenance
- End-of-string terminations provide additional safety and protect installers from high voltage currents
- A balanced inverter loading of 5% enables the project developer to provide substantially more energy harvest
- The quality and durability of TE's CTS components provide high-performance longevity throughout the lifetime of the solar farm

"I've been working in this business for over a decade and looking for just this type of solution. Finally, someone with enough ingenuity has figured it out."

EPC Senior Project Manager



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