



SANDIA-EPRI PV CONNECTOR RELIABILITY WORKSHOP

Panel Session IV. Looking Forward: Finding a Path to Reliability



Shoals Technologies Group

27 years of commitment to quality



Shoals Technologies Group™ is a leading provider of electrical balance of systems (EBOS) solutions for solar photovoltaic and energy storage systems.

HIGHLIGHTS



Founded in 1996 as a Tier 1 automotive supplier



Launched Solar EBOS in 2002



Debuted on the Nasdaq stock exchange in 2021 (SHLS)



Commitment to US manufacturing – Tennessee Mega Plant in 2024

Field work leads to long-term quality control issues

Exposure to weather elements and human error



Pull

wire out and cut it to length



Measure

length to expose copper wire



Strip

cable jacket by hand



Crimp

on the appropriate end (+/-) and torque plastic housing



Inspect

work for any defects

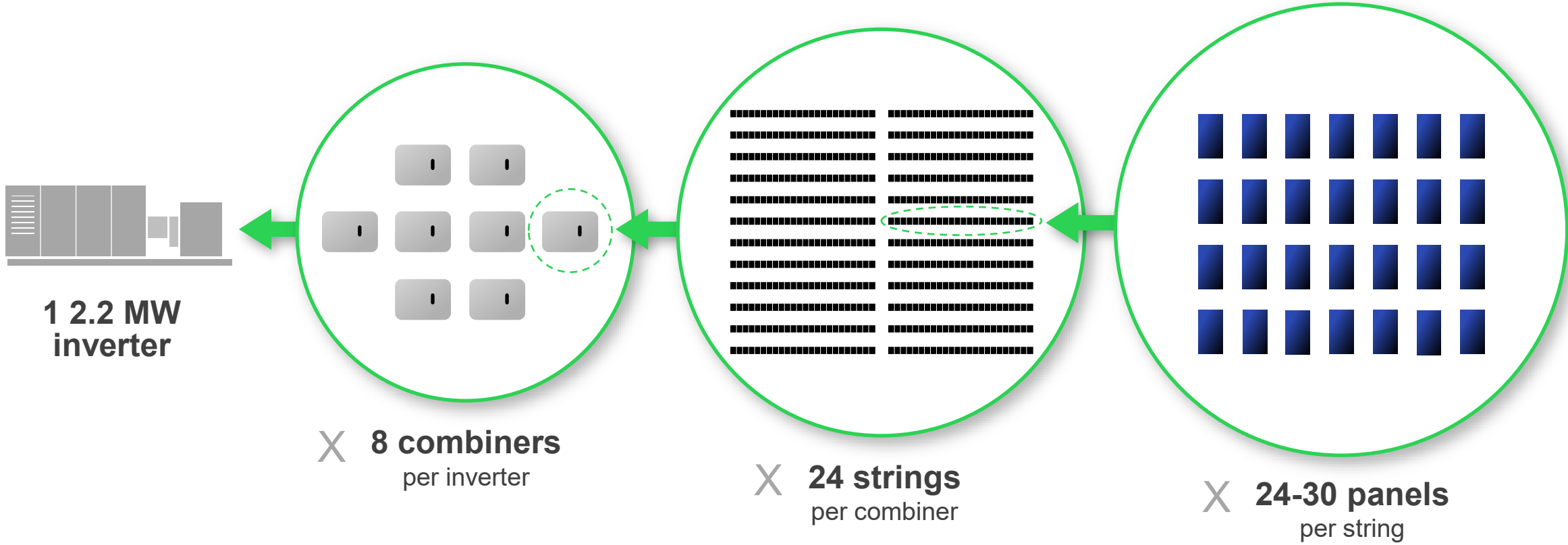


Install

finished product down the row and into the combiner box



Traditional Homerun EBOS requires thousands of wire runs and connections



= 400 wire runs with 2,192 connections for every 2.2 MW inverter!



Moving fabrication to the factory

Mitigates risks in safety, reliability, and improves long term performance

Increases safety & reliability

- Automated and calibrated equipment:
 - Strips cable to correct length
 - Crimps connector pins accurately
 - Seats strain relief nut per torque
- Equipment is maintained and specifications (torque, gap, etc.) verified daily.
- Serialized lot control enables traceability

Shoals stripped, crimped, and assembled approximately 7.1M connectors over the last 12 months – averaging 143,000 per week.





Project Design Rules Shoals Applies

ALWAYS use matching connectors:

- Shoals offers connectors to match >99% of module manufacturers
- Transition to commonly available connector brands once beyond the source circuit connection to facilitate repair/replace.
- Barrel Crimp connectors whenever possible.

Wire Management

- Provide sufficient wire length to allow for expansion and contraction
- Support wires better than minimum requirements to reduce strain
- Support wires with a system that allows them to “slide” a little

