From Quality to Bankability:

The Role of Industrial-Grade EBOS in Solar Project Success

December 2025

Agenda & Our Speaker

We will discuss:

- Shoals: who we are and why we are a trusted voice in the industry
- What's EBOS and why it's critical to project success?
- Traditional EBOS design challenges
- How prefabricated EBOS can ensure quality, longevity, and bankability of installations

Josep Tienda

VP, International Sales
Shoals Technologies Group

Josep Tienda is Vice President of International Sales at Shoals. With deep experience in global electronics, energy, and photonics, he has spent his career leading in technology and innovation. At Shoals, he helps customers adopt high-performance industrial EBOS solutions that drive reliability and lower the levelized cost of energy.

Shoals Technologies Group

Three decades of experience and commitment to quality, transforming solar power industry

Shoals Technologies Group™ is a leading provider of electrical balance of systems (EBOS) solutions for utility-scale, commercial, and industrial solar PV and energy storage projects.

- Founded in 1996 as a Tier 1 automotive supplier
- Launched Solar EBOS in 2002
- Debuted on the Nasdaq stock exchange in 2021 (SHLS)
- PV magazine BoS award 2024 for 2kV solutions
- SPW Top Products 2025 Honorable Mention for BESS Recombiner

shoals

Sustainable Growth

Where we are and where we are going

Largest EBOS supplier worldwide with over **82 GW** under contract, in construction, and operating

Over **67 patents** issued and pending globally

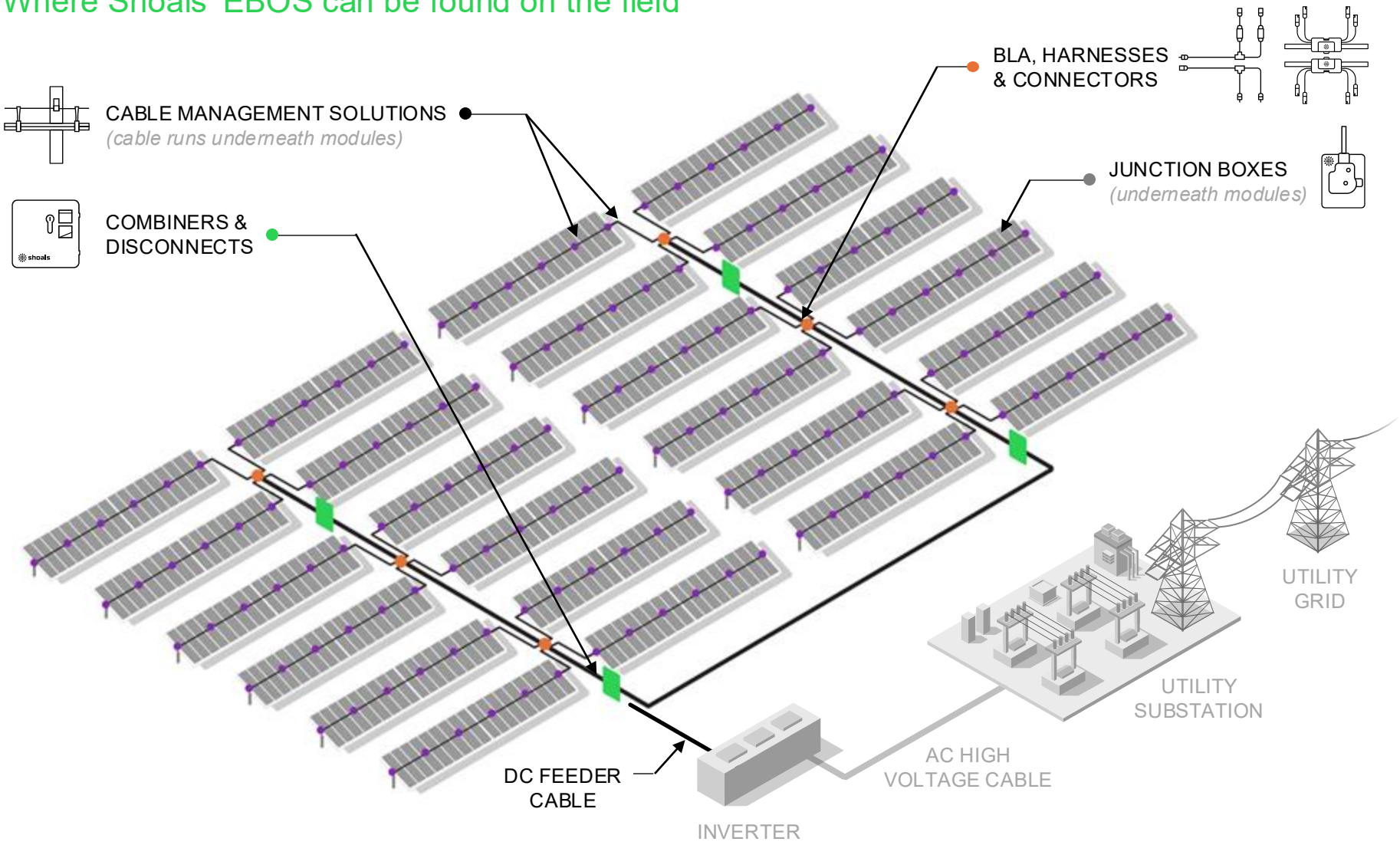
Localised manufacturing across the globe, to suit local market needs by offering UL, IEC and AS/NZS standards products

GEOGRAPHIES SERVED

Sample projects from around the world at shoals.com/projects

EBOS for Utility-Scale Solar

Where Shoals' EBOS can be found on the field



● BLA TRUNK BUS

● DISCONNECT BOX

● CABLE MANAGEMENT SOLUTION

shoals

Shoals Approaches to Solar EBOS

Simplicity is at the core of what we do

Central Inverter
–or–
Single MPPT
String Inverter

Regular Shape → 4 — BLA + DBX

Irregular Shape

Multiple String Row → 3 — MINIBLA + S.COMBINER

Multiple String Row → 2 — HARNESS + HCCB

Single String Row → 1 — INDIVIDUAL HOMERUNS + CB

Multi-MPPT
String Inverter → 0 — INDIVIDUAL HOMERUNS

LOWEST LCOE

HIGHEST LCOE

shoals

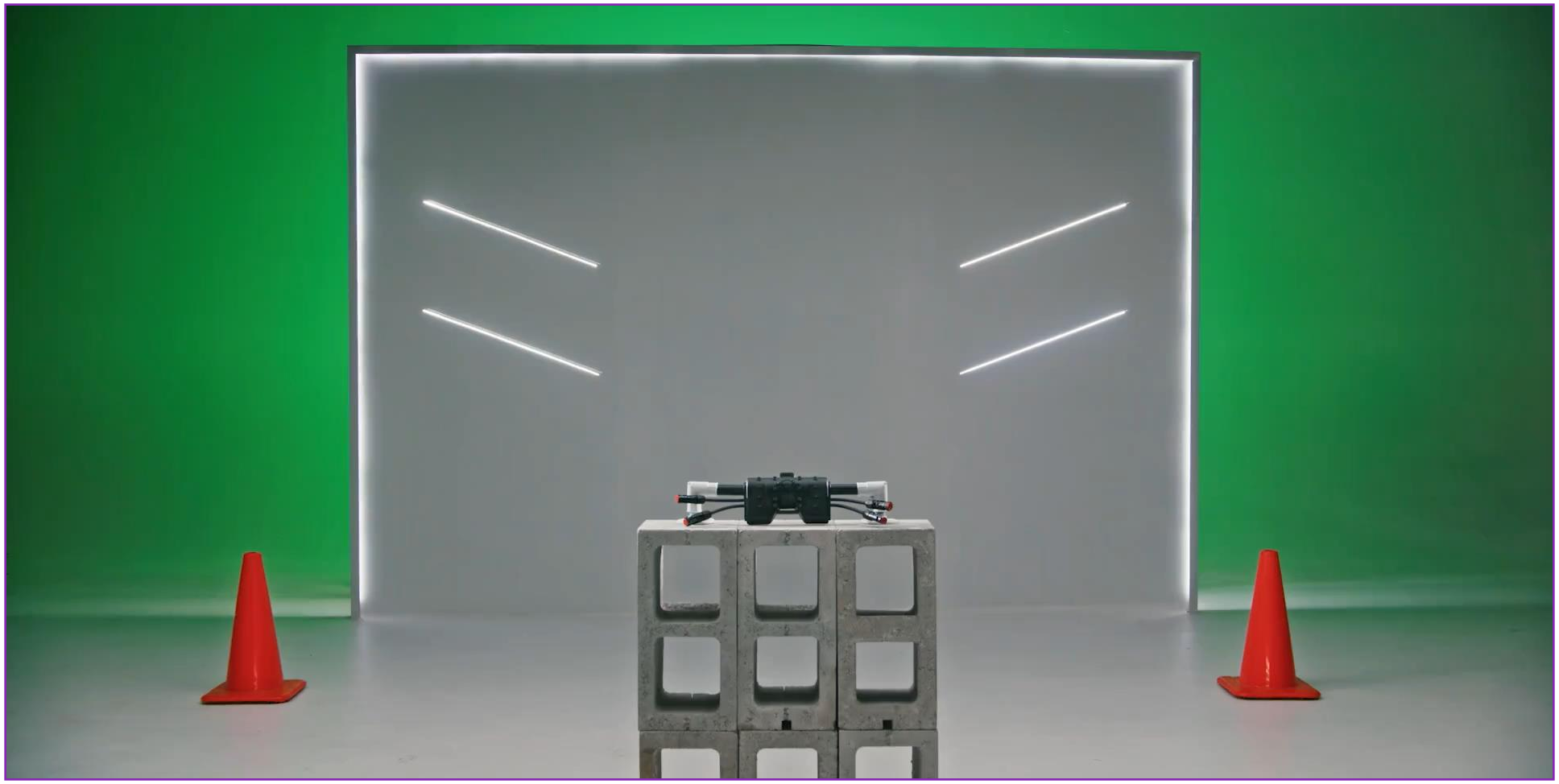
Why EBOS is Critical to Solar & Storage Project Success

EBOS is the backbone that connects solar panels to the grid, delivering safe, reliable, and efficient power

REASON	WHY IT MATTERS	IMPACT ON PROJECTS
Safety	EBOS includes wiring, connectors, and protections that prevent faults and fires.	Reduces electrical and fire risk and ensures compliance with safety standards.
Efficiency	High-quality EBOS minimizes power losses between panels, inverters, and the grid.	Better energy yield and overall system performance.
Reliability & Longevity	Durable, well-designed components withstand harsh conditions for decades. Shoals' EBOS designed for 30+ years ensures system life matches owners' increasing requirements.	Maximizes uptime and reduces O&M costs. Improves ROI and long-term asset value.
Scalability	Prefabricated EBOS systems are modular and repeatable.	Speeds up installation and improves scalability.
Cost Control	Fewer field terminations and less labor-intensive wiring reduce errors and delays.	Lowers construction costs and project risk.
Sustainability	Prefabricated, above-ground EBOS designs minimize waste, trenching, and material use.	Lowers environmental impact and supports cleaner, more responsible project development.

Shoals BLA Durability Test Video

A lighthearted take on the serious quality and safety behind our solutions



Traditional EBOS Systems Present Big Challenges

Driving low quality & reliability

CHALLENGE 1

Redundant wiring wastes time and materials

- Every string requires two wire runs
- Same distances covered multiple times
- Multiple intermediate interconnection points (combiner boxes)

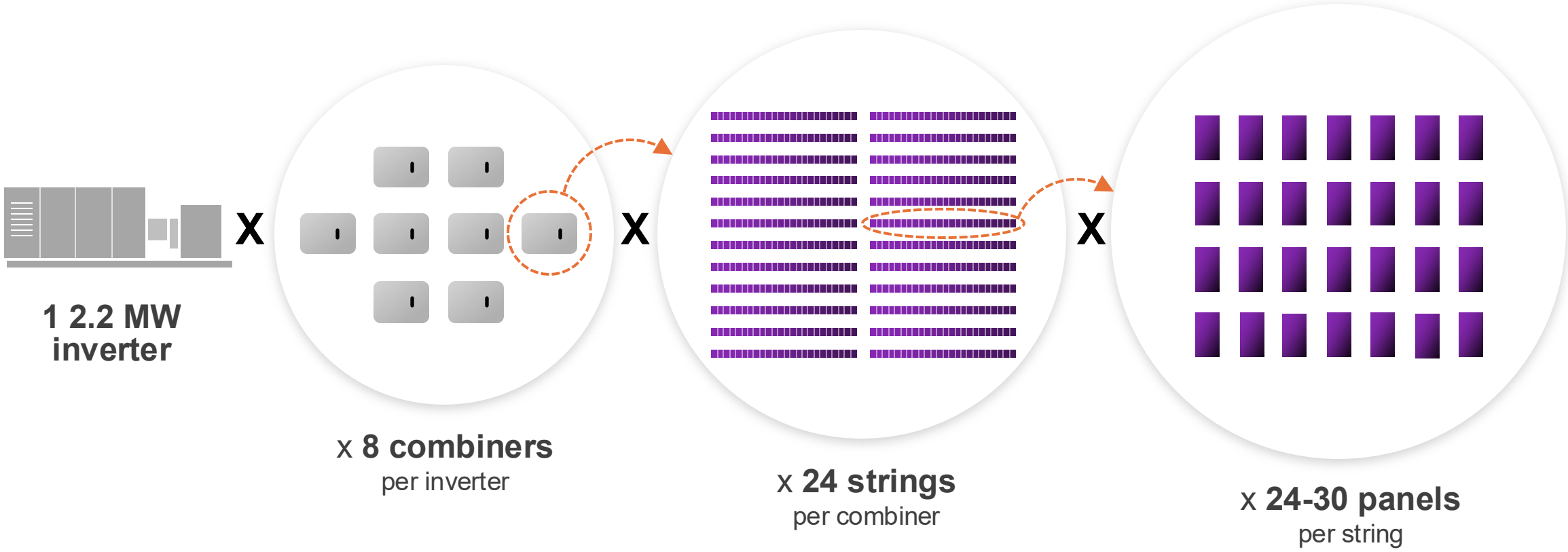
CHALLENGE 2

Field work impacts quality, safety, and yield

- Connectors installed onsite
- “Crimped” connections prone to faults
- Systems vulnerable to human error
- Significant safety risk & rework

Traditional Homerun EBOS Requires Thousands of Wire Runs and Connections

CHALLENGE 1



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

shoals

Innovative Design Enables Less Material & Fewer Connections

SOLUTION 1

Significantly reduces wire runs

- Strings combined in the row
- 67% fewer string runs
- 82% reduction in copper

Eliminates combiner boxes

- Direct connections between components
- Inline fusing
- No complex wiring

Improves safety and longevity

- Fewer touch points and connections - fewer opportunities for error & failures

shoals

Field Work Leads to Long-term Quality Control Issues

CHALLENGE 2

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

REPEAT

shoals

Moving Fabrication to the Factory

Mitigates safety, reliability, and maintenance risks

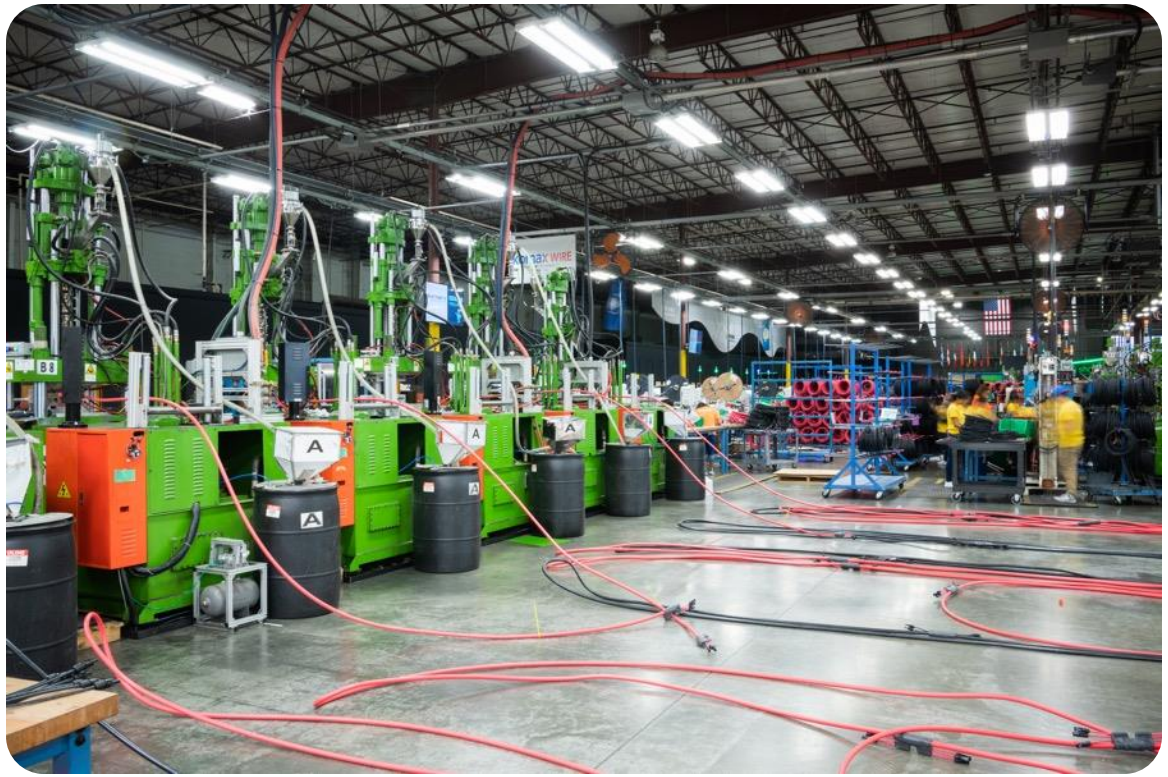
SOLUTION 2

Increases safety & reliability

- Pre-terminated connectors
- Fully automated factory fabricated
- Reduction in failure points
- Innovative, patented undermold/overmold design
- Custom built machinery technology

Reduces maintenance requirements

- Everything above ground & accessible
- Less potential for installation errors
- 83% fewer connection points to maintain

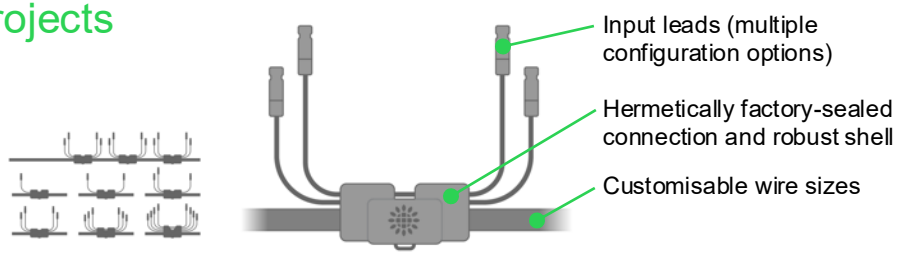


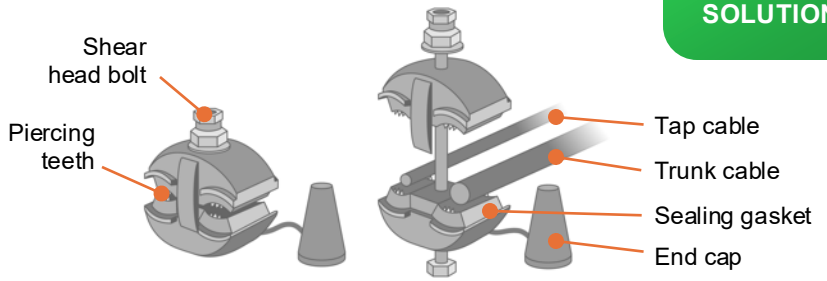
shoals

The Safer Choice

BLA vs. IPCs in solar projects

SOLUTION 2



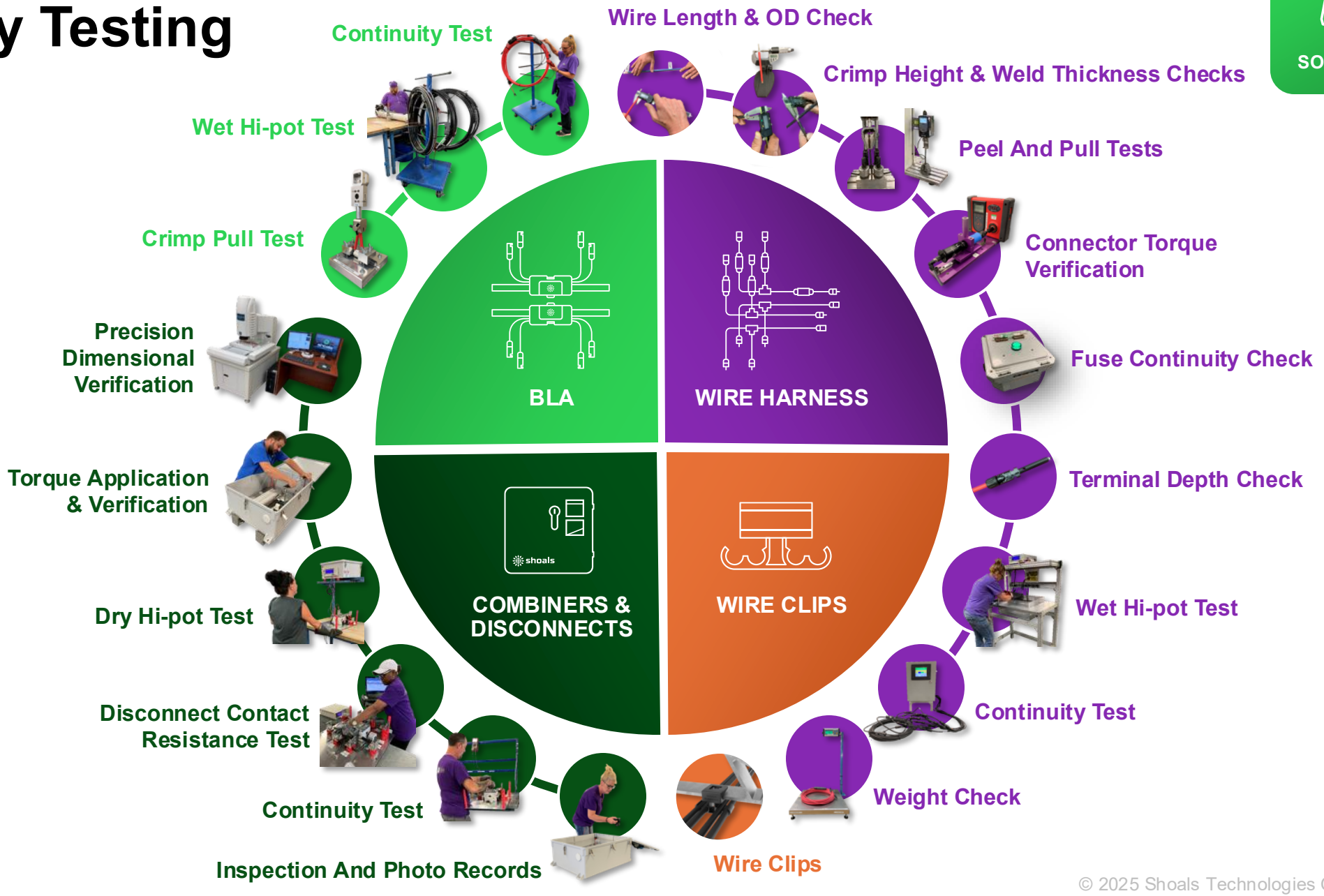


	Shoals BLA	IPCs
Manufacturing & Design	✓ **Factory fabricated** with innovative, patented undermold/overmold design	⚠ **Field fabricated** with piercing and insulated with gel or dry clamshell
Testing	✓ **Overperforms** in wet hipot testing by 10X	⚠ **Underperforms** in wet hipot testing by 10X
Installation	✓ **Easy** installation – no need for skilled labour, clean environment, special tools, or gel	⚠ **Complex** installation – dependent on skilled labour, clean environment, and other factors
PV Standards Compliance	✓ **Fully compliant** – includes UL 9703 PV assembly or harness and UL 6703 connector	⚠ Solar PV UL standards are **not guaranteed**
Risk Of Failure	✓ Long-term **risk is reduced** with factory fabrication and testing	⚠ **Increased risk** from lack of field testing and greater exposure to heat, moisture, and oxidation
Design Life	✓ **Proven 35+ years** design life of Shoals' solutions	⚠ **Unclear** design life

shoals

Quality Testing

SOLUTION 2



shoals

Shoals Design Life

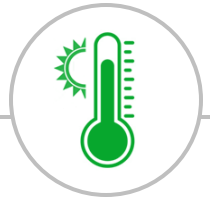
Built for long-term performance, our solutions last the lifetime of your project

SOLUTION 2

UV Exposure

Shoals utilises high irradiance, direct UV exposure test conditions for wire, wire harnesses, and BLA

Key mechanical and electrical criteria are measured to confirm degradation does not exceed regulatory limits



High Temperature

Shoals uses industry (IEC, IEEE) best practices to calculate lifetime of materials based on extreme temperature testing

Key mechanical criteria are measured empirically, and hours of life are calculated based on Arrhenius equations

Water Ingress

Shoals demonstrates the IP68 seal of its products through weeks of submersion (vs. hours for most companies), far exceeding IEC standards

Key electrical criteria are validated through submerged hi-pot testing, exceeding regulatory limits

Shoals environmental testing exceeds safety oriented regulatory standards to confidently deliver solutions with design life exceeding 35 years

How to Reduce Safety Risk and Improve Cost-Effectiveness of Solar Projects

Choose the right partner with EBOS solutions and expertise

✓ Integrate EBOS Early in Project Design

- Make EBOS a key component from the outset to ensure maximum standardisation and reduce variability.

✓ Optimise Your Project's Layout and Performance

- Design systems to reduce the number of critical failure points by streamlining connections and components.
- Choose EBOS that maximizes energy yield.

✓ Opt for Non-Invasive Industrial-Grade EBOS Solutions

- Pre-fabricated, industrial plug-and-play solutions improve reliability and safety of installations.
- Select an experienced partner offering a range of industrial EBOS architectures, suitable for various project types, with a strong emphasis on quality.

✓ Select an Industrial-Grade EBOS Ecosystem that Balances CAPEX and OPEX

- Opt for an EBOS ecosystem that optimises both capital and operational expenditures, ensuring long-term cost-efficiency and reduced complexity.

shoals

Q&A

Josep Tienda

VP, International Sales
Shoals Technologies Group

Josep.Tienda@shoals.com

How to Reduce Installation Risk and LT System Failures

Integrate Shoals' prefabricated solar and BESS solutions early in project design

Common Risks in Traditional Installations	Solutions from Shoals
Too many cables and terminations increase the number of potential failure points.	**Fewer cables and terminations** simplify installation and lower fire risk.
Field crimping and manual assembly like with IPCs lead to inconsistent quality and human error and lead to safety risk over time.	**Prefabricated, factory-tested solutions** ensure uniform quality. **Over-/under- mold design** reduces variability and improves long-term safety & reliability.
Below-ground wiring is exposed to moisture, corrosion, and termites.	**Above-ground architecture** avoids soil and pest damage and allows easy inspection.
Unsealed connectors allow water ingress, causing corrosion and short circuits.	**Over- and under-molded IP68-rated connections** prevent water ingress and long-term degradation.
Multiple connection points raise risk of electrical faults and system downtime.	**Integrated trunk and harness systems** reduce points of failure and enhance overall safety.