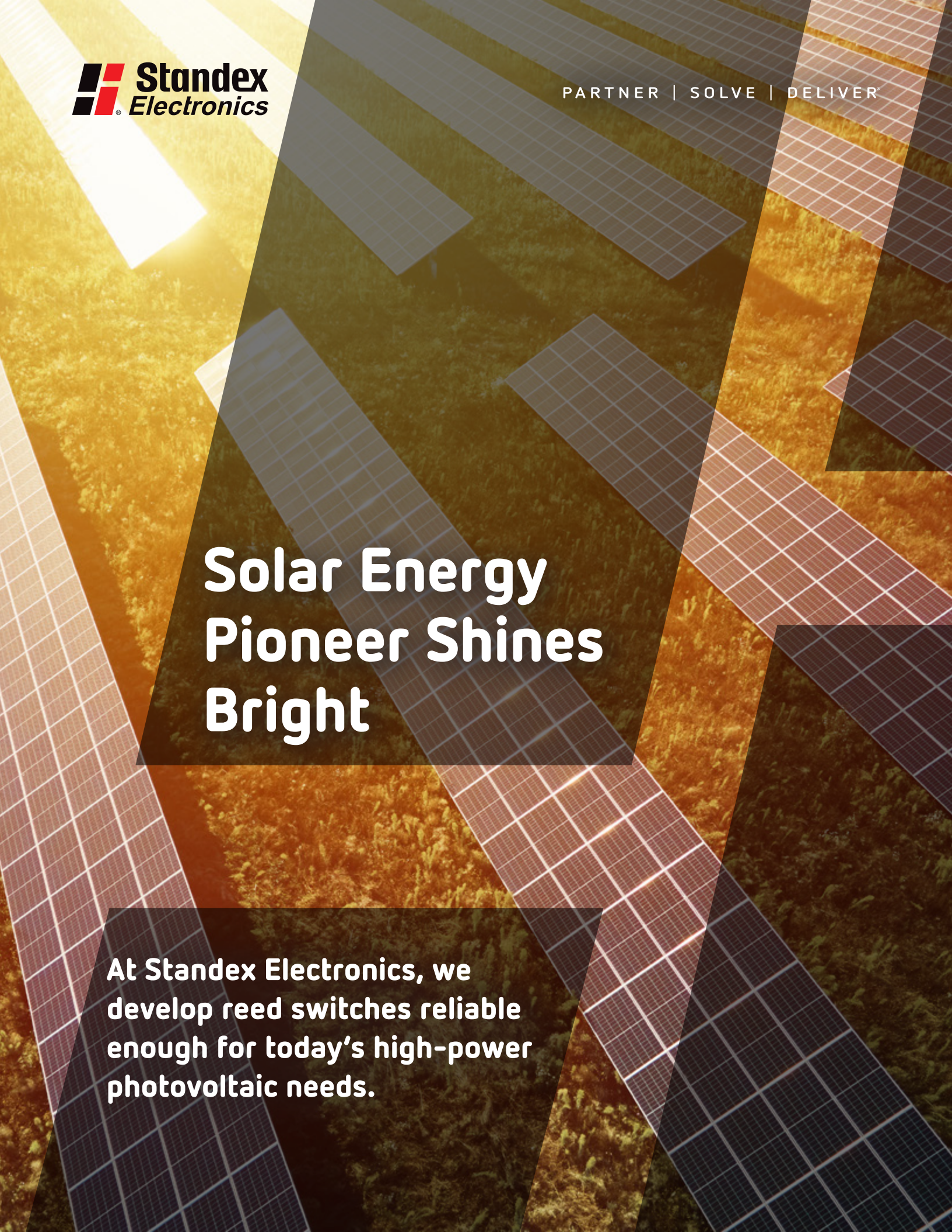

Standex Electronics
PARTNER | SOLVE | DELIVER
Solar Energy Pioneer Shines Bright
At Standex Electronics, we develop reed switches reliable enough for today's high-power photovoltaic needs.

ZERO ENERGY CONSUMPTION IN PASSIVE STATE

Reed sensors do not draw consistent power, optimizing energy usage.

1 BILLION SWITCHING CYCLES

High-voltage reed sensors can reliably perform over 1 billion cycles.

SMALLEST REED SWITCHES IN THE WORLD

Standex Electronics is the go-to partner for developing sensors that satisfy the compact size and space requirements of today's consumer and industrial products.

Renewable energy initiatives are on the rise across the globe. Countries are adopting comprehensive plans to reach ambitious solar reliance goals within the next decade. The trend drives new demand for equipment like solar inverters, and pushes engineering partners like us to innovate sensors that satisfy creepage distances and switching voltages of high-power photovoltaic applications.

Solar changemakers are opting for **reed switches and relays**. Other "always-on" electrified sensors require constant power — but not reeds. This type of sensor doesn't draw power while in its passive state, *reducing energy consumption to zero*.

How Do Reed Relays Work?

At the heart of a reed relay is a reed switch, where two ferromagnetic blades, or reeds, sit slightly separated. A magnetic field draws the two reeds together. The switch only sips a small amount of power in its "on" phase—or when the two reeds meet to connect the circuit.

Even if you don't know much about reed sensors, you probably use them all the time without realizing it.

Get into your car, and a reed sensor detects which seats are occupied. The reading affects seat belt warnings and airbag deployment.

You might even find one on an e-bike, sensing whether a kickstand is deployed or if it's tucked in and ready to ride.

Inside the Renewable Energy Industry:

What makes reed sensors a **popular choice** for alternative energy projects?

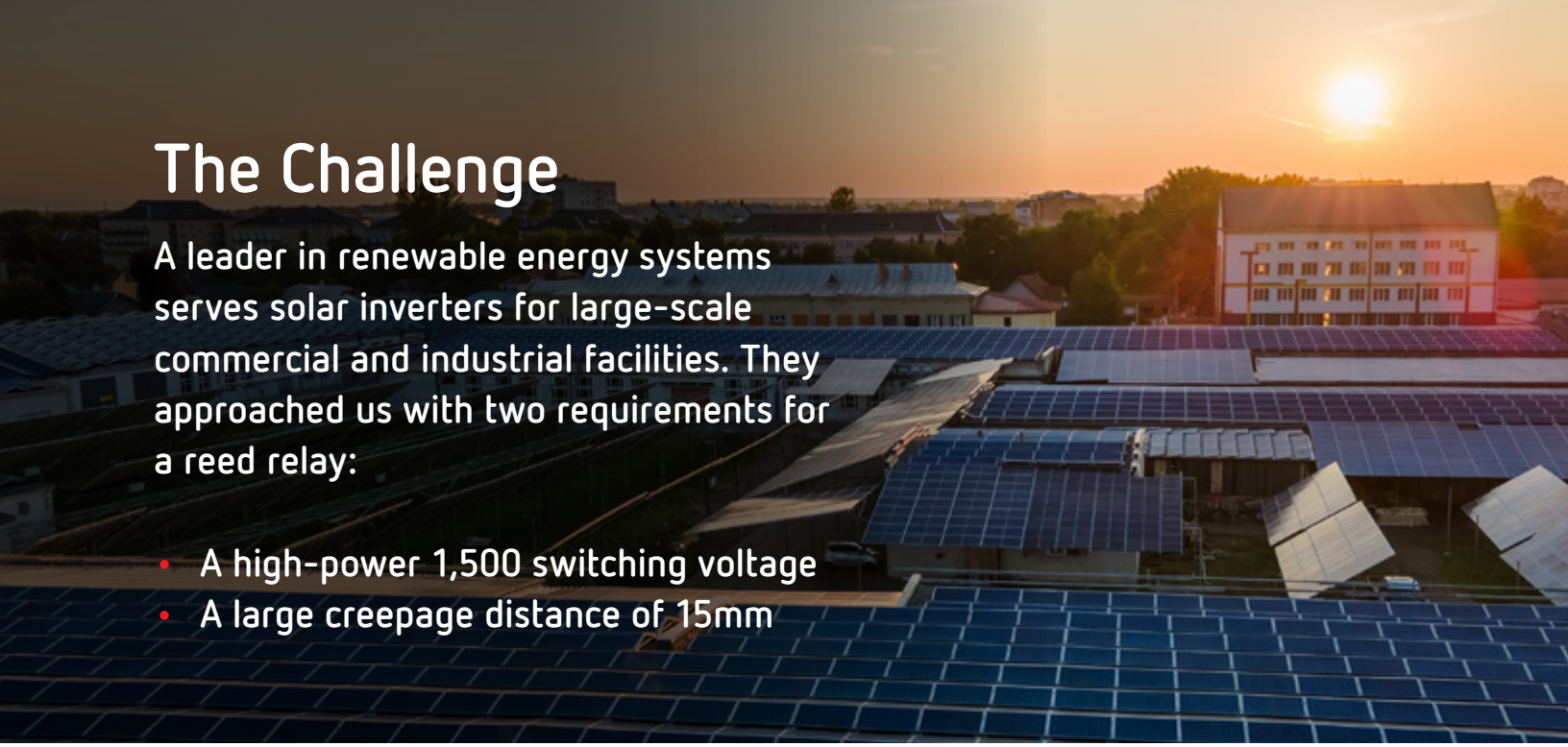
Economize energy usage to maintain sustainability goals.

High voltage designs optimal for solar applications.

Hermetically sealed against outdoor battering of rain, dust, and wind.

Similar to a reed switch, a **reed relay** triggers based on the presence of a magnetic field. But instead of awaiting an approaching magnet, a coil envelops the switch's glass casing. When the voltage running through the coil reaches a certain threshold (up to 1,500V for this solar inverter), the reed switch activates.

See how reed relays are vital to this top renewable energy program.



The Challenge

A leader in renewable energy systems serves solar inverters for large-scale commercial and industrial facilities. They approached us with two requirements for a reed relay:

- A high-power 1,500 switching voltage
- A large creepage distance of 15mm

The sensors would monitor isolation resistance and Potential Induced Degradation (PID), two factors that can diminish performance of a solar inverter—and cause serious harm if improperly monitored.

The team was familiar with Standex Electronics and appreciative of our problem-solving and openness to take on challenges. They also valued our vast manufacturing network, which includes a facility in their home country. But the particular design they were interested in was best for products requiring <1000 switching voltage. They almost considered an electromechanical relay. Reminded of our creative thinking, they approached us to see if we'd be interested in overhauling the existing relay to meet their requirements.

The Solution

Together, Standex and this solar powerhouse collaborated on a fully customized **KT relay**. We designed two reed switches that met their design specifications—and significantly improved product lifetime over an electromechanical switch.

Fully Customized KT Relay

Higher Switching Voltage

One concern with a higher switching voltage? Arcing. To accommodate the 1,500 switching voltage and eliminate potential degradation, the client required a larger creepage distance measuring 15mm.

The higher the voltage, the larger the creepage distance between conductive parts. Because of the 1,500V inverter, the client needed a 15mm creepage distance to maintain safety and performance.

We redesigned the existing coil to switch faster than before, eliminating arcing over the large creepage distance.

Hermetically Sealed

Solar equipment is right in the thick of challenging conditions: the great outdoors. It's subject to endless heat, dust, rain, and dirt.

The switch itself is kept safe inside of a glass container filled with protective gas like nitrogen. To further prevent corrosion and other hostile elements, it's commonly potted or encased.

Two Reed Sensors Inside the Relay

The most common threat to power efficiency is electrical current leaking into the ground—something renewable energy pioneers cannot afford. The two sensors had three benefits:

1. One sensor checks isolation resistance before connecting to the power grid
2. Another monitors PID, to ensure consistent performance
3. Protects users and equipment against electrical shock

New Tests to Evaluate Longer Lifetime

The higher-power coil required new testing procedures to ensure we could still meet product lifespan criteria.

Since our previous tests only evaluated switching voltages up to 1,000V, we engineered a new slate of tests to guarantee reliability for years to come.

Standex Delivers Time and Time Again

To your end customer, our products are invisible. But they can make all the difference. If our products draw attention, that means they're not working. So we strive to remain *invisible and unnoticeable*—by ensuring our products work unfailingly.

Other ways renewable energy projects can benefit from reed switches, sensors, and relays:

- Solar panel positioning
- Tilt monitoring
- Anti-tampering
- ...and more! *If you need it, we can customize a reed solution for it.*

Extensive Technical Support

At Standex, we stand behind a true partnership through value-added engineering. *We don't just sell you what you ask for.* We're not just a catalog to buy from. We forge a true collaboration with you to find the right solution for your project. In this project, the client came to us considering an electromechanical relay. Working together, we realized an energy-efficient, longer-life reed relay was the better choice.

Renewable energy pioneers have enough to worry about. They simply don't have time to hone the expertise required to mind all their switches, sensors, and relays. So they borrow this expertise from us. In this case, the customer thought an electromechanical relay was the right solution—until they learned our reed relay could meet their 1,500 switching voltage requirements.

On-Site Labs and Testing

You can simplify your testing processes by choosing a partner who has it all under one roof. At our facilities, we can analyze product performance over its lifetime, test its safety, evaluate switching cycles, and more, to all international standards. In this case, we designed a completely new test to make sure our higher-power coil was up to the job.

If you're in the neighborhood, we welcome clients for on-site tours and meetings. But if you're on the other side of the world, don't worry. We're equipped to work with clients remotely too. Our team of experts excel in collaborating across distances, backed by our full portfolio of satisfied clients from around the globe.

Global Manufacturing Capabilities

You can count on us to meet manufacturing timelines — and in your preferred region. This means that supply chain disruptions won't impact your product launches. For custom-made solutions you need soon, Standex Electronics works efficiently around the world to meet your needs.

Where Else Will You Find Standex?

You'll find Standex in more places than under the sun. All industries use magnetic switches like reed and Hall effect sensors. They're tucked into sensing components for agriculture, automotive, utilities, consumer electronics, and so much more.

Countries around the world are rallying around net-zero emissions plans. Experts predict global renewable energy generation will rise more than 60% by 2026.[1]

Now, more than ever, you need sensors that:

- Meet the demands of high-voltage applications
- Hermetically sealed against the elements
- Last for a billion cycles

We're here to help.

1 International Energy Agency, "Renewable electricity growth is accelerating faster than ever worldwide": https://www.iea.org/news/renewable-electricity-growth-is-accelerating-faster-than-ever-worldwide-supporting-the-emergence-of-the-new-global-energy-economy

PARTNER | SOLVE | DELIVER®

Standex Electronics

Standex Electronics
Worldwide Headquarters
4150 Thunderbird Lane
Fairfield, OH 45014 USA
+1.866.STANDEX (782.6339)
info@standexelectronics.com

StandexMeder Europe (Germany)
+49.7733.9253.200
salesemea@standexelectronics.com

StandexMeder Asia (Shanghai)
+86.21.37606000
salesasia@standexelectronics.com

Standex Electronics India (Chennai)
+91.98867.57533
salesindia @standexelectronics.com

Standex Electronics Japan (Kofu)
+81.42.698.0026
sej-sales@standex.co.jp

IATF 16949 CERTIFIED · ISO 9001 CERTIFIED · ITAR · NIST · AS9100 CERTIFIED

standexelectronics.com