



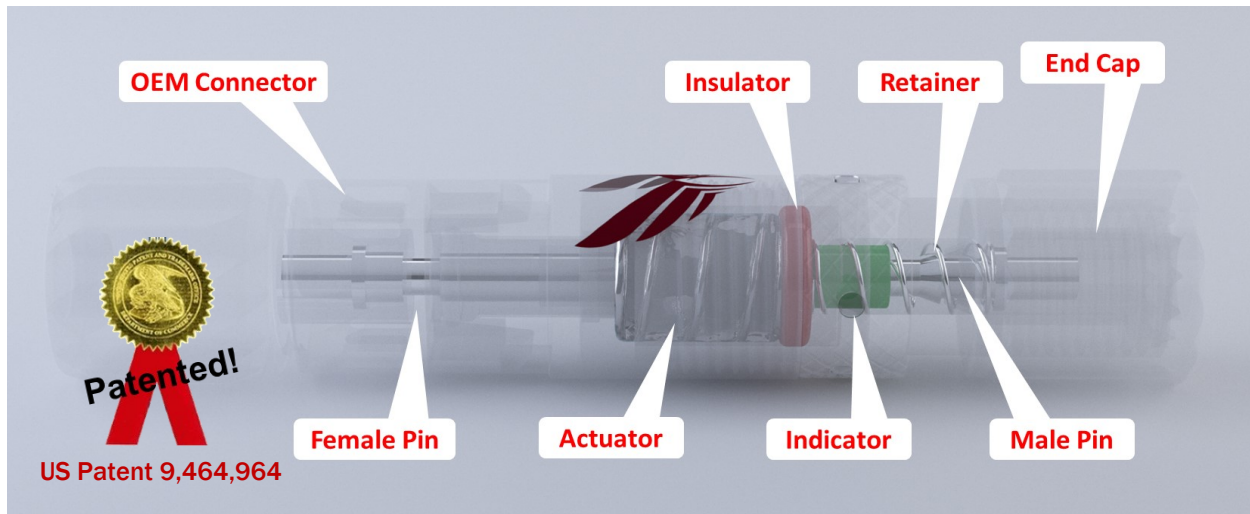
Solar Guardian



Innovative Solutions to Prevent Fires in Photovoltaic Arrays

Technical Challenge

Solar arrays installed today do not have any built-in protection from the fires and human hazards of DC electrical faults because there is no product on the market that complies with Article 690-11 of 2017 National Electrical Code (NEC), requiring systems to “detect and interrupt arcing faults resulting from a failure of system components.”



Approach

The Solar Guardian PV connector contains a dielectric material that expands as temperatures rise to unsafe levels, disconnecting electricity and preventing arc faults in solar arrays. This technology is different from current technologies in that it can pre-indicate when an arc-fault may occur by warning home and plant owners of degradation or incorrect installation that causes overheating of the connector.



Solution

Guardian Sensors, Inc. (GSI) is a wholly-owned subsidiary of Management Sciences, Inc. (MSI) and was created to commercialize MSI's solar technology products. GSI's first product is the Solar Guardian®, which pre-detects, mitigates, and indicates arcing faults **BEFORE** they happen! A national laboratory evaluated and confirmed Solar Guardian's “unique ability” to pre-detect electrical faults and prevent fires in solar arrays. It locates and shuts off only the defective solar panel, connector, or cable; providing continued production of electricity by the array. The Solar Guardian alerts owners and maintainers to replace the faulty panel or cables, for quick restoration of full production. This patented technology exceeds the 2017 NEC requirement.



Solar Guardian

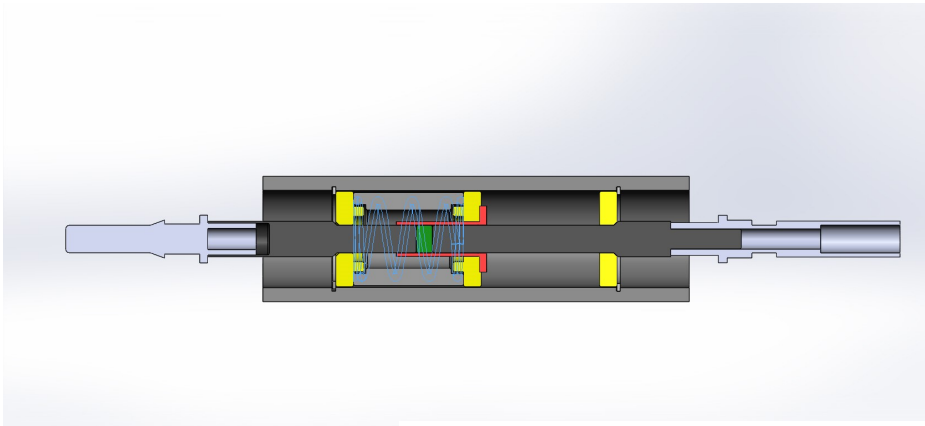


Guardian Sensors, Inc.

Innovative Solutions to Prevent Fires in Photovoltaic Arrays

Technical Challenge

Solar arrays installed today do not have any built-in protection from the fires and human hazards of DC electrical faults because there is no product on the market that complies with Article 690-11 of 2017 National Electrical Code (NEC), requiring systems to “detect and interrupt arcing faults resulting from a failure of system components.”



US Patent 9,464,964

Approach

The Solar Guardian PV connector contains a dielectric material that expands as temperatures rise to unsafe levels, disconnecting electricity and preventing arc faults in solar arrays. This technology is different from current technologies in that it can pre-indicate when an arc-fault may occur by warning home and plant owners of degradation or incorrect installation that causes overheating of the connector.



Solution

Guardian Sensors, Inc. (GSI) is a wholly-owned subsidiary of Management Sciences, Inc. (MSI) and was created to commercialize MSI's solar technology products. GSI's first product is the Solar Guardian®, which pre-detects, mitigates, and indicates arcing faults BEFORE they happen! A national laboratory evaluated and confirmed Solar Guardian's “unique ability” to pre-detect electrical faults and prevent fires in solar arrays. It locates and shuts off only the defective solar panel, connector, or cable; providing continued production of electricity by the array. The Solar Guardian alerts owners and maintainers to replace the faulty panel or cables, for quick restoration of full production. This patented technology exceeds the 2017 NEC requirement.

Solar Guardian



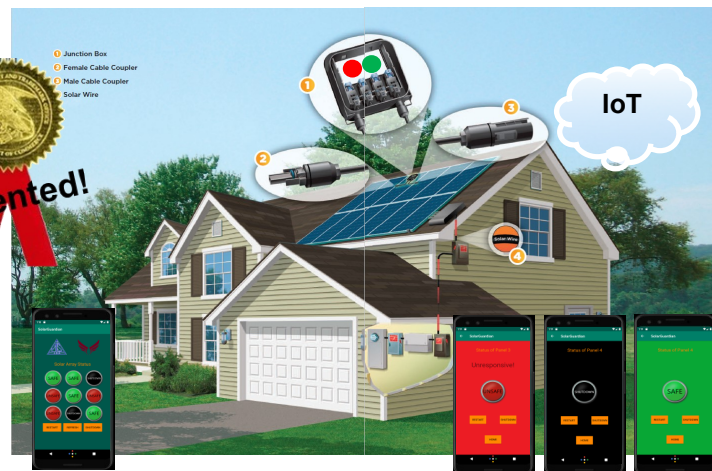
Innovative Solutions to Prevent Fires in Photovoltaic Arrays

The Solar Guardian™ Rapid Shutdown System

A patented, Module-Level Power Electronic (MLPE) that offers features for rapid shutdown of strings per 690.12 with wired or wireless Internet of Things paradigms to protect installers, homeowners, firemen, inspectors, and service personnel from electrocution.

US Patent
9,816,877

International Patent
Chinese Patent:
ZL-2015-08-0053040.5



Features/Capabilities

- A module that can be placed anywhere on the solar panel line (beginning or end for location ease)
- Deactivation of the entire solar array via deactivation of each individual solar panel
- A safe indicator for each solar panel fail that is triggered for removal when the component is above its UL-rated temperature
- Whole array or individual panels can be specified to be shut-off

Benefits

- Solar array protection from overheating by automatically removing defective panels
- Safe disconnection of solar array for maintenance and emergency situations
- Automatic monitoring for overheating fail-safe trigger notification
- Automatic logging of shut-downs and start-ups to audit inspections and repair