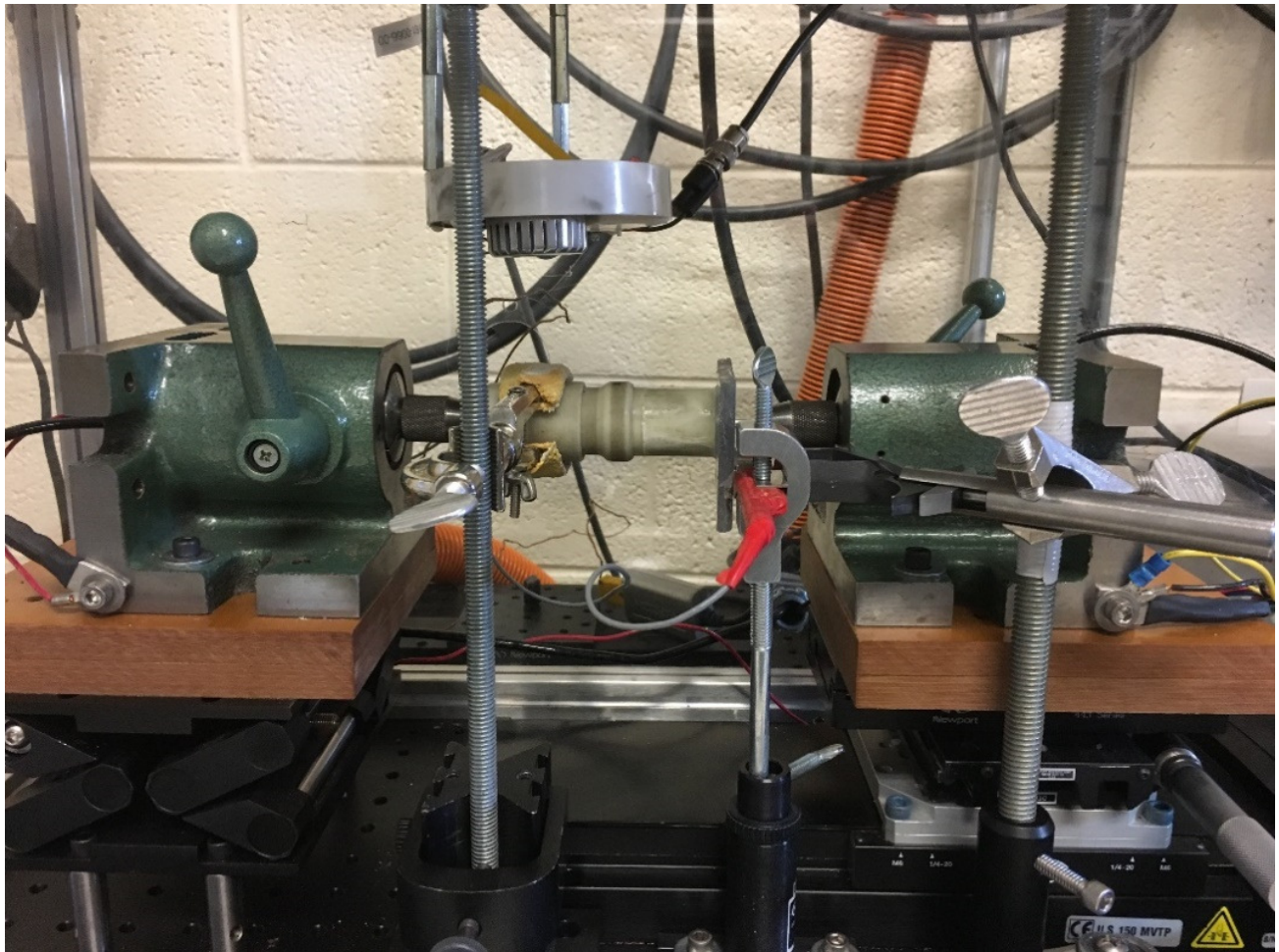


MSI has a history of developing patented solutions for preventing aircraft electrical fires since 2002. MSI has been supported by the New Mexico Small Business Assistance (NMSBA) Program receiving technical assistance from Sandia National Laboratories (SNL) and Los Alamos National Laboratory (LANL) to prevent electrical fires in PV systems since 2011.

Support by Sandia National Laboratories

Our first project with SNL was to innovate an affordable technology to locate defective solder joints and parallel arcing to frames of solar modules to prevent PV module electrical fires before they happen by detection of overheating of solar module conductors. In 2013, a team of Sandia scientists led by Jay Johnson evaluated MSI's solution (US Patent # 9,464,946) in the Sandia DC arc fault generation facility. Sandia Technical Report SAND2018-0876 documents this support.



SNL Arc Fault Generator

In 2016, SNL supported MSI in innovating a product that addresses the problem of electrical fires initiated by PV connectors overheating above the Underwriter Laboratory

rating. In 2017 and 2018, the SNL team led by Dr. Kenny Armijo tested prototypes of Solar Guardian® PV Connectors (US Patent # 9,816,877).



Photo of Prototype used in SNL Testing

It is important to realize that the SNL DC arc fault generation facility is unique and vitally important to assure the efficacy of the Solar Guardian® connectors on the path to commercialization.

Support by Los Alamos National Laboratory

In 2016 – 2018, LANL scientists led by Drs. Philip Leonard and Virginia Manner assisted MSI in definition and testing of environmentally safe energetic pellets for use in a Solar Guardian®. (SNL does not have a facility for testing energetic substances.)



Photograph of PV Connector Tested by LANL

Support by Underwriter Laboratory (UL)

UL Certification is required for PV system components. The new UL PV Innovations Program was established to develop test procedures for innovations like the Solar Guardian®. UL recognized the value of the Solar Guardian® connector and will develop a test procedure.

Need for Continued DoE and Underwriter Laboratory Support

Rapidly moving the Solar Guardian® to market readiness will benefit from continued support by SNL, LANL and UL. These organizations have the necessary equipment and expertise to perform independent testing, validation and certification to meet requirements for safety, toxicity, reliability, durability.

For example, SNL and LANL have the ability to perform tests developed by the Underwriter Laboratory PV Innovations program. This support is necessary because the UL currently is not equipped to test PV electrical connectors above a standard NEC temperature rating.