

# Solar Guardian Photovoltaic Connector



Management Sciences, Inc.  
Kenny Blemel  
Kenny\_Blemel@mgtsciences.com

American Made Challenges: Solar Prize

## TEAM OVERVIEW

### Management Sciences



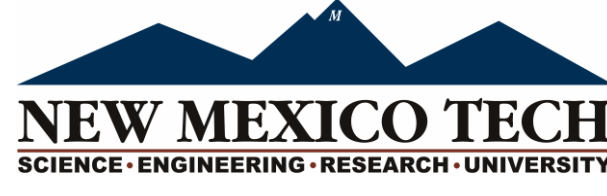
- Electrician/Entrepreneur

### Amphenol



- Industry Connector Supplier

### New Mexico Tech



- Materials Sciences

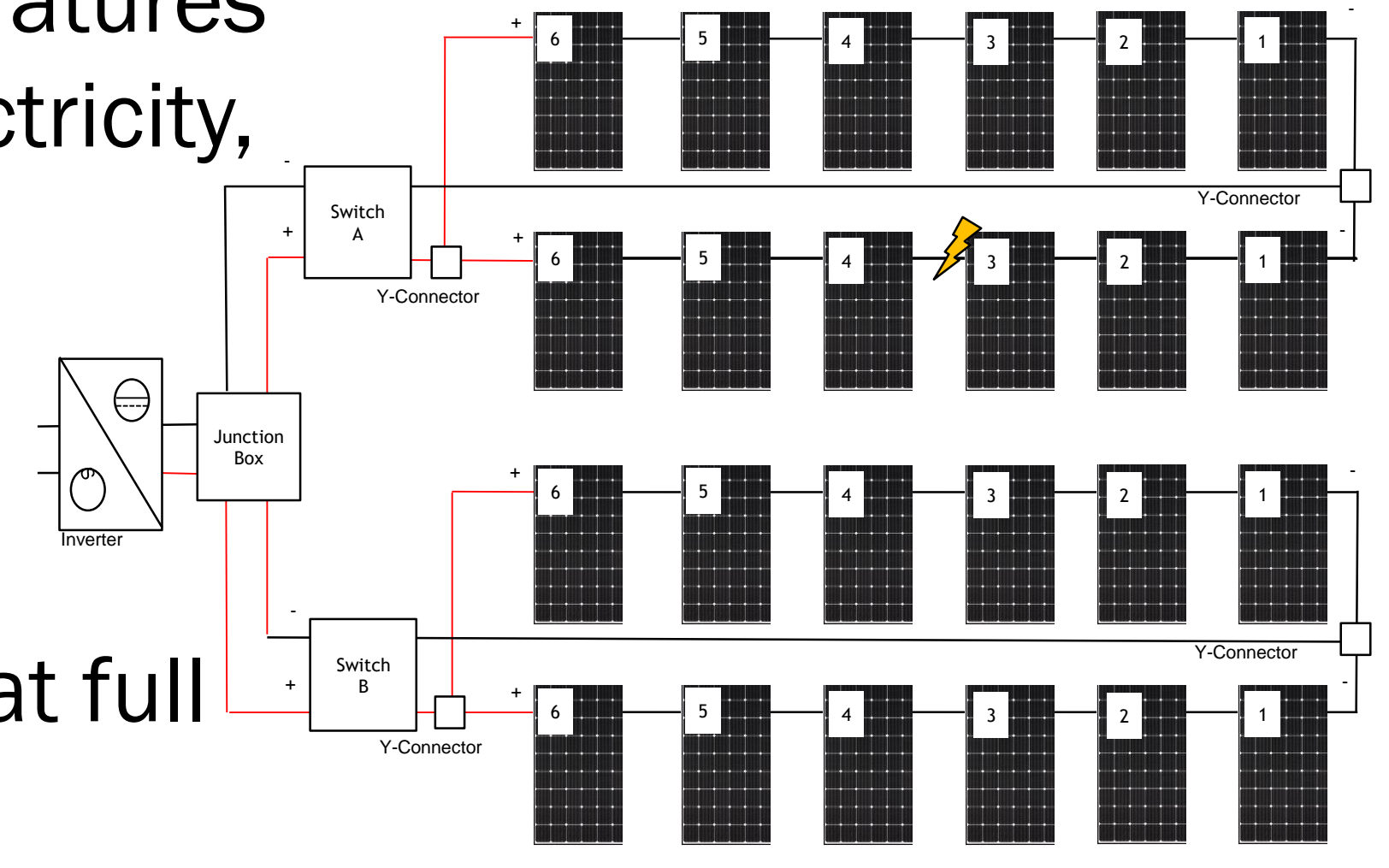
### VAMCO



- Injection Molding

## INNOVATION

- Arcing Faults in Solar Arrays
  - Arcing faults ignite 76 residential fires each day in the United States
- Solar Guardian PV Connector pre-detects arcs before they occur
  - A dielectric material expands as temperatures rise to unsafe levels, disconnecting electricity, and preventing a fire.
  - Potential secondary arcs are quenched.
  - The affected panels in a string are disconnected,
  - Unaffected panels continue to operate at full capacity to produce clean energy and a maximum return on investment.



Source: <https://energy.sandia.gov/wp-content/gallery/uploads/PVDCArcFaul.pdf>

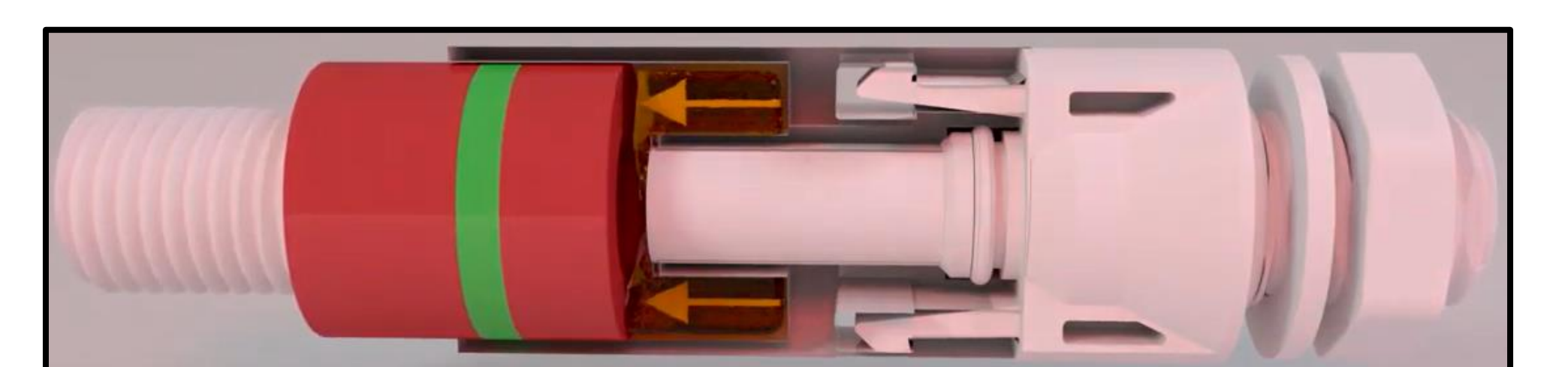
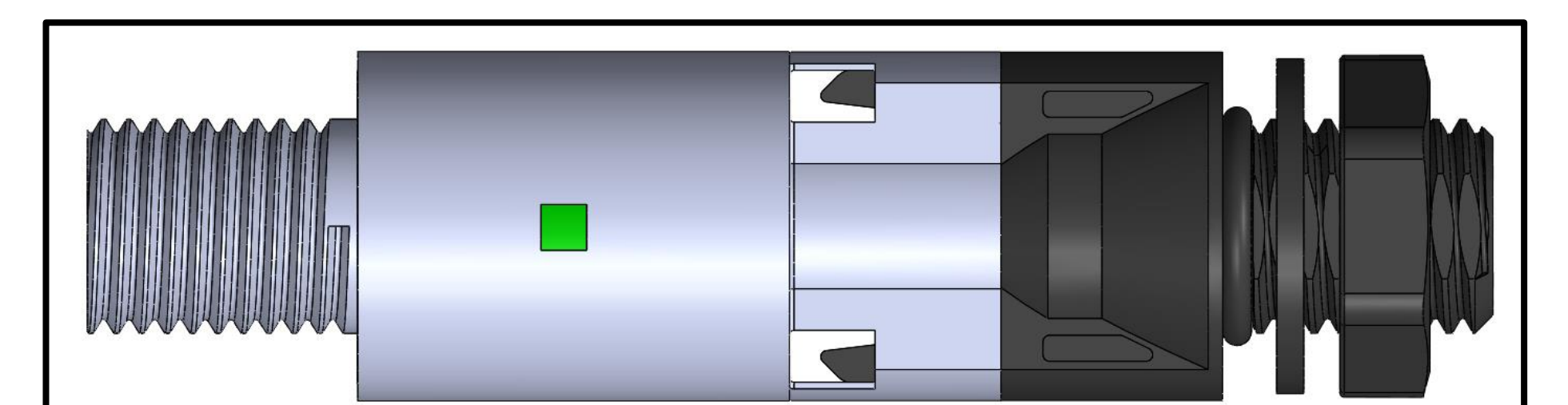
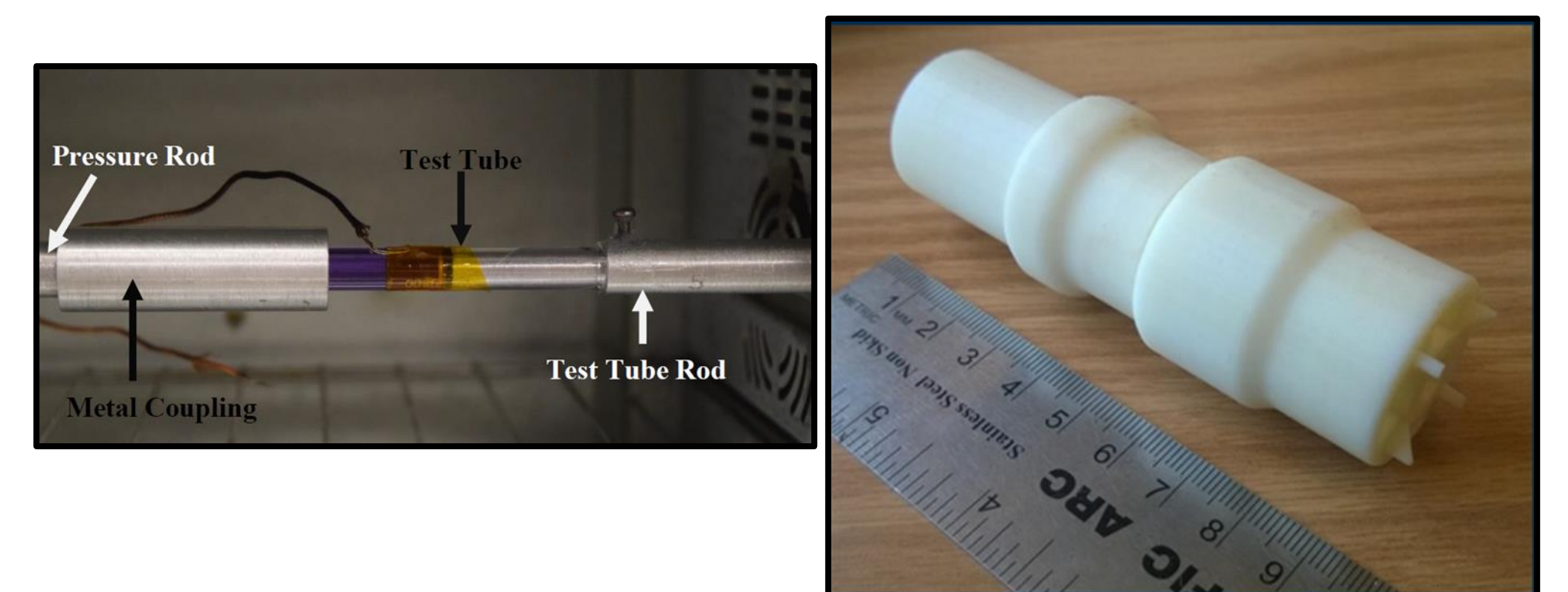
## SUCCESSES TO DATE

- **New Mexico Tech** students of mechanical, electrical, and material sciences have creatively assisted in developing reliable, dielectric, non-toxic, and durable substances.
- **VAMCO** assisted in adaptably designing and manufacturing the injection-molded components that make up the Solar Guardian® PV connector prototypes.
- **Amphenol Sustainable Technologies** provided decisive technical assistance in requirements and specifications needed to achieve success in the PV market.

## Problem



## Solution: Solar Guardian



## PARTNERSHIPS AND FUTURE PLANS

### Testing Performed by:

- Sandia National Laboratories
- Oakridge National Laboratories
- Los Alamos National Laboratories
- National Renewable Energy Laboratories

### Next Steps:

- Advanced Prototyping
- Arc Fault Bench Testing
- Forensic laboratory testing
- Test Beds
- Life Cycle testing
- UL Certification
- Market Distribution

