

Field Failures in Photovoltaic Connectors - Impact and Insurance

Linkesh Diwan, Senior Engineer, HSB
EPRI Wind and Solar O&M Innovation Workshop 2024

HSB

- Founded in 1866
- Licensed Engineering (Insurance) Company
 - Inspection, Engineering, Technology
- Support for Standards Development
- Equipment Breakdown
 - And other lines
- Direct and Indirect (Re-insurance)
- IoT Services, TOGA, Technical Due Diligence
- Owned by Munich RE since 2009

Me (Linkesh Diwan)

- M.Sc. in Energy Engineering and Management
 - Renewable Energy and Environomics
- 11+ years in Renewable Energy
- With HSB since 2017
- TDD in support of > EUR 1Bn Renewable Energy Investments
- Engineering support for global Renewable Energy insurance offerings

Loss Experience

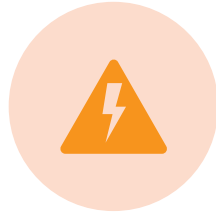
Losses and Impacts



PROPERTY FIRE



REVENUE



THIRD PARTY
LIABILITY



UNAVAILABILITY



OPERATIONS AND
MAINTENANCE



INVESTMENT
RETURNS

Example Loss Experiences

Large Utility Scale Production Losses

- Multiple Large Utility Scale plants
- Annual Revenue Loss
- Production Losses \sim \$2 per MW p.a.
- Additional O&M Budget
 - Approx 1.24 truck rolls per MW per year
 - One FTE full-time at a 200+ MW site to fix connectors.

Small Utility Scale Fire

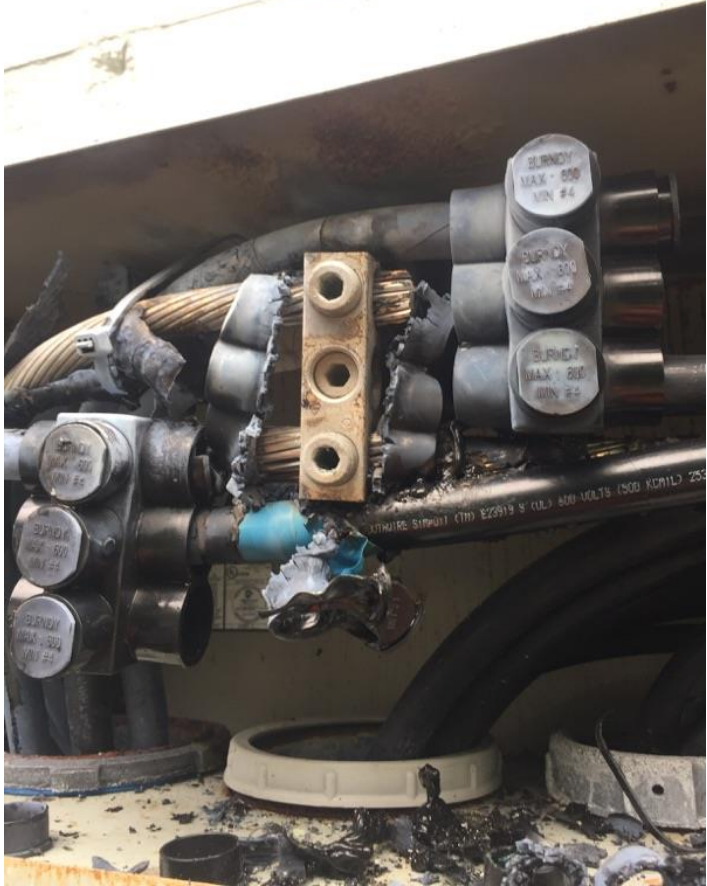
- Likely due to Connector Failure
- Leased Rooftop
- Complicated Liability Boundary
- Losses > \$3M

PV Exposures Equipment Breakdown – Fire

Before



After



Today's Connectors

- Proprietary Designs
- Copycats
- Difficult Field Installation
- Potentially Inadequate
- Intermateability

Alibaba



Staubli MC4 and MC4-EVO2 solar panel PV connector

\$1.00 - \$2.00

Shipping to be negotiated

Min. order: 1 set

12 recent views

[Nanjing Moge New Energy Co., Ltd.](#)

Verified    4 yrs  CN Supplier **5.0/5.0** (2 reviews) 



Waterproof Dc Solar Lamp Pv Panel Connectors Solar Panel Ip68 1500v M C 4 Connector Solar

\$0.12 - \$0.77

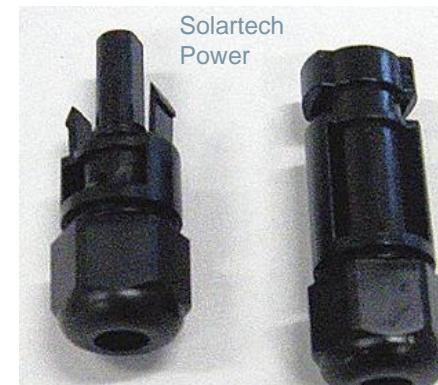
Shipping to be negotiated

Min. order: 100 pieces

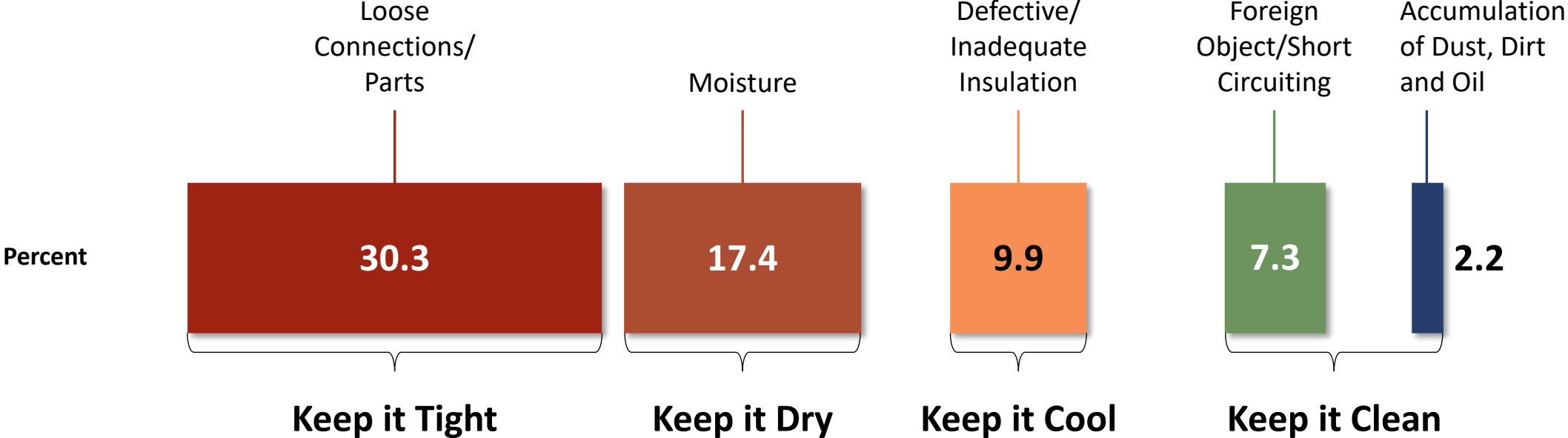
Easy Return

[Dongguan Kangsheng Electronics Co., Ltd.](#)

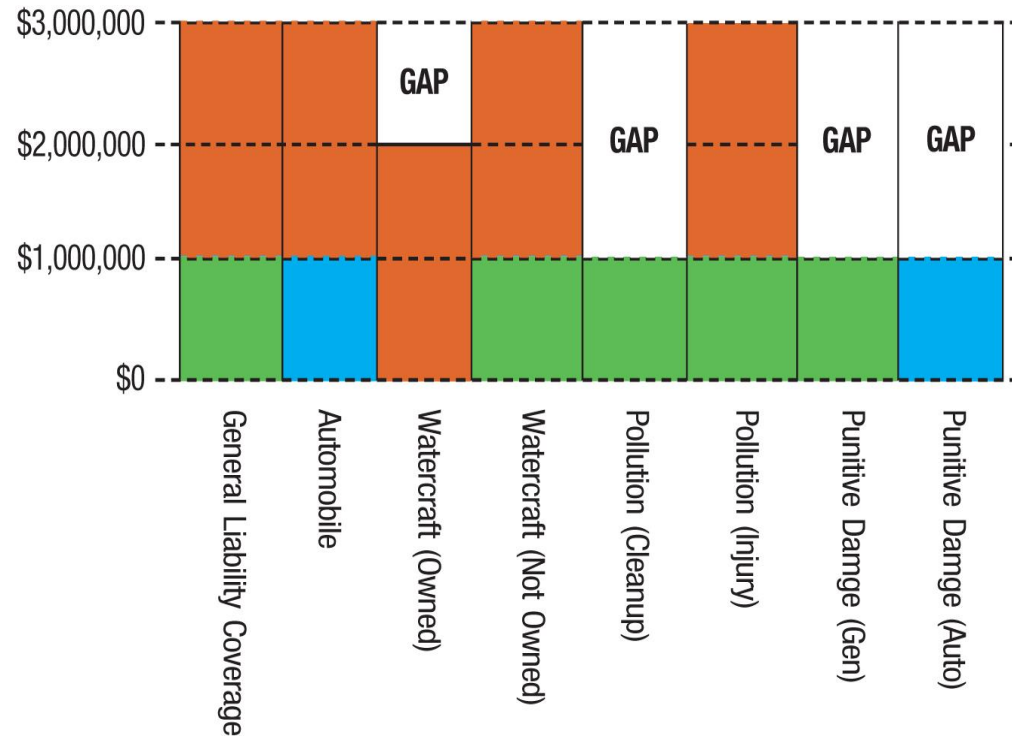
Verified  6 yrs  CN Supplier **4.8/5.0** (15 reviews) 



Reducing Risk Exposure



Insurance Considerations



[Financial Planning with Excess Liability Insurance - The CPA Journal](#)

- CGL Policy
- Auto Policy
- Umbrella Policy

“Can I get a Discount for Good Behavior?”

- Actuarial Analysis
- Technical Review
- Regulations
- Standards Development
- Limits and Exclusions
- Claims: *it's what we're here for*
TPL, EB, PD, NatCat, BI, EE, SLI, etc



A Munich Re company

Thank you

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