Avoiding PID of Installed and Operating PV Modules in the Field (PV-5)

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Scientific Achievement:

Reliability is one of the primary factors dictating the projected PV electricity cost ($/kWh). PV reliability is critical to project developers, to quantify long-term performance and to increase confidence of investors and financial or insurance backers. This work addresses one of the major reliability issues—Potential-Induced Degradation (PID)—of already installed PV modules in the field.[1]

Significance and Impact:

PID issues are avoided at the cell or module manufacturing level. However, a large number of PID-susceptible modules have already been installed in the field. This work eliminates or dramatically reduces the PID issue of PV modules already installed and operating in the field.

Research Details:

- A large fraction of commercial PV cells get shunted due to high system voltage leakage current between the grounded module frame and the cells.
- The method developed at ASU uses commercially available, flexible Corning Willow Glass strips placed on the PV module glass superstrates, interrupting the current leakage path.
- Figure 1 shows the current interruption method, and Figure 2 shows the performance retention impact due to current interruption.

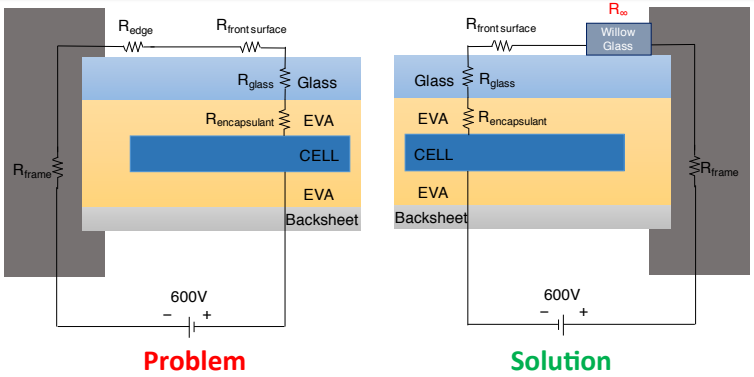

Fig 1. Interruption of PID leakage current path using Corning Willow Glass strips at the frame edges.

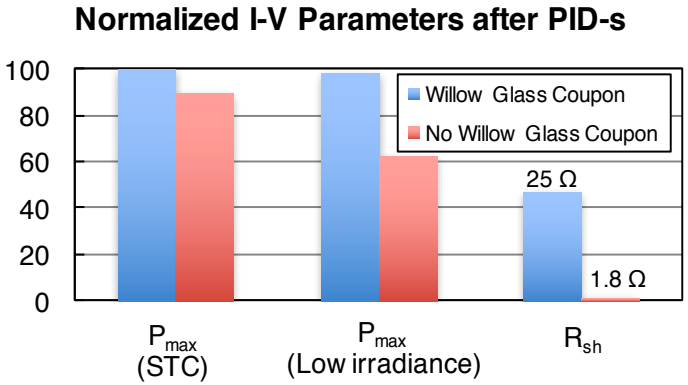

Fig 2. Performance impact on PV coupon with and without the Corning Willow Glass strips at the frame edges.

[1]**Publication:** J. Oh, G. TamizhMani, S. Bowden, and S. Garner, "Surface disruption method with flexible glass to prevent potential-induced degradation of the shunting type in PV modules," *IEEE J. Photovoltaics* **7**, 62–67 (2017).

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