

PRESS RELEASE – Global Sustainable Energy Solutions Pty Ltd (GSES)

06 March 2014

FOR IMMEDIATE RELEASE

GSES releases a technical paper on PID

Global Sustainable Energy Solutions Pty Ltd (GSES) has released a technical white paper, entitled *Potential Induced Degradation: Causes, Effects and Possible Solutions*, covering the issue of power losses observed when photovoltaics (PV) systems have negative potential relative to ground.

This report provides background information on Potential Induced Degradation (PID), including how this degradation process develops, the conditions that make PV systems prone to it, its effects and the methods to correct or prevent it.

The article states that PID is caused by leakage currents from the front side of the frame to the cell, through the solar glass. These cause local short-circuits and reduced array efficiency through decreased voltage, meaning that “the inverter switches on later in the morning than it should because the solar array needs more radiation to reach the inverter’s minimum voltage. The inverter also switches off earlier in the evening, as the system voltage drops rapidly with the day’s decreasing irradiance.” In addition, PID affects output current and “a loss of up to 70% can be measured”.

As the article notes, it is important to realise that: “PID occurs mainly on crystalline silicon modules ... Degradation of these systems could represent a significant problem in the near future.” However, there are several possible remedies and preventative actions for PID, including modifying the materials used in the system, grounding the negative leg to ensure a positive potential, and using a PV-offset box to reverse the potential overnight.

Susan Neill, Director of GSES, said of the article: “The issue of PID occurring in modules has been mentioned by some module manufacturers as a reason to buy their products ahead of others. But there has been little information available to the industry to understand what PID is and how the industry should address reducing the PID effect on solar installations. GSES sees this article as the first step towards these industry discussions of this topic.”

GSES provides white papers and technical information on its website [Resources and Information](#) page for all readers, including system designers, installers and owners. Topics covered so far include DC Isolator Sizing Requirements, Oversizing PV Arrays, and Sealing Roof Penetrations, and those to come include microfractures and their effects on PV modules, and how temperature affects system output.

The *Potential Induced Degradation* technical paper is available to view and download now free of charge from the [GSES website](#).

GSES is a multi-disciplinary renewable energy engineering, training and consultancy company specialising in PV solar design, online and face-to-face solar training, solar book publishing and PV system audits. Collectively, GSES has over 50 years of local and global experience undertaking projects in Australia, NZ, Asia, Africa and the Pacific Islands. GSES leads Australia in education and training in the Renewable Energy Innovation and Technology Sector and actively partners with government, private enterprise and local communities on a global scale in facilitating the growth and development of the renewable energy industry through education, training, engineering, consulting and publications.

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Link to *Potential Induced Degradation* article: <http://www.gses.com.au/publications/resources-and-information/pid>

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