

PV SYSTEM DOCTOR

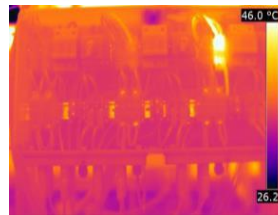
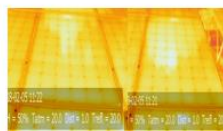
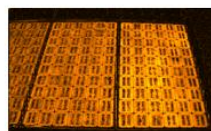
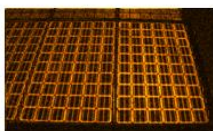
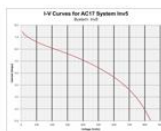
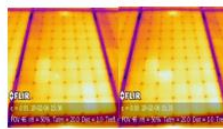
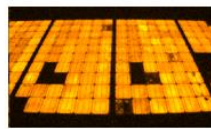
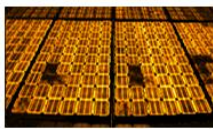
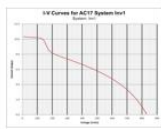
PV SYSTEM INSPECTION & FAULT DIAGNOSIS SPECIALIST

1 – 10 MWp

MALAYSIA



Solar Energy Research
Institute of Singapore



SYSTEM INFORMATION

System type:	Utility scale Grid-connected
Module technology:	Mono-crystalline silicon PERC
Inverter:	String inverters
Age of the system:	4 to 6 years

KEY FINDINGS

Module defects:	Potential induced degradation (PID), EVA delamination, Backsheet pin holes
BOS faults:	Hot spots in DC combiner box

BENEFITS & FINANCIAL IMPACT

Key Benefit	Successful module warranty claims by client after SERIS report.
Financial Benefit:	SG\$200,000 / year estimated.

BACKGROUND

The SERIS PV System Doctor team was engaged by a Malaysian solar power plant company to inspect an underperforming utility-scale ground-mounted PV system.

ON-SITE DIAGNOSIS AND FINDINGS

Monitoring data and initial on-site inspections revealed that close to 15% of the PV system experienced severe power loss of up to 50% as compared to the nameplate capacity. An extensive on-site investigation on the PV system was carried out using SERIS' state-of-the-art daylight luminescence imaging tool. Luminescence image of the modules were captured without the need for removing them from the racks. The team found the affected section of the power plant was experiencing severe potential induced degradation (PID). A strong correlation between images taken by outdoor daylight luminescence and indoor dark luminescence was also demonstrated in this work.

BENEFITS AND FINANCIAL IMPACT

SERIS' diagnosis report served as the key supporting document for the system owner to successfully file for warranty claims from the module manufacturer. The system doctor team also demonstrated implementation of an Anti PID kit to further halt and partially reverse the impending degradation of the rest of the solar panels in the system.

These solutions could potentially helped the system owner to recover at least SG\$200,000 per year of lost revenue, due to system performance recovery.