OFF-GRID SYSTEM

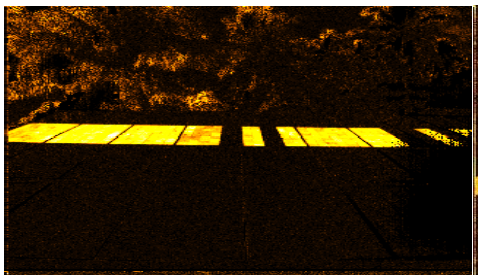
PV SYSTEM DOCTOR

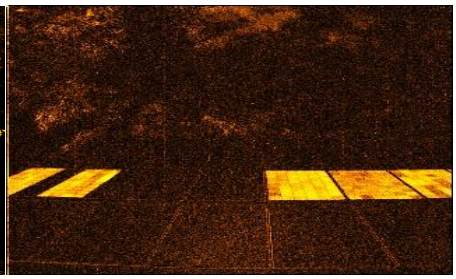
PV SYSTEM INSPECTION & FAULT DIAGNOSIS SPECIALIST

10 – 50 kWp

INDONESIA

SERIS
Solar Energy Research Institute of Singapore





SYSTEM INFORMATION	
System type:	Off-grid PV-battery-diesel hybrid
Module technology:	Multi-crystalline silicon
Inverters:	String inverters
Age of the system:	4 to 6 years
KEY FINDINGS	
Module defects:	Bypass diode failure, missing equipotential bonding of modules
BOS faults:	Inverter not operational, arc faults in disconnector
KEY BENEFITS	
Key benefit	Repaired bypass diodes and BOS equipment 75% recovery of system power loss

BACKGROUND

The SERIS PV System Doctor team was engaged by an island resort owner in Indonesia to inspect and revamp a 4-6 years old off-grid PV system.

ON-SITE DIAGNOSIS

On-site inspection revealed that close to 40% of the PV system was not operational. Upon investigation, it was revealed that the bypass diodes were short-circuited due to lightning strikes. Moreover, one of the string inverters was not working. Connectors were found to be burnt and DC disconnectors not capable of arc suppression were also found to be used.

KEY BENEFITS AND FINANCIAL IMPACT

SERIS helped to identify faults in the system and help to reinstate the expected PV system performance. The bypass diodes were changed in all the faulty modules. Lightning rods were installed near the PV system, and all the modules frames were earthed to the system structure. A potential safety hazard (DC arcing) that could lead to a fire accident was resolved. The team also helped to claim faulty string inverters within the manufacturer's warranty period and to replace the DC disconnectors.

In all, approximately 75% of the system DC power loss is recovered after the PV System Doctor diagnosis service.

http://www.seris.nus.edu.sg/activities/pv-system-doctor.html