SOVA POWER LIMITED

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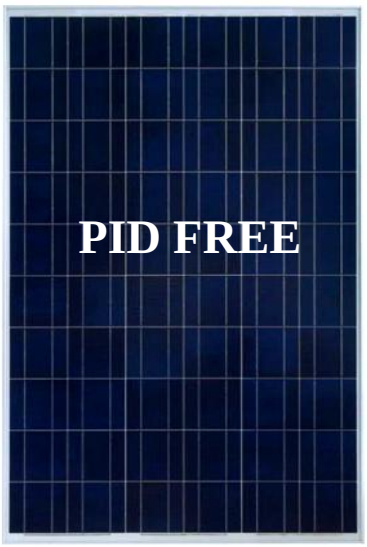
Sova Solar Photovoltaic Module Reliability Report



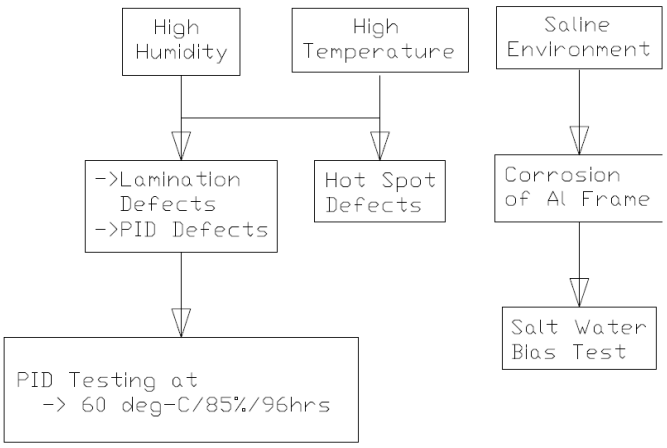


Fig-1

Fig.1 shows the flow chart of SPV module reliability conditions. The main causes for module degradation are PID effect due to high humidity, the hot spot occurs due to high temperature as well as shading effect, frame corrosion occurs due to saline environment and so on. After a long R&D initiative Sova Power has overcome most of the aforesaid application problems associated with SPV modules.

- Majority of the manufacturer's modules showed significant degradation due to PID.
- Solar PV plants with string voltage greater than 700V, installed in hot & humid condition of have mostly been affected with PID and have shown degradation of greater than 50%.

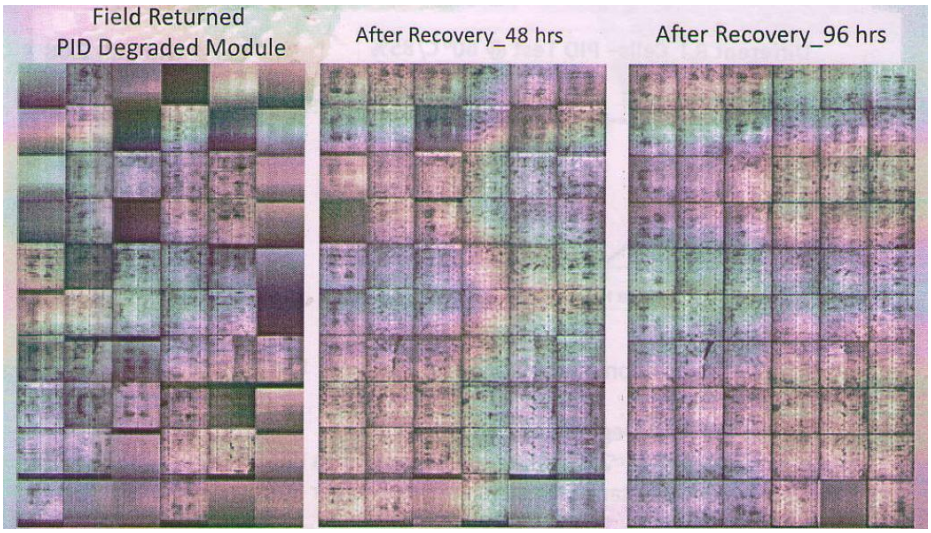


Fig.2

Fig.2 shows the EL image of PID affected module returned from the field.

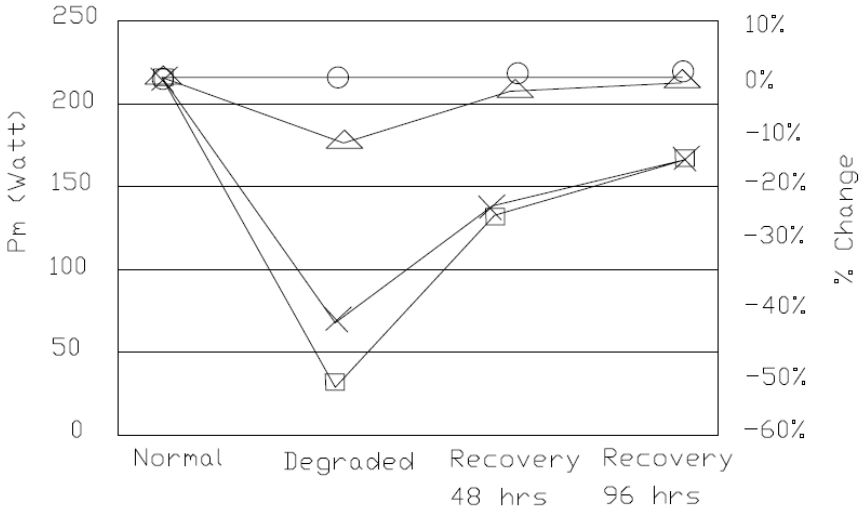


Fig.3

Fig.3 describes the module electrical performance of Sova module during PID after 96hrs recovery process. It is clearly understood that the Sova module can be recovered upto 85% with 96hrs process.

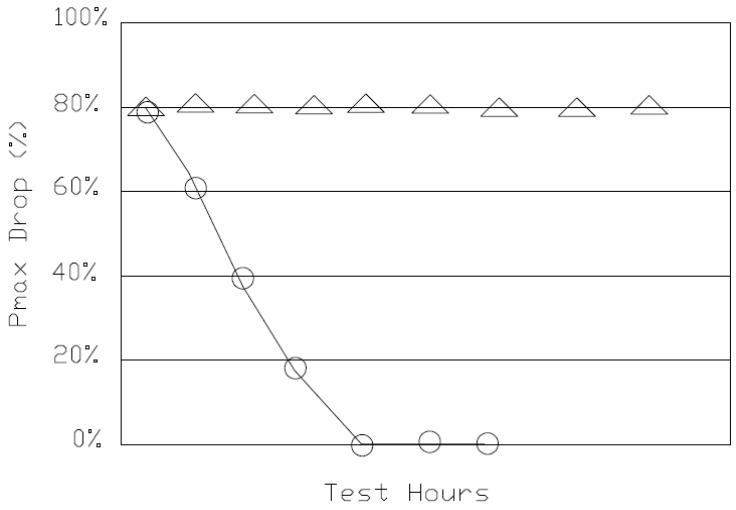


Fig.4

Fig.4 described the Different R.I cells which are under PID process. SiNx(ARC) deposition method & emitter thickness plays a crucial role in accelerated PID. The cell with higher R.I proves to be resistant to PID failure. Sova uses the cells of about 2.3 R.I based cells which in other word high efficient cell.

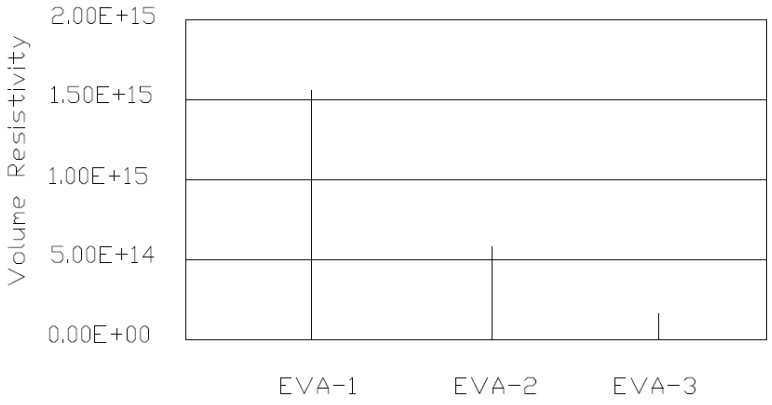


Fig.5

Fig.5 describes the contribution of EVA in PID of PV module. EVA-1 is used by Sova Power. Higher the volume resistivity EVA helps in lowering the leakage current which prevents the PID problem.

Module delamination in the field mainly occurs due to

a. UV aging of EVA.

b. Moisture ingress on back sheet.

c. Poor gel content of EVA

d. Poor adhesion of EVA back –sheet-glass.

Sova Power uses better quality EVA to prevent all these issues.