Requirement for PV reliability assurance system

(design, production and product warranty)

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THE JAPAN ELECTRICAL MANUFACTURERS' ASSOCIATION

Presenter: Yoshihito Eguchi, SHARP CORPORATION

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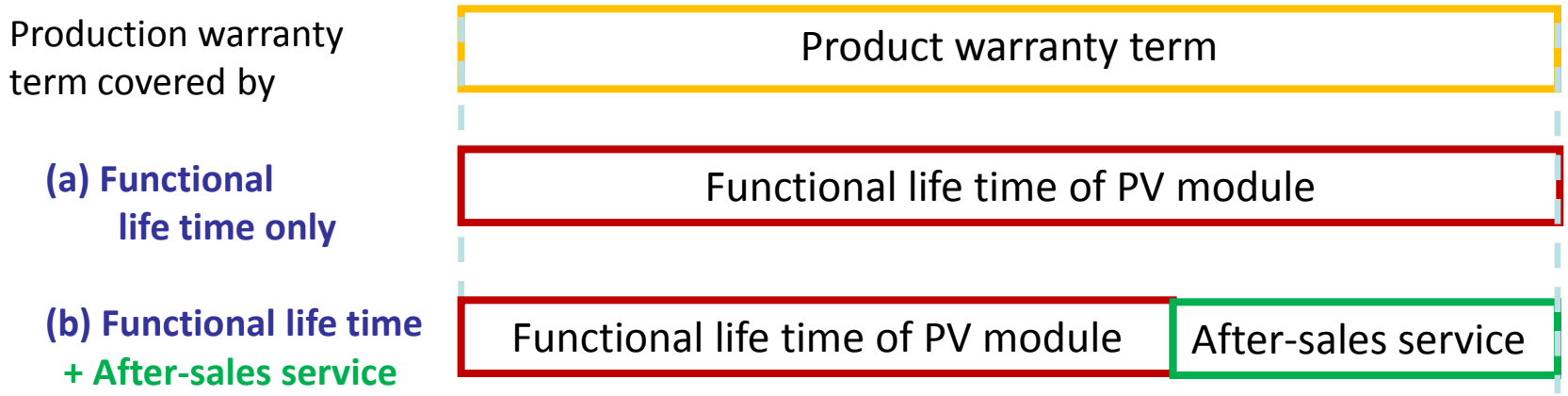
Content

Secured the PV module reliability

- PV module reliability to be secured by combination of the functioning lifetime design of PV module and product warranty.
  - If the functioning life time is shorter than product warranty term, the product warranty shall be ensured by the control system of after-sales service.
  - Rules and systems to assess harmonization between functioning lifetime and warranty to be established and maintained.



Definition of Functional lifetime

Functioning lifetime: a key parameter in PV module design

- "Functioning lifetime" is a design parameter to define a period of PV module functioning its designed performance under specified conditions.
- Functioning lifetime is to be well technically supported and validated by feedback from user/market, supplier, manufacturing, and R&D.
- Rules and systems to assess validity of defining function lifetime to be established and maintained.

Functioning lifetime to navigate all aspects of module design and manufacturing including inline inspection.

- Rules and systems to assess reliability of produced PV module to be established and maintained to make sure functioning life time is secured.

Definition of Product Manager

- Product manager: an organization who takes primary responsibilities for production, quality assurance and warranty of PV module.
  - A single entity needed to take primary responsibilities in case more than one players exist in business flow between manufactures and customers.
  - Product manager can entrust other(s) with some parts of responsibilities in design and/or manufacturing of PV module
  - Product manager to take responsibilities for development and implementation of harmonized QMS in design, manufacturing, and after-sales service to ensure quality assurance and warranty of PV module.

Requirements for PV module design

1. To define Functioning lifetime of the module
   - The functioning lifetime is to be defined based on characteristics of the cell/module design type and climate and other relevant conditions around expected use.
   - PV module design to be implemented in such a manner to secure its defined functioning lifetime.

2. To define rules and/or management systems for PV module design review to check if functioning lifetime is secured in the module design.
   - Appropriate examination items and test methods to asses functioning lifetime of PV module well prescribed in design and secured in the products.

3. To provide user/installer with information about use and/or installation of the PV module if any specific attention needed for them to secure functioning lifetime of the module.

Requirements for After-sales service

1. To keep good alignment between contents of product warranty certificate and internal rules and/or customer support systems to implement warranty.

2. To provide user with accurate written information in document about the contents and conditions of product warranty.

3. To prepare effective after-sales service system to secure implementation of warranty.

Conclusion

To secure the PV module liability for end users, qualification tests and quality assurance program already exist.

But, it is difficult to define the evaluation method of PV module life time 25 years and it take a long time.

□**To secure the PV module liability for end users ;**

(1) Make the new regional **quality assurance standard** and establish national **certification scheme**

(2) **Propose** it to National standardization Committee through QA forum activity.