PV MODULE SUPPLY CHAIN TRACEABILITY STANDARDS AND TECHNOLOGY FOR REUSE AND RECYCLING

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SOLAR AWARDEE™

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Problem

Currently in the solar industry, solar panels and other assets are inadequately labeled. The labels are not standardized throughout the industry and the data provided by the labels have been proven ineffective. The data in the current labels must be manually entered into the web, and workers have also found that the information they need is not accessible when they need it. Furthermore, solar products aren't recycled enough despite being made of scarce materials and recyclers don't have enough information about those materials. The solar industry needs a standard for barcodes to allow for tracking and traceability throughout an assets lifecycle.

Barcodes provide a link between the physical and digital worlds.

Smart Barcodes will link the module to its Digital Thread.

Solution

This project will create an Industry standard universal unique IDs linked to a dataset of a module's constituent materials. This smart ID will enable stakeholders along the supply chain to access to improve the efficiency and profitability of recycling and refurbishment. Unique IDs will enable accurate tracking and traceability of end-of-life activities.

Project Deliverables

The deliverables of this project will include:

- **PV module traceability specification**
  - **Open, decentralized, universal unique IDs**
  - **Smart barcode format using GS1's Digital Link standard**
  - **Data model for BOM and related attributes**
- **Proposal to convert the specification into a published industry standard**
- **Traceability portal for data exchange and event tracking**
- **Implementation tools leveraging EPRI's CIM and Orange Button**

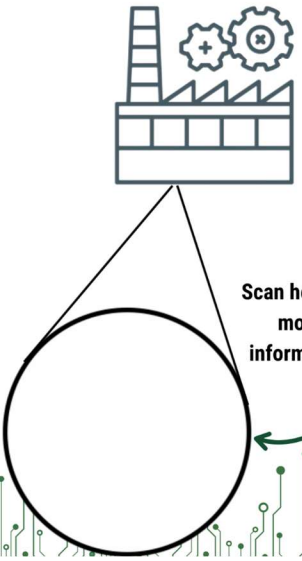
Module manufacturers apply smart barcodes with universal unique ID and upload material data.

Asset Owners, EPCs, and service providers scan smart barcode as-needed to access and modify data.

Owner can upload asset operations and maintenance updates throughout the products lifecycle such as commissioning, repair, and decommissioning

Recycler scans barcode and retrieves module design and material composition data and uploads recycled content data.

End-of-life events are tracked and reported.



Scan here for more information

Attribute	Value	Unit
GTIN:	298567763451	
Serial Number:	ZY-298746	
Manufacturer:	Acme	
Country of Origin:	USA	
Model Number:	ABC-400	
Dimensions:	1600x960x24	mm
Weight:	1150	grams
Max Power (Pmax):	400	Watt
Max Voltage (Vmp):	40.3	Volt
Max Current (Imp):	9.92	Amp
Backsheet Type:	Fluoropolymer	
Number of Cells:	60	cells/module
Cell Structure:	ABSF	
Silicon Type:	n-type mono	
Silicon Volume:	10	grams/cell
Recoverable Silicon	80	%
Copper Volume:	0.5	grams/cell
Recoverable Copper:	90	%

Recyclers will be able to access Bill of Materials (BOM) and component data. Recycling efficiency and profitability will increase.