



**ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION**  
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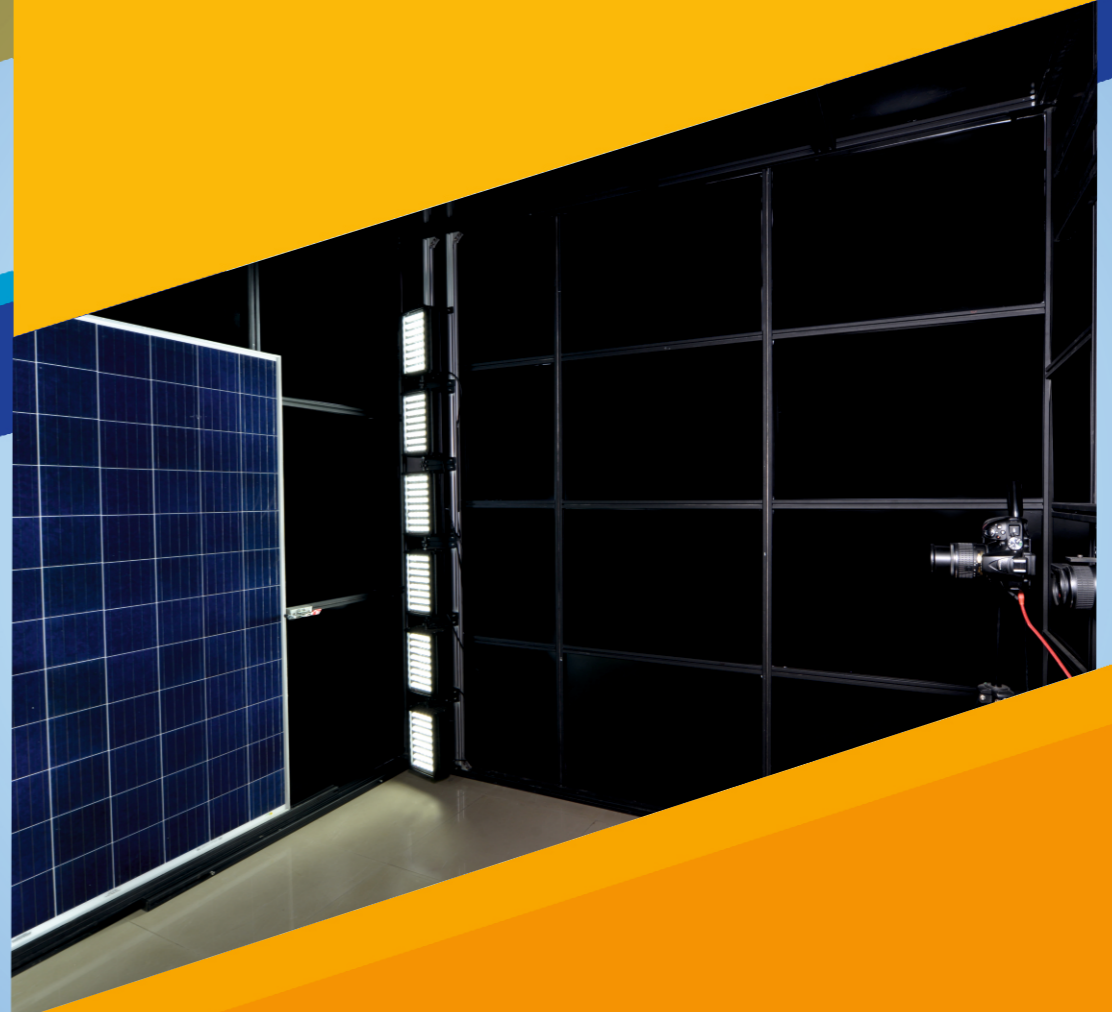


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EXPERIENCE THE EXCELLENCE

# ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION



## SOLAR PV MODULE LABORATORY

## INTRODUCTION

The role of new and renewable energy has been assuming increasing significance in recent times with the growing concern for the country's energy security. The global power sector is also undergoing an accelerated transformation due to technological innovations and response to climate change protocols. The country's vision is to achieve Net Zero Emissions by 2070, in addition to attaining the short-term targets which include increasing renewables capacity to 500 GW by 2030. Among the various renewable energy resources, solar energy potential is the highest in the country.

ERDA with its state of the art facilities undertake various solar equipment testing at its various laboratories. ERDA's Solar Photovoltaic Modules evaluation laboratory has been providing solar photovoltaic module testing services to the nation for more than one decade. We are accredited by NABL and approved by MNRE, Government of India. Laboratory Services are provided under ERDA's three business verticals of "Testing & Evaluation", "Field services" & "R&D and Expert services".

## TESTING AND EVALUATION

### Key Test Capabilities at a Glance

Complete test facilities for solar photovoltaic modules as per Indian standard for BIS certification testing which is now mandatory as per the Quality Control Order Issued by MNRE (Govt. of India) and also as per International standards.

### Major Infrastructure

- Solar Sun Simulator, Class AAA
- Climatic chamber & Humidity chamber
- EL (Electro luminance) tester
- NMOT & Outdoor exposure test set up
- Wet leakage current tester
- Mechanical load & Hail tester
- Bypass diode tester
- Module breakage tester
- UV Preconditioning test chamber
- Hot-spot endurance test chamber

### Products Evaluated

- Crystalline Silicon Terrestrial Photovoltaic (PV) Modules
- Thin-film terrestrial Photovoltaic (PV) Modules

### Applicable Standards

- IS 14286:2010
- IEC 61215:2021
- IS/IEC 61730-2:2016

## FIELD SERVICES

- Advance PV analyzer (I-V Curve tracer) for Commissioning, Auditing, O&M, and Troubleshooting of PV systems
- IR camera for thermal performance monitoring of PV systems
- Monitoring and analysis of complete solar PV systems
- Third party inspection/verification of grid connected solar PV systems installed on rooftop

## RESEARCH & DEVELOPMENT AND EXPERT SERVICES

### 1. TECHNOLOGY DEVELOPED & AVAILABLE FOR SALE

#### • Anti-dust, Self-Cleaning Nano Crystalline Coating for Solar Panels

Innovation:

The coating developed helps to reduce dust accumulation on solar panels and thereby reduces cleaning frequency and increases efficiency of solar PV Panels.

Benefits:

- Saving in expenditure for cleaning of dust from solar panels
- Reduction in power generation loss

#### • Automatic Robotic Arm for Solar Panel Cleaning

Innovation:

The mechanism is developed for the automated cleaning of solar PV panels without any external power requirement.

Benefits:

- Saving in expenditure for the outsourcing of solar PV panel
- Reduction in power generation loss
- Retrofit Design
- Automated System

### 2. Research Project

ERDA undertakes sponsored/contract research and internal projects on Solar PV modules.

### 3. Expert Services

- Due diligence of Solar Power Plant
- Efficiency measurement of Solar PV modules and grid tied inverters at site
- Root cause analysis of failed Solar PV modules



Robustness of Terminations Test Setup



Module Breakage Tester



Mechanical Load & Hail Tester



Wet Leakage Current Tester



Onsite Solar PV Module Testing



Automatic Robotic Arm for Solar Panel Cleaning