

Photo Voltaic Cell Design /solar Based Workshop

SESSION I:

- INTRODUCTION TO Solar PV Panel
- SOLAR CELLS
- P-N Junction
- Photogeneration of charge carriers
- Connection to an external load
- Characteristic equation
- TESTING OF SOLAR CELLS
- CELL CUTTING
- TABBING & STRINGING
- LAY UP
- LAMINATION
- FRAME FIXING
- MODULE TESTING

SESSION II:

Types of Solar Cells

- Amorphous Silicon solar cell (a-Si)
- Biohybrid solar cell.
- Buried contact solar cell.
- Cadmium telluride solar cell (CdTe)
- Concentrated PV cell (CVP and HCVP)
- Copper indium gallium selenide solar cells (CI(G)S)
- Crystalline silicon solar cell (c-Si)

SECTION III:

TESTING OF DEFECTS IN CELLS

- Visible cell breakage
- Hair Line crack
- Cell Edge
- V chip
- U chip
- Holes
- Cell discolourise
- White paste stains in any area of cell
- Fringer prints
- Grid line cuts
- Uneven or missing alluminium back print

SECTION IV:

REQUIREMENTS FOR MAKING A SOLAR PANEL

- Solder X – 66
- Polyester Tape
- Silicon Rubber (Foam Tape)
- Screws
- RTV Tube
- Solder Flux

MODULE TESTING (SUN SIMULATOR)

The cell voltage at which point there is zero current flow

- Short-circuit current (I_{sc})

The current flowing out of the cell when the load resistance is zero

- Maximum power output of the cell (P_{max})

The voltage and current point where the cell is generating its maximum power.

The P_{max} point on an I-V curve is often referred to as the maximum power point (MPP).

- Voltage at P_{max} (V_{max})

The cell's voltage level at P_{max}

- Current at P_{max} (I_{max})

The cell's current level at P_{max}

- Fill factor (FF)

The ratio of the maximum power P_{max} divided by the open circuit voltage and short circuit current

