

Trial/Pilot Event

Contact the organizers of your tournament to find out what trial/pilot events will be held.

ENERGY - PHOTOVOLTAIC SYSTEM

DESCRIPTION:

The objective of this event is to increase the power output of a flat photovoltaic cell by applying integrated High-Concentrated Photovoltaic (IHCPV) technology to improve the efficiency. The student will supply Current Voltage (IV) plots of the cell before and after the application of the high concentration mechanism.

PARTICIPANTS: 1 student

APPROXIMATE TIME: 30 minutes

COMPETITION:

Materials:

- All materials are provided by the student.
- All photovoltaic module rated at 9 volts at 60 ma is used. This module is 4"x6".
- Only passive cooling of the PV cell can be used if necessary to optimize efficiency.
- Concentrator can be made of any material appropriate to the design.

Construction:

- All construction is to be completed prior to the tournament.
- Measurement equipment (meters, resistor) is to be included as part of the project.
- All work on building the concentrator must be performed by the student.
- All other construction work on the project must be done by the student.
- Concentrator is to be removable.

Testing:

- All projects are to be impounded by the event supervisor prior to the start of competition.
- No alterations will be allowed once the project is submitted for competition.
- The student must take all of the performance data.
- All performance data is to be submitted with the project.
- Report written by the student, describing the project is to be submitted with the project.
- Projects will be maintained in the possession of the event supervisor until they are released at the end of the event assuming there are no pending arbitrations.
- Event supervisors may take pictures of all projects that are entered in the tournament for future assessment and instructional purposes.

SCORING:

- 15% on the simplicity of the concentrator
- 15% on efficiency improvement with the use of the concentrator
- 15% on data taken
- 15% on plots from data
- 15% on neatness of project
- 25% on report describing results of project

Reference books for Photovoltaic Conversion:

Sunlight to Electricity

Joseph A. Merrigan

Solar Cells

Martin A. Green

Photovoltaic Module, Photocomm part number 06180, 4" X 6" 60 ma at 9 volts

Contact: Photocomm, Inc. , Steve Bass, 7681 East Gray Road, Scottsdale, AZ 85206
602-948-8003