

Manufacturing Consulting Training Laboratory and Research Equipments



### SOLAR PANEL TEST RIG Model NCES.SPT

- LED Lamp: 11 Watt
- Solar Panel : 36 Watt
- Battery: 12 V 42 Ah
- Highly Efficient Charge
  Controller
- Weather Proof Fixture
- Control Panel
- 15 years Limited Warranty on Panels
- Ideal for Campus Lighting
- Experiment Scope
- i. Current Voltage Curves
- ii. Efficiency of Solar Pannel
- iii. Studing Solar cells under different illuminance, temperature and Shading

# SOLAR STREET LIGHT TEST RIG Model NCES.SSL

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#### Works:

Plot No. 553, Phase-2 Opp. Railway Stn., GIDC Vatwa, Ahmedabad -382445, India



# Solar Parabolic Concentrator Test Rig

Manufacturing Consulting Training Laboratory and Research Equipments



# Model NCES.SC

Parabolic trough concentrator (PTC) comprises of concentrator, of parabolic crosssectional shape, and a circular cylindrical receiver located along the focal line of the parabola. It reflects direct solar radiation onto a receiver tube located in the focal line of the parabola. Since the collector aperture area is bigger than the outer surface of the receiver tube, the direct solar radiation is thus concentrated.

The test rig is suitable for evaluation of thermal performance of a concentrator. Provision to change receiver material; fluid flow rates and input temperature makes it an ideal study unit. Application includes Research and Academic Uses.

### **Specifications:**

- **1. Collector :** The collector of a parabolic trough is an assembly of curved shaped reflectors arranged on a structural steel framework. The reflectors are arranged so as to give a parabolic shape and reflect the incident solar radiation onto to a tubular receiver
  - Focal length 0.15m
  - Aperture width 0.6m
  - Rim angle 90<sup>o</sup>
  - Concentration ratio 12
  - Mirror reflectivity 90%
- 2. **Receiver:** The receiver of parabolic trough is placed at the line focus of a trough so as to capture the solar radiation and transfer the same to the thermal medium used in the system. The receiver being used comprises of a linear absorber constructed of a metallic tube surrounded by a glass tube
  - Absorber diameter 25 35 mm
  - Coating absorbance 0.94
  - Coating emissivity 0.09

**3. Trough stand** The basic framework of a trough stand is a steel structure. The structure is designed so as to withstand wind speed in an operating condition as well as in parked stage

- Material: Standard structural steel
- Protection Coating: Epoxy coating / PU paints



**4. Tracking System** Tracking system enables the trough to remain focused towards the sun so as to capture the maximum possible direct radiation during the day. The single axis tracking system is provided with either north to south or east to west tracking. Tracking system may include the following few set of equipment's – Electrical motor, Gearbox, Gear & Pinion, Shaft, Solar radiation sensor, Wind sensor and Timer. Optionally also Dual axis tracking System is available using skew drive

- Solar tracker type: Single as well as Dual Axis
- Sensor protection: Dome plastic case
- Sensor type :1 set of optical sensor ( to East/ West /South and North )
- Sensor reaction time : <0.5 /S
- Max. Load: 1500 N
- Tilting Moment Torque: 1100 N\*m
- Axial Load: 30 N\*m

**6. Storage System (optional)** The thermal storage subsystem is a part of the circulation system. It extracts heat from the circulating fluid when the temperature becomes too high. When the temperature is too low, it supplies the stored heat to the fluid. Insulation is provided both on the tank and supporting structure. Tank is fabricated from SS material

**7. Piping; Instrumentation and Safety Mechanism:** Includes Temperature sensors; Flowmeter; Pump and Valves necessary for measurements and control of the systems

8. Comprehensive instruction manual and One Year On-site Warranty

## **Our other products in Solar Energy Test Units**





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# Solar Pump Test Rig



# **Model NCES.SP**

# SOLAR PUMP TEST RIG 0.5 HP

- Solar Module: 12 V, 500 Watts
- Solar USPC Pump Controller
- Working Hours: 6 Hrs @ Peak Sunlight
- Submersible Water Pump: 0.5 HP
- Water Flow: 30 LPM @ Peak Sunlight
- Pump Output Line 1" Inch and Discharge upto 10 mtrs
- Control Panel including Mounting Arrangement Structure, Controller, Mounting Clamp, Connector and Standard Cable etc.
- 100 Litre Sump Tank
- Experiment Scope

i) Main characteristics - Graphs of discharge vs. total head, input power and overall efficiency at different speeds.

ii) Operating characteristics - Graph of discharge vs. total head, overall efficiency, input power and water power, at rated speed.

• 1 year Warranty and Detailed Technical Manual

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