



Solar concentrators can be categorized as point-focusing and line-focusing. Point-focusing systems utilize either an array of mirrors or a single large concentrating mirror to focus reflected solar radiation onto a receiver located at the focal point.

Following is an illustration of a CSP power plant using parabolic trough solar concentrators. (Courtesy engineering.com)

Types of solar concentrators

Flat plate concentrators with plane reflectors and adjustable mirrors

In this type of solar concentrators, the mirrors are used to reflect radiation to the absorber plate. It is quite simple in design and has a good concentration ratio. It is important to note that with a single collector, it is always possible to use four reflectors simultaneously.

Cylindrical parabolic collector

It is also known as the linear parabolic collector. In this type of collector, the primary emphasis is on the focal axis of the reflecting material. The absorber is usually made of copper or stainless steel and has a diameter of 3cm to 5cm.

Solar ray collector with a circular concentrator

It is a type of collector which has a moving receiver. In this type of concentrator, there are mirror strips that produce a narrow image which follows a circular path, the receiver moves along the circular way so that it can track the sun.

Parabolic Dish Collector

In this type of collector, the concentrator tracks the sun with the help of rotation along the two axes. The sun's rays are brought to the primary focus. There exists a fluid which flows through the receiver, and this heat is used to drive a mover. The parabolic dish collectors can generate power in kilowatts

Advantages of using solar concentrators

Here is the list of benefits of using the solar concentrators.

It comes with the ability to increase the intensity of solar energy by concentrating the available energy over a large area on a smaller surface

It assists in reducing the cost in a solar power generation system as it replaces an extensive and costly receiver with a less expensive reflecting area.

The heat loss is drastically reduced.



The temperature on the receiving area is quite high, a thermodynamic match can be achieved which augurs well for the overall efficiency of the solar power system

Solar concentrators have potential applications in both photovoltaic and thermal utilization. Stay tuned to our blog for more updates.

Generic price of Solar Concentrators available in India

Parabolic solar concentrators: Rs. 1 lakh per piece

Commercial solar parabolic concentrator: Rs. 350 per piece

Compound parabolic concentrator: Rs. 35000 per piece

Parabolic trough solar energy collector: Rs. 25000 per piece

Parabolic trough tech: Rs. 20000 per piece

