

# Principle of solar trough power generation system



## Overview

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A parabolic trough collector (PTC) is a type of that is straight in one dimension and curved as a in the other two, lined with a polished metal . The which enters the mirror parallel to its plane of symmetry is focused along the , where objects are positioned that are intended to be heated. In a , for example, food is placed at the focal line of a trough, which is cooke.

## Principle of solar trough power generation system

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### Trough solar thermal power generation system design

The traditional solar trough type solar thermal power generation system technology (as shown in Fig. 1) is a heat carrier represented by heat transfer oil. It utilizes the optical principle of parabolic light to

### [10.2. Parabolic Trough Collector Systems . EME 811: Solar Thermal](#)

Fluid is pumped through the absorber tubes that are connected in series and parallel. Some systems employ an insulated storage tank to enable power generation when the solar resource is either



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### Parabolic Trough

CSP, parabolic trough, is defined as a type of concentrated solar power system that uses curved mirrors to focus solar energy onto receiver tubes, which contain a thermal transfer fluid that is heated and



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### Solar explained

Concentrating Solar Thermal Power Plants  
Linear Concentrating Systems  
Solar Power Towers  
Solar Dish-Engines  
A solar power tower system uses a large field of flat, sun-tracking mirrors called heliostats to reflect and concentrate sunlight onto a receiver on the top of a tower. Sunlight can be concentrated as much as 1,500 times. Some power towers use water as the heat-transfer fluid. Advanced designs are experimenting with molten nitrate salt because of it See more on eia.gov  
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**What is a CSP solar trough?**



**How does a solar trough work?**



**How do parabolic troughs collect solar energy?**



**What is a solar trough made of?**  
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**Overview**  
**Efficiency**  
**Design**  
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### **Solar Trough Systems**

**On sunny days, oil in the receiver tubes collects the concentrated solar energy as heat, and on cloudy days it is heated with natural gas. The hot oil is then pumped to an electric power generation system**



## **Trough Solar Thermal Power Generation Systems: How They Work**

**Imagine using sunlight to power entire cities - not with solar panels, but with mirrors that create enough heat to generate steam for electricity. That's exactly what trough solar thermal power generation**



### **Parabolic trough**

**This solar energy collector is the most common and best known type of parabolic trough. When heat transfer fluid is used to heat steam to drive a standard turbine generator, thermal efficiency ranges**



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### **How CSP Works: Tower, Trough, Fresnel or Dish**

**In a parabolic trough CSP system, the sun's energy is concentrated by parabolically curved, trough-shaped reflectors onto a receiver pipe - the heat absorber tube - running along about a meter above**



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**A solar power tower system uses a large field of flat, sun-tracking mirrors called heliostats to reflect and concentrate sunlight onto a receiver on the top of a tower.**



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**As steam passes through the turbine, it turns the generator's rotor, producing electricity. This conversion of thermal energy into mechanical energy, and subsequently into electrical energy,**

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