Concentrated solar power technologies use mirrors to focus sunlight and convert it into heat to create steam and drive a turbine to generate power. The technology is expected to meet 25 per cent of global energy needs by 2050.

## Why

- Generating power through reflectors and storing it in materials is a reliable and cheaper solution.
- 'India One' in Mount Abu aims to generate power to meet the requirements of 20,000 people.
- It can be replicated as captive power plants for small townships, pharmaceutical units and institutions.

## Cost

- For 1 MW storage for 16 hours, the cost of storage will be Rs 40 crore for a life of 20 years.
- The prototype of this 1 MW plant, which in solar energy terms is meant to generate 3.5 MW in 24 hours, costs Rs 80 crore.
- Industrial production can bring down the cost to half.

## Challenge

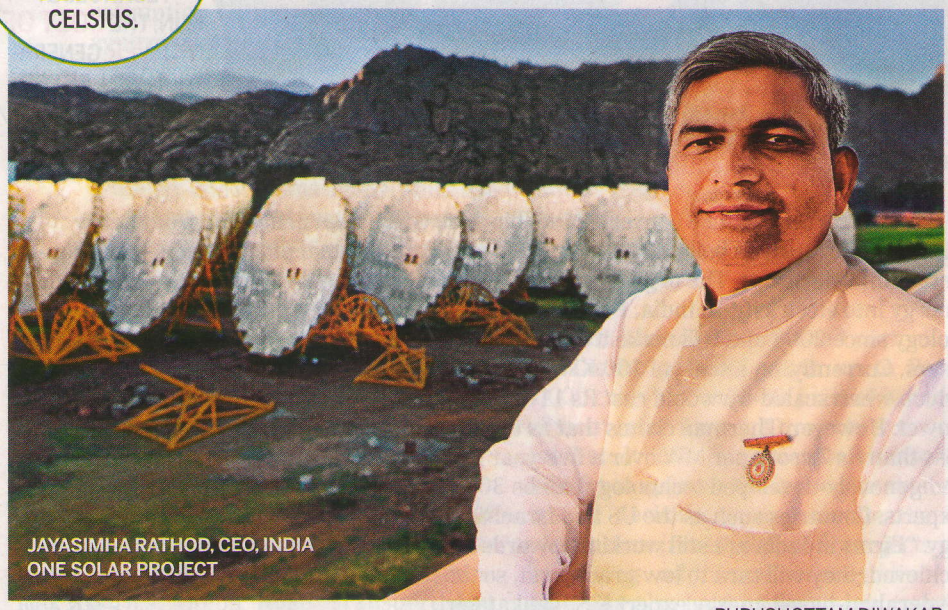
- The manufacturing process needs to be simplified with introduction of a modular design.
- Improving efficiency through better performing dishes, a better storage system, and more efficient turbine.

### 9 Concentrated Solar Thermal Power

# HIGH ON SUNSHINE

Large-scale solar thermal power generation became a reality in the early 1980s, with Spain and the US emerging as leaders in the field. A study done by Greenpeace International, the European Solar Thermal Electricity Association and the International Energy Agency's SolarPACES group found that concentrated solar power can account for up to 25 per cent of the world's energy needs by 2050, with a drastically reduced generating cost. It is game on now in India. A solar thermal power plant is being built and patented by the World Renewal Trust of Brahma Kumaris on its Abu Road campus in Rajasthan with assistance from the Union Ministry of New and Renewable Energy along with German collaboration. Called the 'India One Solar Project', the overall budget for the project has been pegged at approximately 10 million Euros, or more than Rs 80 crore. "This is the only one of its kind dish-cum-cast iron storage system in the world. It is simple to make in India with indigenous material and manpower," says Jayasimha Rathod, project CEO. India One, which when commissioned, will have 770 parabolic dishes of 60 $m^2$, each covered with 800 pieces of solar-grade mirror sparkling with such intensity that they can burn down grass, wires and tubes, if accidentally focused on them. *—Rohit Parihar*

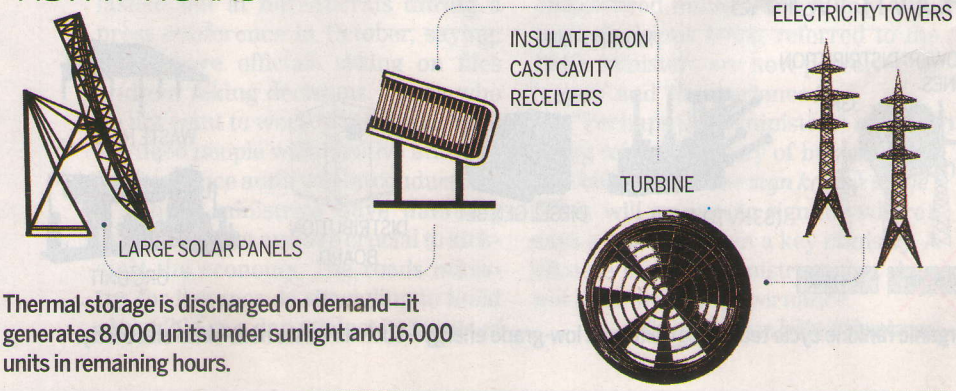
THESE DISHES CAN GENERATE TEMPERATURE OF UP TO **1,200 DEGREES** CELSIUS.



JAYASIMHA RATHOD, CEO, INDIA ONE SOLAR PROJECT

PURUSHOTTAM DIWAKAR

## HOW IT WORKS




Thermal storage is discharged on demand—it generates 8,000 units under sunlight and 16,000 units in remaining hours.