

The Better India

- GOPI KARELIA
- JUNE 25, 2020
- SOLAR TAMIL NADU

Unique 'Solar Bowl' Keeps Kitchen Cool Despite Using Steam to Cook 1,000 Meals a Day!

The Auroville Solar Kitchen in Tamil Nadu is a shining example of sustainable architecture as it also keeps the interiors cool, with greywater recycling and composting.



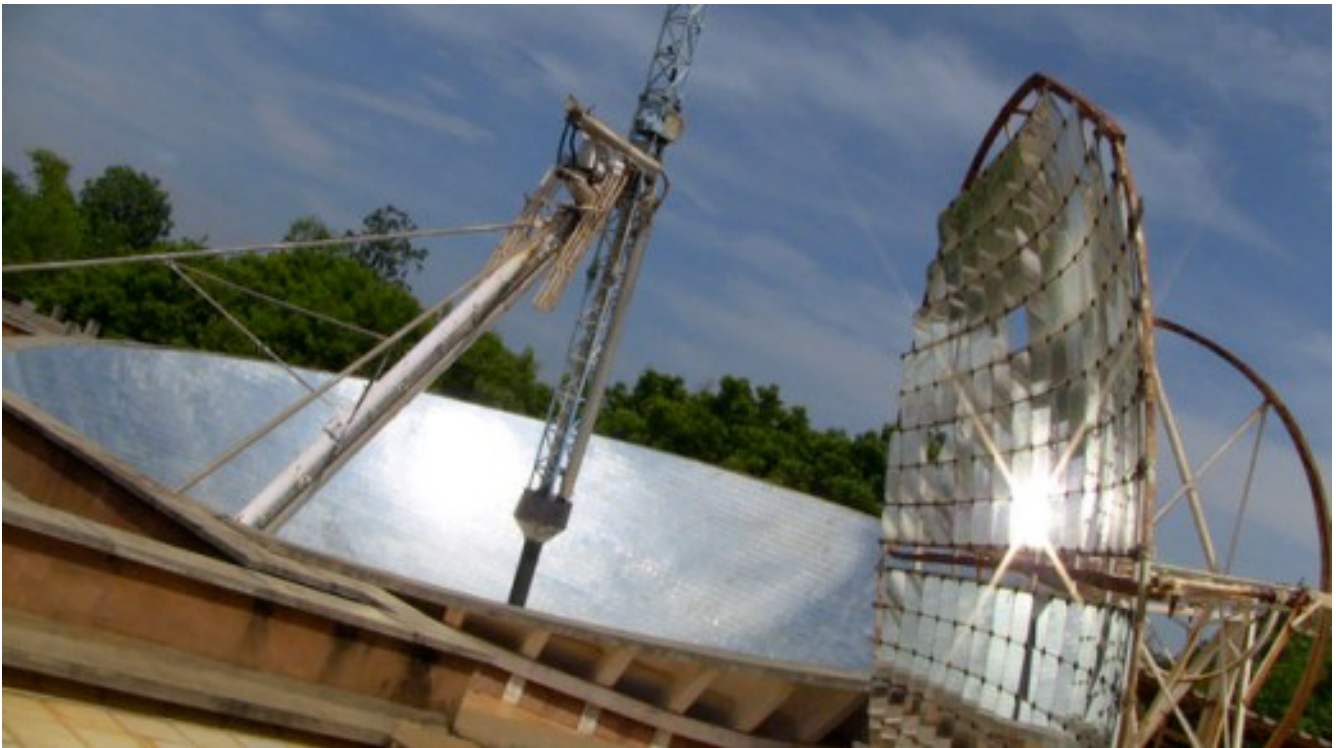
Kitchen staff at the Auroville Solar Kitchen in Villupuram, Tamil Nadu, an eatery, begin their operations as early as 6 a.m.

The secret behind their simple yet popular vegetarian meals lies in a detailed protocol. This involves getting fresh vegetables from the market, sanitising their utensils, and preparing every dish on time.

It is believed that the staff prepares more than a thousand meals every day, serving domestic and international tourists, schools, and workplaces.

Besides the mouth-watering food, this community kitchen, spread over three acres, is also famous for its rooftop solar bowl.

This 18-metre wide solar bowl, developed by the Tata Energy Research Institute, can prepare meals three times a day.



The super solar bowl.

Guests at the kitchen often demand to see the unique device that generates the steam required for cooking through solar energy. It was fitted on the building terrace in 1997 by renowned architect Suhasini Iyer of Auroville Design Consultants.



“The aim was to build a demonstration project on Solar Thermal Energy to generate steam as part of a solar building. In other words, the spaces were to be designed to absorb solar radiation. Natural ventilation and solar chimneys are other features of the building,” Suhasini tells **The Better India**.

<https://www.thebetterindia.com/231002/architect-home-natural-solar-kitchen-cost-price-auroville-tamil-nadu-sustainable-green-wastewater-gop94/>

How the Solar Bowl Works



Source: [Auroville Design Consultants](#)

The bowl is made from composite granite and walls of compressed earth blocks. It has a total of 96 prefabricated ferrocement elements, lined with 11,000 mirror reflectors, that form a perfect and fixed spherical bowl.

A tracking boiler is fitted in the bowl that moves in all directions, around a double-axis articulation placed at the centre. Water is pumped to this boiler, which uses sunlight and converts it into steam.

The steam is then transported to the kitchen hybridised boiler where it is mixed with the steam in a diesel-fired boiler.

By 11 a.m., when the sun is at its peak, the diesel boiler is switched off and cooking is done entirely on solar steam.

Other Eco-Friendly Measures



Source: [Auroville Design Consultants](#)

A staunch supporter of natural building materials, Suhasini used minimal water-intensive materials like steel or cement while constructing the building. She used compressed earth blocks (CEBs) from local earth on the site. This not only reduced the transportation cost but also significantly curbed carbon footprint.

Besides, the building also practices greywater recycling, composting, and rainwater harvesting. “The sewage treatment plant recycles almost 70 per cent of the greywater, which is used for watering the garden,” she adds.

When asked if the eco-friendly measures helped in cutting construction costs, she points out the two categories of costs.



Source: [Auroville Design Consultants](#)

“Yes, the project costs were lowered by 10-15 per cent as we stuck to earth blocks. However, we tried to excel in another kind of cost-benefit that one rarely discusses—reducing carbon footprints. Electricity consumption is less today due to the solar bowl and natural air ventilation through open spaces. The building materials absorb heat, thus keeping the interiors cool. By avoiding the manufacturing-intensive construction process, we further curbed air pollution,” explains the architect.

Several South Indian dishes like idli and rice are steamed. The process of heating water (conventional and electric) consumes a lot of energy. This solar bowl is a sustainable alternative, and many food processing industries in India are also replicating it, Suhasini says.

A comprehensive and sustainable setup like the Auroville Solar Kitchen is also better for a cleaner and greener future.

(Edited by Shruti Singhal)