

CALL FOR PROPOSALS FOR CONCENTRATING SOLAR THERMAL TECHNOLOGY FOR INDIAN INDUSTRY

UNDER RENEWABLE ENERGY RESEARCH AND TECHNOLOGY DEVELOPMENT (RE-RTD) PROGRAMME

1. Objective

The objective is to accelerate the adoption of concentrating solar thermal (CST) technology for various heating applications in Indian Industry. To accelerate the adoption of Green Heat in Indian industry by promoting solar thermal technologies integrated with Thermal Energy Storage (TES), for clean, reliable, sustainable process heating applications and promoting indigenous technology development in efficient and cost-effective manner across the country.

2. Problem Statement

The thrust of the problem statement is to be on identifying commercially viable, scalable solar thermal solutions.

There is a need to pilot and demonstrate scalable solar thermal heating solutions integrated with existing industrial processes, with appropriate thermal storage and hybrid systems, to reduce fossil fuel consumption. The pilot should establish technical feasibility, economic viability, scalability and replicability, thereby creating a pathway for commercial deployment and large scale replacement of fossil-fuel-based industrial heating.

3. Potential Technologies and Industrial Sectors

Multiple concentrating solar thermal technologies are available in the market, and the details and the potential temperature ranges are as follows:

- i. **Parabolic trough technology:** 60 deg C to 400 deg C (suited for process heating applications; this is one of the widely used technologies for solar-thermal based power generation)
- ii. **Linear Fresnel technology (LFR):** 60 deg C to 250 deg C (suitable for direct steam generation; can be utilized for process heating and power generation also)
- iii. **Parabolic dish technology:** 100 deg C to 500 deg C (low-temperature variants can be used for process heating applications; much higher temperatures are also feasible; Stirling engine-based power generation systems are in operation across the world)
- iv. **Power tower technology:** 150 deg C to 600 deg C (mainly used for power generation; even higher temperatures are possible).
- v. **Solar Photovoltaic (PV) Coupled with Heat Pump Technology:** upto 90°C or more (PV-generated electricity powers heat pumps to provide hot water and low- to medium-temperature process heat; suitable for residential, commercial, and industrial heating applications.)
- vi. **CST with thermal energy storage systems:** Provides continuous process heat through thermal energy storage during non-sunshine hours

The technologies listed are only indicative and in no way exhaustive.

Some of the potential sectors/ processes where CST technologies can be useful are as follows.

Sl. No.	Sectors/ Processes	Temperature Range (deg C)	Cleaning	Drying	Evaporation	Distillation	Pasteurization	Sterilization	Cooking	Process Heating	Boiler Feed Water Heating	Cooling
1	Automotive/ Automobile	50 to 150										
2	Breweries	Up to 150										
3	Cement	Up to 1500										
4	Ceramics	Up to 1800										
5	Chemical	50 to 300										
6	Dairy	Up to 180										
7	Food Processing	50 to 180										
8	Glass	Up to 1500										
9	Iron & Steel	Up to 1,800										
10	Leather & Footwear	Up to 200										
11	Non-ferrous Metals.2	Up to 1,800										
12	Petroleum Refineries	Up to 1,200										
13	Pharmaceuticals	50 to 300										
14	Plastics & Polymers	Up to 300										
15	Pulp & Paper	50 to 240										
16	Rubber	Up to 250										
17	Textile dyeing	50 to 250										
18	Hospitality Sector	Up to 90										

Or any other application for Green heat for industry.

4. Activities Proposed under Call for proposal

- Identification and prioritization of suitable industrial clusters based on parameters such as type and temperature of industrial processes, thermal energy demand, existing fossil-fuel consumption, potential for fossil-fuel substitution, solar resource availability, and techno-economic feasibility.

- ii. Implementation of pilot/demonstration projects in selected industrial clusters to validate the technical performance, reliability, integration with existing heating systems, fossil-fuel displacement and economic viability of CST-based process heat solutions. The developer shall be responsible for operation and maintenance (O&M) of the installed system for a minimum period of five years to ensure sustained performance and reliability.
- iii. Compilation and documentation of case studies of successful CST installations, with preference to applications and industrial segments relevant to the identified clusters, covering technology, capacity, performance, economics and fossil-fuel savings.
- iv. Development of best practices and standard guidelines for the design, installation, integration/retrofitting, operation and maintenance (O&M) of CST systems in industries, in consultation with technology suppliers, system integrators, installers and end-users.
- v. Facilitation of wider adoption and commercial deployment of scalable and economically viable CST-based green heat solutions through development of replicable business models, dissemination of pilot outcomes, stakeholder engagement and a structured outreach mechanism for industrial users

5. Roles and Responsibilities of Key Stakeholders

Stakeholder	Key Roles & Responsibilities
MNRE	• Provide partial capex support (upto 50%) • Select/ approve pilot projects • Monitor overall programme progress and review outcomes for replication and scale-up
Cluster/ Industry Association	• Facilitate outreach to industries within identified clusters • Support identification of suitable beneficiary units • Facilitate industry consultations and coordination • Support dissemination and replication of successful pilot outcomes within the cluster
Industry Host/ Beneficiary Unit	• Identify/ provide the suitable process heat application and site • Provide adequate land area and site access for the project duration • Provide baseline and operational data • Facilitate approvals and system integration • Contribute the beneficiary share of project cost • Support installation, monitoring and operation of the system
Solar Thermal Technology Provider/ System Integrator	• Undertake site assessment, technology selection, system design, supply, installation and commissioning • Integrate the system with the industrial process • Provide training • Undertake 5-year O&M and performance monitoring • Support M&V and ensure agreed technical/performance requirements are met
MSME, CII	• Identify suitable clusters and potential beneficiary industries • Facilitate industry and stakeholder consultations • Support technical evaluation and technology–industry matching • Facilitate implementation and monitoring

6. WHO CAN APPLY

Industries engaged in the manufacture, development, deployment, or utilization of solar thermal technologies, including beneficiary industries utilizing solar thermal systems in consortium mode.

7. FUNDING PATTERN

The Ministry encourages research and technology development proposals and provides upto 50% financial support to Industry/Start-ups/Private Institutes/Entrepreneurs. The financial assistance shall be capped at a maximum of ₹2.00 crore per project, depending on the project requirements and potential for adoption and may be provided in the form of Viability Gap Funding (VGF).

8. ASSESSMENT CRITERIA

The project would be assessed as per Guidelines for Implementation of Renewable Energy Research and Technology Development (RE-RTD) Programme *vide* no. 223/90/2017-R&D dated 17.07.2026. A dedicated committee will be constituted for evaluation of these proposals.

9. SUBMISSION OF PROJECT PROPOSAL

The interested and competent organizations may submit the proposals, online in the portal <https://research.mnre.gov.in/home>.

10. IMPORTANT DATES

OPENING DATE FOR SUBMISSION OF PROPOSAL: -- 08.09.2026

CLOSING DATE FOR RECEIPT: -- 07.10.2026

11. For any further clarification and online submission of the proposal: contact the following;

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