

No. 1/5/2008-09/ST
Government of India
Ministry of New & Renewable Energy

**Block NO. 14, CGO Complex,
Lodi Road, New Delhi-110 003**

Date: 27th August, 2008

To

**Heads,
State Nodal Agencies**

Subject: Sanction of continuation of the Implementation of Technology Evaluation Projects on Large Area Solar Dish Concentrator (ARUN-160) for Industrial Process Heat Systems

Sir,

Sanction of the President is hereby conveyed for continuation of the "Implementation of the Programme on Technology Evaluation Projects on Large Area Solar Dish Concentrator (ARUN-160) for Industrial Process Heat Systems".

2. The above scheme will be implemented during 2008-09 as per same funding norms / guidelines and other provisions applicable during 2007-08 as announced vide sanction no.22/9/2006-07/ST dated 22/8/2007 for 18 months and until such time the same is superseded by fresh / new programme / scheme.

3. Release of financial support during 2008-09 on the basis of provisions of programme / scheme / sanction 2007-08 will continue to be governed by the set provisions even after the same are superseded by fresh / new programme / scheme.

4. All the SNAs are requested to take up scheme for implementation as per the guidelines of sanction no.22/9/2006-07/ST dated 22/8/2007.

5. The expenditure is debitable to Demand No.67, Ministry of New and Renewable Energy, Major Head '2810' Non-Conventional Sources of Energy, Sub Major Head 02-Solar, Minor Head 02.101 Solar Thermal Energy Programme, Sub Head 02-Research and Development, 02.00.31 Grants-in-Aid during the year 2008-2009 (Plan).

6. This sanction issues under the power delegated to Ministry of New and Renewable Energy with the approval of the competent authority and concurrence of IFD vide their diary no. IFD/SAN/109/332/2008-09 dated 27/08/08.

(Dr R. P. Goswami)
Director / Scientist 'E'
Ph. No. 2436 8915

Copy for information and necessary action to:

- (i) The Director of Audit, Scientific Audit-II, DACR Building, I. P. Estate, New Delhi.**
- (ii) Adviser (RE), Planning Commission.**
- (iii) PPS to Secretary, MNRE.**
- (iv) Special Secretary and Financial Advisor, MNRE**
- (v) Joint Secretary, MNRE**
- (vi) All Advisers, MNRE**
- (vii) The Director, IIT Bombay, Powai, Mumbai – 400 076**
- (viii) M/s. Clique Development Pvt. Ltd., 134 A/B, Govt. Industrial Estate, Charkop, Kandivli (West), Mumbai – 400 067.**
- (ix) Dir (ST)/ Scientist 'E' (ST)/ SO(ST)**
- (x) Dir (F)/ US (F)/ PAO**
- (xi) Managing Director, IREDA/ Solar Energy Centre, MNRE**
- (xii) Regional Offices, MNRE/ Regional Test Centres of MNRE**
- (xiii) Sanction folder / Guard file**

(Dr R. P. Goswami)
Director / Scientist 'E'
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No. 22(9)/2006-07/ST
Government of India
Ministry of New & Renewable Energy

**Block NO. 14, CGO Complex,
Lodi Road, New Delhi-110 003**

Date: 22/08/2007

To

**Heads,
State Nodal Agencies**

Subject: Implementation of Technology Evaluation Projects on Large Area Solar Dish Concentrator (ARUN-160) for Industrial Process Heat Systems

Sir,

I am directed to convey sanction of the President for "Implementation of the Programme on Technology Evaluation Projects on Large Area Solar Dish Concentrator (ARUN-160) for Industrial Process Heat Systems" within a period of 18 months from the date of issue of scheme as per provisions and guidelines contained herein.

1.0 Objectives

1.1 Large area solar dish concentrator (ARUN-160) technology has been developed and tested at a dairy for industrial process heat applications under a MNRE supported R&D project to IIT Bombay and M/s Clique Development Private Ltd. (CDPL), Mumbai. The technology has large potential in the industrial sector to meet process heat requirements.

1.2 The basic objective is to support installation and commissioning of ARUN-160 solar dish concentrators for various industrial process heat applications with a view to evaluate the technology under actual field conditions for obtaining feedback on the reliability and performance data under different conditions. The programme would help in evaluating the effectiveness and potential of the technology in the industrial sector for reducing dependence on conventional fuels, and ultimately to establish the technology for dissemination on a wider scale, especially in the industrial sector.

2.0 ARUN-160 Solar Dish Concentrator Technology

2.1 Basically, ARUN-160 is a Fresnel paraboloid reflecting concentrator mounted on a flat dish with downward facing cavity receiver at its focus designed to absorb the concentrated solar energy and to transfer it for useful application. The concentrator tracks the sun on two axes, continuously facing it to capture maximum amount of solar radiation over a day. The dish concentrator along with the receiver is mounted on a specially designed tower. The system is equipped with a heat retrieval mechanism (which may consist of piping and fittings, insulation, fluid circulating pump, etc.), and system controls related to tracking, thermal system and security/ emergency measures.

2.2 The configuration of an industrial process heat solar system depends on the respective application. Broadly, it may consist of one (or more) number of solar dish, specially designed heat exchangers for transferring solar heat to the existing thermal system in the user industry, fluid pre-treatment equipment and storage vessel (if required), apart from piping/ fittings, fluid circulating pump(s), insulation, control valves etc. on application side for delivery of heat as per the requirements.

2.3 A unit of ARUN-160 dish concentrator having 160 square meter of aperture area was developed and installed at Mahanand Dairy at Latur in Maharashtra for pasteurization of about 20,000 to 25,000 liters of milk under MNRE sponsored R&D project.

3.0 Target

A target to undertake 10 number of technology evaluation projects involving up to a maximum of 20 no. of solar dish concentrators (ARUN-160) for process heat applications has been fixed.

4.0 Pattern of Financial Support and Release of Funds

4.1 Irrespective of the total cost of the projects, a fixed financial support of Rs.12.0 lakhs will be provided for each ARUN-160 dish involved in a project. The user organization will meet the balance cost of the solar system, and the cost of integration of solar system with the existing system, cost of AMC, etc.

4.2 The projects sanctioned to private sector organizations shall not be entitled to grant / support from any other government organization.

4.3 The release of funds will be made on reimbursement basis to the user industry after submission of i) a completion report along with a month's data on the performance ii) statement of total expenditure, and iii) joint inspection report from the user organization, M/s. CDPL, MNRE and the concerned state nodal agency (SNA).

4.4 For implementation of these projects, the SNAs will be eligible for service charges amounting to 2% of the CFA, which will be released at the time of release of CFA to the user industry

5.0 Implementation Arrangement

5.1 M/s. CDPL will help the user industry in developing the project proposal in the format given at Annexure-1 and the same will be submitted to the Ministry through concerned State Nodal Agency (SNA) for consideration of support.

5.2 The proposal received will be forwarded by the concerned SNA to the Ministry along with its recommendations within a period of one month. Three additional copies of the proposal will be submitted by the user directly to the Ministry for perusal and information.

5.3 M/s CDPL will be wholly responsible to fine-tune the design of ARUN-160 dish for each application and its integration into the existing thermal system with the user industry taking into account the geographic location and site conditions. Also, M/s CDPL will be responsible for timely fabrication of the system, its assembly, erection, commissioning and testing.

6.0 Monitoring Mechanism

6.1 The Ministry will regularly monitor progress of implementation of the projects through SNA, officers of the Ministry / Solar Energy Centre, Regional Test Centres or any other research organization authorized by the Ministry. A Committee comprising officials of the Ministry / SEC / Regional Offices, SNA, M/S. CDPL and the user industry will give a report regarding completion of the installation and commissioning of the solar system and its smooth operation before the MNRE share of support is released.

6.2 M/s CDPL will be required to make available performance data of the completed projects to the Ministry for a period of at least one year after commissioning of the systems. The SNA, Regional Offices of the Ministry, Solar Energy Centre, and the Regional Test Centres established by the Ministry for solar thermal systems/devices, or any other research institution decided by the Ministry, may also be associated with the monitoring, as and when required.

7.0 Expenditure

The expenditure for undertaking the above-mentioned projects will be met from the overall allocated budget provision of Rs. 3.0 crores for the year 2007-08 under budget head: Demand No.: 65, Major Head: 2810-Non-conventional Sources of Energy, 02-Solar (Sub Major Head), 02.101-Solar Thermal Energy Programme (Minor Head), 02-Research and Development, 02.00.31-Grants in aid.

8.0 This issues in exercise of the power delegated to the Ministry and with the approval of competent authority and concurrence of IFD vide SAN. No. IFD/SAN/108/3/3/2007-08 dated 22/08/2007.

(Dr R. P. Goswami)
Scientist 'D'
Ph. No. 24360707 (Extn. 1905)

Copy for information and necessary action to:

- (i) The Director of Audit, Scientific Audit-II, DACR Building, I. P. Estate, New Delhi.**
- (ii) Adviser (RE), Planning Commission.**
- (iii) PPS to Secretary, MNRE.**
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(Dr R. P. Goswami)
Scientist 'D'
Ph. No. 24360707 (Extn. 1905)

**Format For Project Proposals for Technology Evaluation Projects Related to ARUN-160
Solar Dish Concentrating System for Industrial Process Heat Systems****A) PROJECT DETAILS**

Sl. No.	Item	Details
1.	Project Title:	
2.	Technology Area:	
3.	Project Summary:	
4.	Name and Address of User Organization: postal address, phone, fax, e-mail, website	
5.	Name and Address of Implementing Organization: postal address, phone, fax, e-mail, website	
6.	Proposed duration	
7.	Month-wise activities with milestones and time schedule:	
8.	Date of Submission	
9.	Estimated Cost (Item-wise)	
10.	MNRE share	
11.	User Organization's share	
12.	Other's Share (Pl. define)	
13.	Technical Details	
	a) Proposed site for installation:	
	b) Latitude, Longitude and Altitude of the site:	
	c) Availability of shadow free area for the proposed installation (9 A.M. to 5 P.M.)	
	d) Estimated daily	

	solar radiation in summer/ winter separately:	
	e) Approximate number of sunshine days in a year:	
	f) Heat requirements from solar dish (Quantity, temperature and pressure): (Demand pattern may also be provided)	
	g) Present Pattern of Consumption of Conventional Fuel (type and average quantity per day)	
	h) Expected Savings (Rs. /annum)	

**B) CERTIFICATE FROM THE USER ORGANIZATION
(On the letter head of the Organization)**

Project Title:

The project proposal with above details is submitted to MNRE for financial support. We (name of organization) agree to abide by the terms and conditions of the MNRE scheme "Implementation of the Programme on Technology Evaluation Projects on Large Area Solar Dish Concentrator (ARUN-160) for Industrial Process Heat Systems".

Place & Date

**Name, Signature and Seal
Head of the User Organization**

C) ENDORSEMENT BY THE CONCERNED STATE NODAL AGENCY

The project site has been visited by the SNA officers and found suitable for installation of ARUN-160 solar dish concentrator to provide process heat for industrial applications.

Place & Date

**Name, Signature and Seal
Head, State Nodal Agency**