

ഭരണഭാഷ-മാതൃഭാഷ

അനേർട്ട്

ANERT



Agency for New and Renewable Energy Research and Technology

നവീനവും പുനരുപയോഗയോഗ്യവുമായ ഊർജ്ജ ഗവേഷണങ്ങൾക്കും സാങ്കേതിക വിദ്യകൾക്കുമുള്ള ഏജൻസി
(Department of Power, Government of Kerala)

No. ANERT-TECH/155/2021-PO(RR)

Date: 24/08/2021

GUIDELINES FOR THE IMPLEMENTATION OF SOLAR THERMAL PROGRAMME 2021-22

The guidelines to be followed for the implementation of Solar Thermal Programme of ANERT during 2021-22 are detailed below:

OBJECTIVES

The objective of the programme is to popularise the application of the advanced Solar Concentrator Technology systems in the State for the production of steam to facilitate community cooking and process heat requirements including high temperature drying. The State Plan Scheme will be supported with significant State Government subsidy to promote high temperature solar thermal devices in the Community, Institutional and Industrial sectors. Conducting technical feasibility study and preparation of DPR for solar concentrator steam generation systems are also included in the scheme.

DESCRIPTION OF THE SCHEME, TARGET & ANERT's SUBSIDY

1. Solar Concentrator Steam Cooking Systems and Solar Concentrator Steam Generation Systems

Steam generation systems based on Scheffler concentrators, various dish concentrators and Parabolic trough concentrators are applicable under this scheme. These devices are used for heating water or thermic fluids to generate super heated steam for operating boilers or steam cooking systems. The applications include steam cooking, operation of steam boilers and steam turbines, production of hot water etc. The intended beneficiaries have to contact the MNRE approved manufacturers / Channel Partners of CST systems for the preparation of the Detailed Project Report. The list of such Manufacturers/ Suppliers is available in the website of the Ministry of New and Renewable Energy (MNRE) at www.mnre.gov.in . The beneficiaries have to submit the duly filled Registration form enclosed as Annexure I along with the DPR for considering their systems for State Govt. subsidy. Installation work of the system can be started only after getting registration number from ANERT.

The target for year 2021-22 is 180 m² of Solar Concentrator area.

The State Govt subsidy applicable is @ Rs.25,000/- per m² of solar concentrator area or 50 % of the total cost of the system, which ever is lower.

The registration for subsidy will normally be valid for a period of four months from the date of registration, within which the commissioning of the system has to be completed and subsidy application submitted. The registration period shall be extended in case of genuine reasons furnished by the beneficiary and subject to availability of funds from Government. The beneficiary will be eligible for subsidy only if the project proposal is approved by ANERT. The State Government subsidy will be available to the beneficiary on completion of the commissioning of the system and by submitting the following documents to ANERT within the validity period of registration.

1. Subsidy application in the prescribed proforma (Annexure III)
2. Joint Inspection Report as given in Annexure V
3. Project Completion and Performance Report as given in Annexure VI
4. Audited Statement of Expenditure as in Annexure VII
5. Copy of invoice/bill of the solar concentrator system
6. Photographs of the commissioned system (Solar concentrators, other components & utility points)

Technical personnel from ANERT will be inspecting the performance of the system and compliance of technical parameters of the components of the system and the inspection report is mandatory for the release of subsidy to the beneficiary. The area of solar concentrator is to be certified by the technical personnel in their inspection report.

In case of deposit work executed by ANERT, tenders will be invited by ANERT among the MNRE approved manufacturers and the eligible subsidy will be reimbursed to the beneficiary on completion of the commissioning and inspection of the systems.

2. Non Imaging Solar Concentrator for Solar Drying / Air Heating

Solar drying systems based on solar hot air evacuated tube collectors capable for generating hot air above 80⁰ C are applicable under this scheme. These devices are used for drying fish, agricultural produces such as coconut, tobacco, medicinal plants, spices and industrial products such as gypsum board, rubber foams etc. The hot air generated from the evacuated tube collectors is allowed to flow into the drier chamber in which the drying materials are kept. Fully automated blowers powered with grid electricity or solar PV modules regulate the hot air flow. The generated hot air shall be appropriately mixed with ambient air to achieve the desired drying temperature for the drier chamber. The intended beneficiaries have to contact the solar drier system integrators for the preparation of the Detailed Project Report for the solar drier project. The beneficiaries have to submit the duly filled Registration Form enclosed as Annexure II along with the DPR for considering their systems for State Govt. subsidy. Installation work of the system can be started only after getting registration number from ANERT.

The target for year 2021-22 is 2500 m² of ETC solar collector area. Solar collector area indicates direct solar exposure area of the hot air ETC.

The State Govt. subsidy applicable is @ Rs.2500/- per m² of ETC solar concentrator area or 50 % of the total cost of the system, which ever is lower.

The registration for subsidy will normally be valid for a period of four months from the date of registration, within which the commissioning of the system has to be completed and subsidy application submitted. The registration period shall be extended in case of genuine reasons furnished by the beneficiary and subject to availability of funds from Government. The beneficiary will be eligible for subsidy only if the project proposal is approved by ANERT. The State Government subsidy will be available to the beneficiary on completion of the commissioning of the system and by submitting the following documents to ANERT within the validity period of registration.

1. Subsidy application in the prescribed proforma (Annexure IV)
2. Joint Inspection Report as given in Annexure V
3. Project Completion and Performance Report as given in Annexure VI
4. Audited Statement of Expenditure as in Annexure VII
5. Copy of invoice/bill of the solar drying system
6. Photographs of the commissioned system (Solar concentrators, drier chamber interior and exterior and other components)

Technical personnel from ANERT will be inspecting the performance of the system and compliance of technical parameters of the components of the system and the inspection report is mandatory for the release of subsidy to the beneficiary. The area of solar concentrator is to be certified by the technical personnel in their inspection report. In case of deposit work executed by ANERT, tenders will be invited by ANERT among the MNRE approved manufacturers / system integrators and the eligible subsidy will be reimbursed to the beneficiary on completion of the commissioning and inspection of the systems.

3. Conducting Technical Feasibility Study and Preparation of DPR for Installation of Solar Concentrator based Steam Generation Systems

Technical feasibility study and preparation of DPR will be conducted in Govt. and Quasi Govt. Institutions such as Kochi Shipyard, Milma Dairies, residential schools etc. for the installation of solar steam generation / cooking systems based on solar concentrator technology. The financial target for year 2021-22 is Rs.10,00,000/-. Empanelled agencies or experienced manufacturers of solar concentrator based steam generation systems selected through a bidding process will be engaged for the purpose.

Yours faithfully,



CHIEF EXECUTIVE OFFICER

Encl: As above

Copy to: All the District Offices, Website of ANERT

Registration form to be submitted by Beneficiary to ANERT for installation of Solar Concentrator Systems for Community Cooking/Industrial Steam Generation purposes under State Subsidy Scheme

1.	Name of Beneficiary with complete postal address, telephone, e-mail address etc.	
2.	Details of Registration Certificate of Institution / Organisation	
3.	Whether Profit making/Non-profit Making	
4.	Place of installation of the Solar Concentrator and available shadow free area	
5.	Distance of place of installation of Solar Concentrator from kitchen/utility point	
6.	Number of people for whom food is to be cooked per day OR Quantity of steam required per day for industrial application	
7.	Present arrangement for community cooking or steam generation/Back-up facilities	
8.	Name and address of MNRE approved Manufacturer/Supplier selected for installation of Solar Concentrator System	
9.	Proposed date of commissioning of the system	
10.	Total number and area of the solar concentrators (m ²) and size of each concentrator to be specified	
11.	Amount of State subsidy eligible (State subsidy is available @ Rs.25000/- per m ² of concentrator area or 50% of the total cost of the system whichever is lower)	
12.	Bank account details of the beneficiary Account No: Name and Address of Bank IFSC Code of Bank	

(*) Copy of Detailed Project Report of the Solar Steam Generation and Utilisation System to be submitted along with this form

Date:

Signature & Name of Beneficiary (with seal)

Registration form to be submitted by Beneficiary to ANERT for installation of Solar Drying Systems based on Non imaging Solar Concentrator (Solar Hot Air Evacuated Tube Collectors) under State Subsidy Scheme

1.	Name of Beneficiary with complete postal address, telephone, e-mail address etc.	
2.	Details of Registration Certificate of Institution / Organisation	
3.	Whether Profit making/Non-profit Making	
4.	Place of installation of the Solar Collectors and available shadow free area	
5.	Distance of place of installation of Solar Collectors from the drier chamber / utility point	
6.	Quantity and pressure of hot air required per day for the application (m ³ per hour) and daily duration of operation of the drier	
7.	Present arrangement for drying / back-up facilities	
8.	Name and address of the Manufacturer/Supplier selected for installation of Solar Drying System	
9.	Make and Model number of the ETC capable for providing hot air above 80 ⁰ C	
10.	Proposed date of commissioning of the system	
11.	Total number and area of the solar collectors (m ²) and size of each collector to be specified. (Copies of Data Sheet of the collector to be given)	
12.	Amount of State subsidy eligible (State subsidy is available @ Rs.5000/- per m ² of exposed collector area or 50% of the total cost of the system whichever is lower)	
13.	Bank account details of the beneficiary Account No: Name and Address of Bank IFS Code of Bank	

(*) Copy of Detailed Project Report of the Solar Drying System to be submitted along with this form

Date:

Signature & Name of Beneficiary (with seal)

Format for submission of subsidy application by beneficiary to ANERT for installation of Solar Concentrator Systems for Community Cooking/Industrial Steam Generation purposes

1	Name of beneficiary with complete postal address, telephone, e-mail address etc.	
2	Registration number and date of the system allotted from ANERT	
3	Requirement of application (Cooking / process heat)	
4	Type of solar technology used for CST based system Type Size (m ²) No. of collectors Total collector area Approx. cost (Rs)	
5	Total cost for the solar steam generation system	
6	Heat transfer medium (steam / hot air / pressurized hot water / hot oil / any other)	
7	Available temperature and pressure of useful heat from the system	
8	Pre-existing arrangement for heat generation (boiler / LPG burner / any other)	
9	Fuel savings after installation of the system compared with prevailing fuel consumption per day	
10	Whether the solar system is integrated with pre existing boiler / heater / burner or a totally new system? If it is a new system, balance of components to be mentioned	
11	Name, address , phone numbers and email ID of the manufacturer of the system	
12	Average heat delivery of the solar heating system per day	
13	Component wise estimated cost of the system (1) Solar heating system (2) Balance of system (3) Total cost (4) AMC charges	
14	ANERT's financial assistance sought as per	

	the scheme guidelines	
15	Balance cost of the system which was met by the beneficiary	
16	Date of completion of the work including commissioning	
17	Commitments from the beneficiary <ol style="list-style-type: none">1. All the above information furnished above are true and with reference to the records maintained2. We will not dismantle the solar heating system at any stage without prior written permission of ANERT3. We will regularly use and properly maintain the system and submit quarterly performance report for a minimum period of one year from the date of commissioning of the system.4. We will take Annual Maintenance Contract (AMC) for a period of at least 4 years after completion of the warranty period, from manufacturer5. We will allow ANERT and other Govt. officials for inspecting the performance of the system and allow visitors to study the operation of the system.	

Signature :

Name :

Designation :

Date:

Name and address of beneficiary institution :

Place:

Office Stamp

Annexure-IV

Format for submission of subsidy application by beneficiary to ANERT for installation of Solar Drying Systems based on Non imaging Solar Concentrator (Solar Hot Air Evacuated Tube Collectors)

1	Name of beneficiary with complete postal address, telephone, e-mail address etc.	
2	Registration number and date of the system allotted from ANERT	
3	Requirement of drying application	
4	Dimensions and cost of solar hot air ETC used for drying system Type Length & Dia of tube No. of tubes Total collector area Cost (Rs)	
5	Total cost for the solar drying system	
6	Purpose of solar drying	
7	Available temperature and pressure of useful heat from the drying system	
8	Pre existing arrangement for drying application (Electricity / LPG burner / Firewood stove / any other)	
9	Fuel savings after installation of the system compared with prevailing fuel consumption per day	
10	Whether the solar drier collector is integrated with pre-existing heating arrangement?	
11	Whether the drier chamber of the system is a pre existing one? If it is a new one, balance of components to be mentioned	
12	Name, address , phone numbers and email ID of the manufacturer of the system	
13	Average heat delivery of the solar drying system per day	
14	Component wise estimated cost of the system 1. Solar heating system 2. Balance of system 3. Total cost 4. AMC charges	

15	ANERT's financial assistance sought as per the scheme guidelines	
16	Balance cost of the system which was met by the beneficiary	
17	Date of completion of the work including commissioning	
18	<p>Commitments from the beneficiary</p> <ol style="list-style-type: none"> 1. All the above information furnished above are true and with reference to the records maintained 2. We will not dismantle the solar drying system at any stage without prior written permission of ANERT 3. We will regularly use and properly maintain the system and submit quarterly performance report for a minimum period of one year from the date of commissioning of the system. 4. We will take Annual Maintenance Contract (AMC) for a period of at least 4 years after completion of the warranty period, from manufacturer 5. We will allow ANERT and other Govt. officials for inspecting the performance of the system and allow visitors to study the operation of the system. 	

Signature :

Name :

Designation :

Date:

Name and address of beneficiary institution :

Place:

Office Stamp

Format for Joint Inspection Report

1. Name of the project :
2. Name and address of beneficiary :
3. Registration No. and date of the system :
4. Place of installation of the system :
5. Total area of the solar concentrator / SHA ETC :
6. Total cost of the system :
7. Date of commissioning of the system :
8. Name of the manufacturer of the system:

Certified that the above project has been inspected by us and the following has been ascertained (Please tick Yes / No)

(For CST based steam generation systems)

Sl. No.	Check details	Yes	No
1	Whether the system has been installed and commissioned as per MNRE / ANERT specifications and its workmanship is good with proper insulation done for all required components?		
2	Whether the mirrors comply with solar grade quality and the supplier has given warranty / guarantee to replace them at their own cost if found deteriorating within 5 years?		
3	Have the supplier / manufacturer followed all safety measures while installing the system including Indian Boiler Regulations (IBR) certificate from concerned department?(If required)		
4	Have all the solar dishes been checked for their focuses on receivers and verified that no manual adjustment (for Scheffler dishes) is required during the whole day to keep the focal spots within the receivers?		
5	Is there any shadows observed / expected on the dishes or from outside structure during day time hours (9 am to 4 pm)?		
6	Has the performance data generated from the system for a period of		

File No.ANERT-TECH/259/2021-PO(RR)

	at least 15 days (as enclosed) been studied?		
7	Is the system delivering the required heat output as envisaged in the DPR / tender condition?		
8	Is the system properly integrated with pressurised vessels / boilers?		
9	Does the system area, number of dishes, type of solar tracking etc. mentioned in the proposal / tender specification matching with the installed items? Specify the area of collector and tracking type.		
10	Is the beneficiary satisfied with the installation and performance of the system?		

For solar Drying Systems

Sl. No.	Check details	Yes	No
1	Whether the system has been installed and commissioned as per ANERT specifications and its workmanship is good with proper insulation done for all required components?		
2	Whether the supplier has given warranty / guarantee to replace the SHA ETC at their own cost if found defective within 5 years?		
3	Is there any shadows observed / expected on the solar collectors or from outside structure during day time hours (9 am to 4 pm)?		
4	Has the performance data generated from the system for a period of at least 15 days (as enclosed) been studied?		
5	Is the system delivering the required heat output as envisaged in the DPR / tender condition?		
6	Is the system properly integrated with drier chamber through insulated ducts?		
7	Does the system area, number of ETC, air temperature controllers, air blowers etc. mentioned in the proposal / tender specification matching with the installed items?Specify the area of collector.		
8	Is the beneficiary satisfied with the installation and performance of the system?		

Signatures with name, designation, date and seal

(Manufacturer)

(Beneficiary)

(ANERT official)

Annexure-VI

Project Completion and Performance Report of the Solar Steam Generation System / Solar Drying System

1. Name of beneficiary with complete :
postal address, telephone & e-mail address.
2. Registration number and date of the system :
allotted from ANERT
3. Address of installation site :
4. Date of commissioning of the project :
5. Application of the system :Cooking/ process heating/ drying
6. Number of dishes and total dish area in sq. m :
or dimensions of SHA ETC and total numbers
7. Type of conventional fuel used earlier :
8. Opinion of beneficiary : Satisfactory / Not satisfactory
9. Format for submitting performance report (For 15 days)

Date	Irradiance kWh/m ² /day	Operating hours	Output Kg/hr	quantity cooked / dried per day (Kg)	Fuel saving per day (Kg/Lit)	Cost of fuel savings (Rs)

10. Performance overview: The performance of the system is satisfactory / not satisfactory. On an average, system delivers steam / hot air at the rate ofKg/hour and savings ofKg/ Litres of conventional fuel ofper day, benefiting a saving of Rs.....per day.
11. This is to certify that the manufacturer, viz,..... has successfully completed and handed over the system on, and it is working satisfactorily. Beneficiary will not decommission, replace or transfer the system for

File No.ANERT-TECH/259/2021-PO(RR)

next 5 years without the prior approval from ANERT. A few photographs of the system are also attached with this report.

12. This is to certify that the system has actually been installed as per MNRE / ANERT specifications and has been installed with 5 years warranty / AMC.
13. No subsidy or financial assistance other than ANERT's subsidy will be claimed for the installed system from any other agency.
14. If there is any deviation from the above declaration, the sanctioned subsidy will be refunded to ANERT by the beneficiary

Signature of beneficiary with date and seal

Name of authorised person

Signature of manufacturer with date and seal

Name of authorised person

AUDITED STATEMENT OF EXPENDITURE
(On the letter head of Chartered Accountant)

1. Name of beneficiary of subsidy programme :
2. Name of manufacturer / supplier of the system :
3. Registration number and date of the system:
4. Eligible ANERT subsidy for the project : Rs.

Size of the solar collectors of the system (m ²)	Total estimated cost of the project (Rs)	Total actual expenditure incurred for installation of the system without AMC (Rs)

5. Item wise statement of expenditure including invoice details:
6. Total cost for the maintenance of the system for next 4 years after the first year of installation:
7. Certified that an expenditure of Rs.has been spent by(Name of beneficiary) for installation of solar thermal system. The beneficiary has paid the manufacturer of the system, viz, an amount of Rs. including subsidy and the eligible subsidy may be released to the beneficiary.

Certified by Chartered Accountant
(with name, signature, seal, date and membership number)