

**NOTICE INVITING EXPRESSION OF INTEREST
FOR
TRANSFER OF TECHNOLOGY FOR “ GRID CONNECTED SOLAR PV POWER PLANTS
UPTO 1MW”**

Eol No: NaMPET-III/GCSPV-1MW/Eol/2022

Eol release date: 27/05/2022



**Centre for Development of Advanced Computing (CDAC)
Thiruvananthapuram**

1. Introduction

National Mission on Power Electronics Technology (NaMPET) is a programme launched by the Ministry of Electronics and Information Technology (MeitY), Govt. of India in 2004, with a vision to provide the country with capability to become a dominant player in Power Electronics Technology. Through this Programme, Research, Development, Deployment and Commercialization of Power Electronics Technology is envisaged by enhancing the indigenous R&D expertise and infrastructure in the country with active participation from academic institutions and industries. Centre for Development of Advanced Computing (CDAC), Thiruvananthapuram, a premier R&D organization under MeitY, is the Nodal Centre for coordinating the activities of NaMPET. Two phases of this National level program each with 5-year duration has been successfully completed. MeitY initiated the Third phase of NaMPET (NaMPET Phase-III) in January 2019 for five years aiming further strengthening of the power electronics technology base in the country, through this phase of NaMPET a green technology for powering houseboat hotel loads with battery banks has been successfully developed and commissioned. The project is well appreciated by state, central governments and media as it addresses a major environmental issue.

2. Indigenous Technology for Grid Connected Solar PV Power Plants upto 1 MW

The basic scheme for Grid Connected Solar photovoltaic power plant is given in Fig.1. The major building blocks associated with the system are the solar PV array, the Power Conditioning Unit (PCU) and the inter-connecting transformer. The PCU consists of the DC capacitor bank, central solar inverters, grid side filters, switchgears, surge suppressor devices and EMI filters. The DC current generated by the PV array is converted into ac current, matched in frequency and phase with grid is then exported to the grid. There is no battery storage in this scheme. But the design is easily extendable for battery storage based system also.

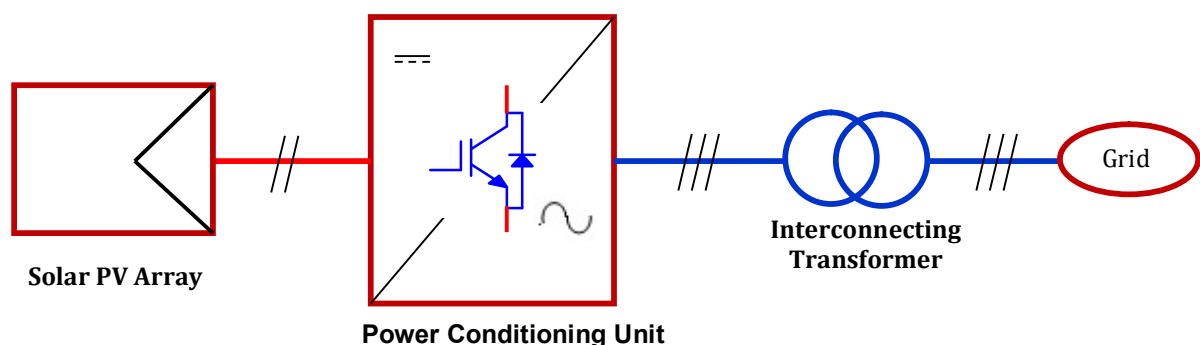


Fig1. Grid connected Solar PV system

The system is designed to achieve higher efficiency, better serviceability with modular arrangement, higher reliability by proper selection of components and protection schemes, flexibility by configurable control software and easy erection/commissioning. For achieving redundancy and better operational efficiency, 3 number of 330 kW PCU sub modules are

connected in parallel to achieve the total power capacity of 1 MW. This can be otherwise 500 kW×2 also. Parallel inverters improves the operational efficiency of the system and its redundancy.

Technology features

Major features of the power conditioning system for the grid connected power plant are PWM scheme for improved efficiency

- Paralleling and control of operating sequence for improving reliability and redundancy
- Reactive power support
- Power quality improvement with harmonic compensation
- Low Voltage Ride Through with reactive power support
- Anti-islanding protection
- Active and reactive power ramping control
- Intelligent Maximum Power Point Tracking
- Current control during fault ride through
- Filter and control scheme for improved current quality
- Reduction of auxiliary power consumption so as to minimize sleep mode power
- Remote Monitoring through Internet using Android application
- Protection schemes implemented as per IEEE 1547 : 2003
- Harmonic performance as per IEEE 519 : 1992The

PCUs have the following inherent protections. All the protection schemes are provided to improve the reliability of the system

- Input DC over voltage protection
- Input over current protection
- Output over current protection
- Earth fault protection
- Grid side over voltage/under voltage protection
- Frequency error protection
- Protection during single phasing
- Over temperature protection for the converter
- Anti Islanding protection during grid failure and sustained grid faults

In addition to the above, system will have lightning and surge protection on the input side as well as on the utility grid side.

3. Application Areas

- Distributed generation
- Solar Roof top applications

- Grid scale solar PV power plants
- Hybrid renewable energy stations
- Hydrogen generation
- Battery energy storage systems
- Microgrids

4. Technology Transfer

The technology will be transferred on non-exclusive basis.

The ToT package contains the following

1. Document(s) for technology know-how and fabrication, schematics of the system
2. Installation guide
3. Training and user's manual
4. Technical support for a period of 6 months
5. Bill of Materials of the system

5. General terms and conditions

1. An expert committee constituted by MeitY/C-DAC will scrutinize the applications for follow-up action.
2. The applicants may be called for a presentation regarding their strengths and business proposals
3. All incidental expenditure incurred in preparation/ submission or presentation of the EoI shall be borne by the participating agency
4. Participation in this EoI does not guarantee any association with C-DAC unless notified by MeitY/C-DAC in writing.
5. MeitY/C-DAC reserves the right of rejecting any offer without assigning reasons.
6. There is neither a business guarantee nor any commitment for funding support from MeitY/C-DAC to the appointed/ empanelled agencies.
7. A Committee of experts constituted by MeitY/C-DAC will assess capabilities and strengths of the industry before finalizing the technology partners.
8. The industry willing to take technology for commercial production will be required to enter into a ToT agreement with C-DAC as per the terms and conditions approved by the competent authority in the MeitY in the prescribed format.

6. Eligibility

Companies/organizations with expertise in recreational vessel manufacturing/operating industry, especially houseboats and shikkars who are willing to take up the production and deployment of LVDC powered houseboat technology as per the ToT guideline agreement of C-DAC are eligible to apply. Industries with good experience in development & deployment of renewable power systems or power conversion systems can apply. Professionally managed companies, corporates and startups are also welcome to apply for the technology.

7. How to apply

Interested companies/industries may send expression of interest with their details by filling the EoI form as per Annexure – I to the following address.

Aby Joseph
Scientist G/Senior Director
Power Electronics Group
CDAC Thiruvananthapuram
Kerala
PIN: 695033
Ph: 0471-2723333-365 (extn)
Email: abypj@cdac.in

Annexure-I

Details of Expression of Interest

(To be filled by the organization interested in technology transfer from C-DAC(T))

Sl No.	Description of Items	Details from Organisation
1	Name of the Organisation Address of registered office with telephone no. & fax	
2	Contact Details Name Designation Address for Comm. Email & Phone	
3	About Organisation Website if available	
4	Any Additional Technology development request	
5	Readiness level to take the technology	
6	Any other information request	
7	Feedback on the information shared by C-DAC(T)	

Declaration

I/We hereby confirm that I/we are interested in the above technology and would productionise it as per terms and conditions. All the information provided above is genuine and accurate.

Authorized Person's Signature.

Name and Designation:

Date of Signature: