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National Certification Programme for Rooftop Solar Photovoltaic Installer

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Background

The Government of India has set an ambitious target of 100 gigawatts of solar capacity in the country by the year 2022, out of which 40 gigawatts are to be installed on rooftops. As on July 2015, the total installed solar capacity in India was just over 4.1 gigawatts, while under 99 megawatts (i.e. 0.099 gigawatts) were installed on rooftops. Rooftop solar systems offer tremendous advantages such as lower transmission and distribution losses, lower investment amounts, lesser number of clearances, public participation and higher employment and entrepreneurship opportunities.

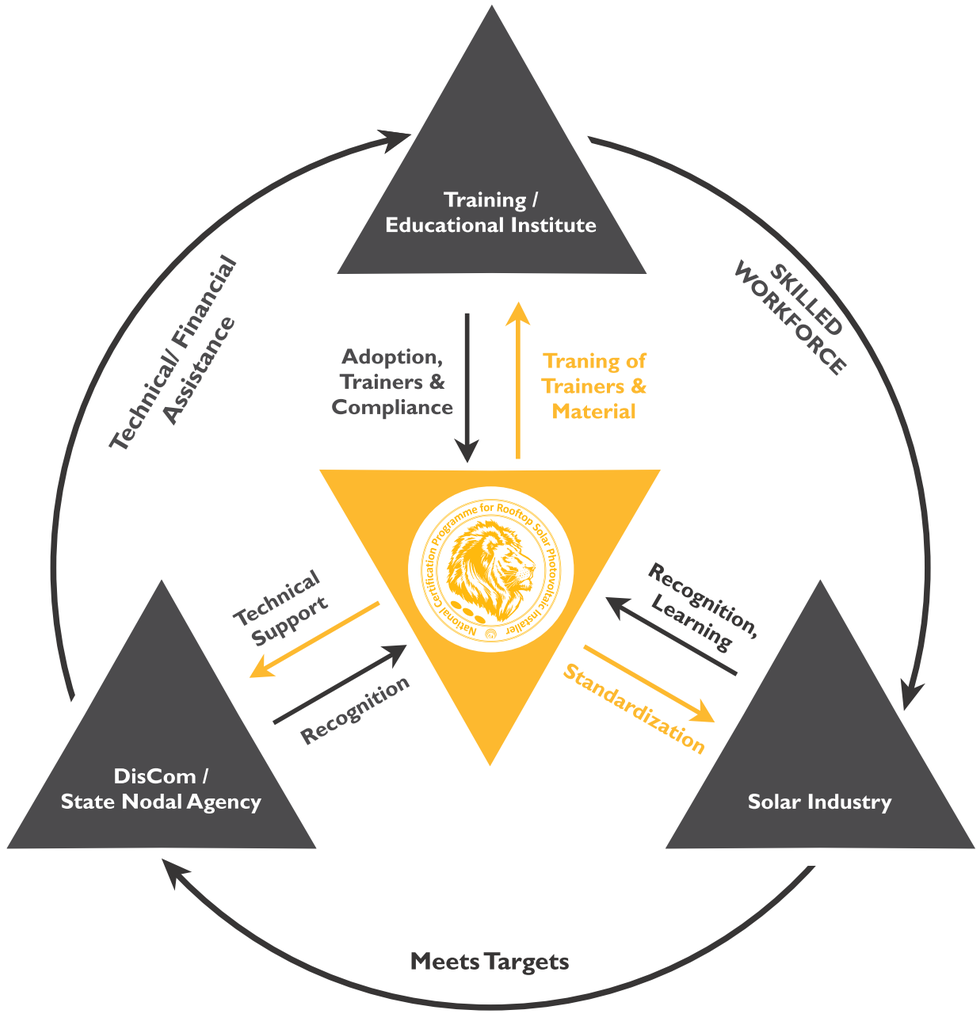
One of the most critical component of aggressive rooftop solar deployment is the availability of highly skilled and qualified installers. It is estimated that India will need approximately 13 lac jobs for solar technicians by 2022 to meet the solar targets. The National Certification Programme for Rooftop Solar Photovoltaic Installer is framed keeping this background in mind.

Vision & Mission

The Vision of this Certification Programme is 'Decentralized Empowerment of Local Institutions with Global Capabilities'. The Mission of this Certification Programme is to establish a conducive but robust training framework throughout the country to not only train and certify rooftop solar photovoltaic technicians, but also open doors towards successful entrepreneurship.

Objectives

- Develop highly skilled and technically qualified rooftop solar photovoltaic installers, and also give them a pathway towards becoming a successful professional and an entrepreneur.
- Establish a technical and administrative framework to train and certify 10,000 Rooftop Solar PV Installers per year throughout the country.
- Foster 100 partnering training centres and empower them by building their internal human resource and infrastructural capacities.
- Translate global knowledge and national experience into local learning through standardized and regularly updated course curriculum and content.



Framework of the Certification Programme

This Certification Programme not only simply targets training of technicians, but positions itself in a sustainable framework to cater to Stakeholders and the overall solar energy sector.

The National Certification Programme for Rooftop Solar Photovoltaic Installers is based upon the following methodology :

Develop a knowledge bank

- Obtain technical and other capacity requirements from the solar industry
- Obtain learnings about the sector locally and globally from experts
- Obtain requirements from government, utilities and statutory bodies
- Process the information and knowledge into simple deliverable vocational material

Develop capacities

- Guide educational and training institutions to set up relevant learning infrastructure
- Train trainers and provide teaching material with continuous upgradation and support
- Through competent trainers, develop skilled technicians in a decentralized manner
- Monitor the overall development and delivery process

Develop standards

- Unify technical standards and aspects for the sector
- Standardize the teaching-learning process
- Provide skilled workforce to the sector to meet its targets

Partners & Recognition

BSES Rajdhani Power Limited
BSES Yamuna Power Limited
madhav group
harsha abakus solar
TATA POWER
BERGEN
Azure Power
adani
GMR
MICROVISION GROUP
STUDER
SunEdison
WAAREE
BESCOM
BHEL
NREDCAP
SESI
GEDA
SECI
JREDA
Energy And Environment Foundation
NSEFI
OMSPTRI
Wisdom EDUTECH INTERNATIONAL

Become a Certified Installer

Why become a Certified Installer?

For Electricians and Domestic Household Technicians, Rooftop solar Photovoltaics (PV) is a unique and upcoming sector, which requires several cross-cutting electrical, mechanical, civil and structural skills. Such systems carry high DC voltages and are expensive; hence, safety, standard and performance compliance become very critical. Because rooftop PV system are small in size and large in numbers, in order to ensure quality, many countries have also mandated Installer Certification.

For University Students, this Certification Programme would provide the much-required hands-on skills enhancing their employability. This Programme also lays the very foundation for advance skill development such as designing of more complex PV systems, performance assessment, owner's engineering and financial calculations.

For Professionals, this Certification Programme would help to develop inhouse capacity to address India's rapidly growing rooftop solar market. It would also help managers to get hands on approach to solar rooftop systems that would aid in better understanding of the components, design and functionality. This in turn would help in better business decision making in a competitive and dynamic market. This Programme is designed in a very flexible manner, where it can be conducted in the evenings and also weekends. Please contact your local Authorized Training Centres to know more about the timings.

Who is eligible for the Certification Programme?

The minimum criteria for eligibility for registering into the Certification Programme for electrician/technician are :

1. The Candidate should be at least 18 years of age at the time of starting the Certification Programme, and
2. The Candidate should have at least passed 10th standard.

Electricians who have been practicing for at least 5 years and possess basic writing skills can also be considered for the Certification Programme based on the discretion of the Authorized Training Centre where the Candidate wishes to register.

In addition to these minimum eligibility criteria, an Authorized Training Centre may have its own selection process, which the Candidate would have to undergo.

How can I register into the Certification Programme?

1. Locate an Authorized Training Centre
2. Fill up the Trainee Admission Form
3. Submit to the Authorized Training Centre with the Application Fee

Universities, Colleges, ITIs that are running this Certification Programme may have a slightly different process. So please contact them directly to understand their registration process.

Course Objectives

After completion of the Certification Course, the successful trainee, i.e. Certified Installer, should be able to:

1. Understand the basics of electricity and solar energy,
2. Survey a rooftop solar PV installation site,
3. Understand all equipment related to the rooftop solar PV system,
4. Design a rooftop solar PV system as per Customer's requirements as well as appropriate codes and standards,
5. Prepare the necessary technical documents related to the design, installation and operation of the rooftop PV system,
6. Install a rooftop solar PV system based on the relevant designs and drawings,
7. Operate and maintain a rooftop solar PV system including identification and troubleshooting of faults,
8. Ensure safety while installation and operation of the rooftop PV system,
9. Undertake project management for installation of a rooftop solar PV system,
10. Understand necessary formalities with authorities for applications, submissions, approvals, interconnections, inspections, certifications, commissioning, etc.,
11. Prepare preliminary techno-commercial proposals for Customers, and
12. Communicate professionally and act responsibly with Customers and Suppliers/ Sub-contractors.

Training Structure

Course Name : National Certification Programme for Rooftop Solar Photovoltaic Installer

Sector : Renewable Energy

Specific Segment : Rooftop Solar Photovoltaics (PV)

Type of Course : (Vocational) Installer Certification

Total Hours : 204 hours (consisting of 96 theory hours + 108 practical hours)

Course Duration : 3 months (12 weeks)

Course Syllabus

Introductory

• Global and Indian Energy Scenario • Types of solar technologies and applications • Basics of electricity
• Overview of types of PV systems and components

PV System Concepts and Components

• Solar resources, radiation and optimization • PV Modules • Module mounting structures • Charge controllers
• PV Inverters • Batteries • Transformers • DC and junction boxes • Cables and connectors • Lightening, surge, faults, earthing and protection

PV System Design

• Load calculation and analysis • Site selection and shadow analysis • PV system designing • Preparation of drawings for rooftop PV systems

Advance Topics

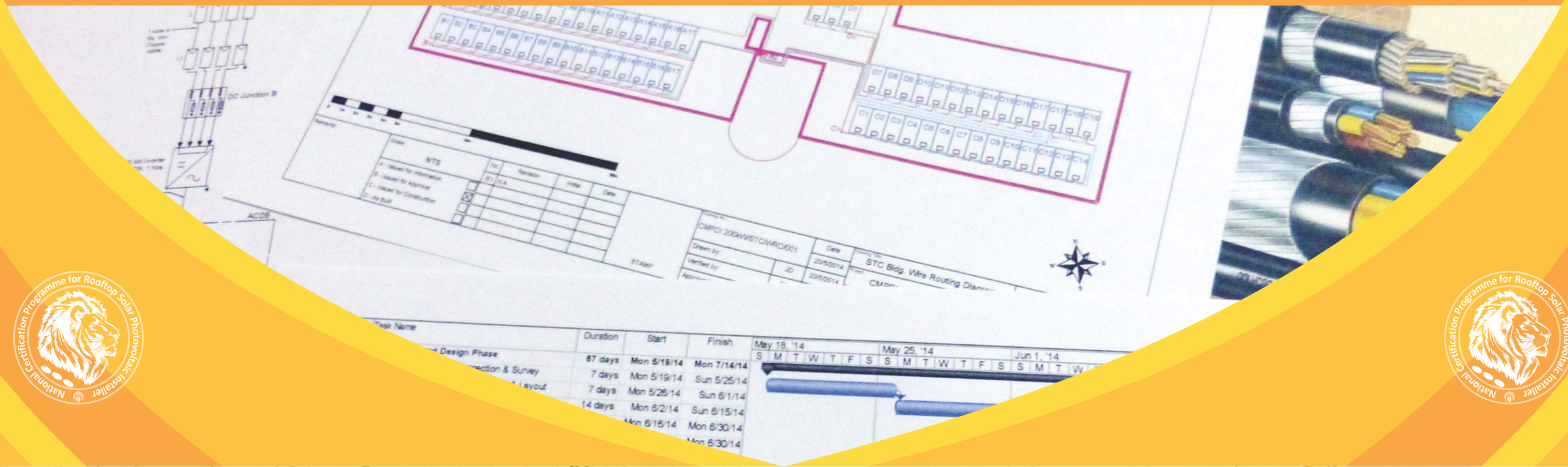
• PV system monitoring • Standards and certification for PV components and systems • Marking and labelling components • Operation and maintenance (O&M) • Troubleshooting PV systems

Safety and Soft Skills

• General and specific safety and tools • Specific safety for PV systems • Responsibility and professionalism
• Professional communication

Administrative and Management

• General administrative processes for electrical installations • Procedures, permissions and approvals for rooftop PV systems • Project execution plan and resource allocation • Finishing a rooftop PV project • Understanding financial payback, energy payback, carbon calculations • Metering, interconnection and commissioning
• Preparation of financial proposal for Customer



Partner with Us

Become an Authorized Training Centre

Technicians under the National Certification Programme for Rooftop Solar Photovoltaic Installer are only trained and certified through Authorized Training Centres (ATC) in order to ensure overall quality of content, delivery and learning. It is through our ATCs that the vision and objectives of this overall Certification Programme can be achieved.

Why become an Authorized Training Centre?

- Achieve a jumpstart in launching training in a promising and upcoming sector using readily available support.
- Receive constant handholding support provided in terms of technical content with regular upgradation, setting up training infrastructure to train and certify the trainers, taking examinations and incorporating feedbacks.
- Derive credibility through the Certified Programme from its partners including private, public and government sectors as well as the overall training network.
- Conduct the Certification Programme with complete freedom in terms of fees, timings, etc. (after meeting the minimum compliance criteria).
- Train and certify technicians relevant to the industry's requirements.

Who can become an Authorized Training Centre?

Any institute, old or new, with required resources (infrastructure and manpower) and commitment to excellence is welcome to become an ATC. The institute can be an already existing training centre, a university or a college, an industrial training institute (ITI), a solar company wishing to set up value-added in-house training, and so on.

Programme Process Flow for Authorized Training Centre

Institute intending to become an **Authorized Training Centre (ATC)** will send its Expression of Interest (EoI) to **GERMI** as per the given format.

GERMI will provide the necessary compliance requirements to the **Institute.**

Institute will send its trainers to get trained and certified at **GERMI.**

Institute will establish the necessary training infrastructure as outlined by **GERMI.**

GERMI will inspect the **Institute's** establishment, and upon successful inspection, certify the **Institute** as an **Authorized Training Centre.**

ATC will develop its own training calendar and will market the **Certification Programme** to student trainees. Student trainees will apply directly to the **ATC.**

The **ATC** will scrutinize the application forms and admit trainees based upon…

1. Meeting the minimum eligibility criteria, and
2. **ATC's** own internal selection process, if any.

ATC will conduct the **Certification Programmes** based on the syllabus and content provided, and report the trainee's grades to **GERMI** on a regular basis.

GERMI will conduct the final examination, and after evaluation of all the grades of the trainees, **award the Installer Certification to the successful trainees.**

Becoming a Certified Trainer

Certified Trainers are the most critical link that will connect this Certification Programme's knowledge to the technicians. The Certified Trainer's job involves:

- Training the student technicians as per the syllabus and content of the Certification Programme, and
- Ensuring compliance of the Authorized Training Centre (ATC) with Certification Programme in terms of basic administrative processes, reporting, and so on.

Why become a Certified Trainer?

- Receive endorsement to undertake technician training not only at your own ATC, but also at other ATCs upon their request.
- Avail performance-based incentives based on successful trainee certification and trainee feedback.
- Enhance your own technical and management skills, and be regularly updated with advancements in the sector.
- Upgrade your professional career not only in training, but also in the direction of providing technical services as consultancy, third-party inspections and even entrepreneurship.

How to become a Certified Trainer?

For trainers/ teachers teaching at any institute/ organization, you can apply using "Apply using the ToT Workshop Registration Form". If your institute/ organization has applied to become an ATC or is already an ATC, then please submit the form to GERMI through them.

Individuals can apply within their personal capacity too using the ToT Workshop Registration Form. Once certified, they can train at ATCs.

Minimum Eligibility Criteria

The eligibility requirement for an individual to apply to become a Certified Trainer is any one of the following :

- Degree in electrical/ electronics/ instrumentation & control engineering or an equivalent engineering branch with 1 (one) year of experience; OR
- Diploma in electrical/ electronics/ instrumentation & control engineering or an equivalent engineering branch with 2 (two) years of experience; OR
- National Trade Certificate (NTC) or National Apprentice Certificate (NAC) in Electrical Trade Group with 2 (two) years of experience.

About GERMI

Gujarat Energy Research and Management Institute (GERMI) is a centre of excellence in Education, R&D and industry learning and has been set up to develop human resource assets to cater to the renewable as well as conventional energy sectors, improve knowledge base of policy-makers and technologists, and provide a competitive edge to leaders to compete in the global arena.

GERMI is a

- Not for profit Trust and Society, registered under the Bombay Public Trust Act, 1950, and Societies Registration Act, 1860, respectively.
- Scientific and Industrial Research Organization (SIRO) recognized by Department of Scientific and Industrial Research (DSIR), Govt. of India.
- Schedule-I Environmental Auditor recognized by the Gujarat Pollution Control Board (GPCB).
- Energy Auditor Consultant recognized by the Gujarat Energy Development Agency (GEDA).
- An ISO 9001:2008 organization, with the scope of
    - Research & development;
    - Advisory, management and technical services such as consultancy and third party inspection; and
    - Professional and vocational trainings; in the field of energy and energy-related areas such as petroleum, environment and renewable energy.
- An autonomous body promoted by Gujarat State Petroleum Corporation (GSPC) Ltd., a Govt. of Gujarat undertaking.

GERMI's Solar Activities

- Fundamental research on materials (like graphene, indium gallium nitride, etc.) and allied device structures to attain high-efficiency commercial solar cells.
- Applied research based on performance of establishing solar PV projects, micro-grids, solar PV & solar thermal applications, performance, etc.
- Development of solar policy, regulation, transaction structures and business models.
- 100+ MW of solar PV project advisory, feasibility and detailed project report, bid-process coordination, project management consultancy for public sector and private companies.
- 20+ MW of rooftop solar third-party inspections and audits.
- **Integral part of pioneering projects like**
    - Asia's largest Solar Park at Charanka in Gujarat (now replicated all over India),
    - World's first canal-top solar project and its replication (received PM Award, now replicated all over India), and
    - 5 MW Gandhinagar Rooftop Solar Programme (top-10 PPP of Asia-Pacific by Infrastructure Journal, Earth Care Award, replicated in various cities of India).
- Trained 550+ Solar Professionals through Solar Power Workshops all over India.
- Established ITI-level solar PV course curriculum, trained trainers and established infrastructures in 6 ITIs.