VISHAKHA®

**Date:** 20th August 2024

**To,**
Md. Israfil
Scientist-D/Joint Director
Bureau of Indian Standards (BIS)
9 Bahadur Shah Zafar Marg,
New Delhi-110002, India

**Subject: Authorization of Mr. Rajiv Raval to Represent Vishakha in the Technical Committee of the Bureau of Indian Standards (BIS) - ETD C 28**

Dear Sir,

Greetings from Vishakha Group.
We hope this message finds you well.

We are writing to formally authorize Mr. Rajiv Raval, Vice President, to represent Vishakha Group as a member of the Technical Committee of the Bureau of Indian Standards (BIS) - ETD C 28. Mr. Rajiv Raval is a key member of our team with extensive expertise in the manufacturing sector. We are confident that his participation will be valuable to the ongoing discussions and initiatives within the committee.

Please consider this letter as an official authorization from Vishakha Group for Mr. Rajiv Raval's involvement in the committee's activities. We are prepared to provide any additional information or documentation you may require to complete this process.

Thank you for your attention to this matter. We look forward to continuing our collaboration with BIS to advance the quality standards in our industry.

**Regards,**

Mr. Jigish Doshi
Chairman & Managing Director (CMD)
Vishakha Group

Vishakha Group

Vishakha House, CH-9 Inspire Business Park,
Adani Shantigram, Near Vaishnodevi Circle,
Ahmedabad - 382421, Gujarat, India.

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E: info@vishakha.com
www.vishakha.com

**To,**

**Date: 09th Aug 2024**

**Md. Israfil**
**Scientist-D/Joint Director**

**Bureau of Indian Standards (BIS)**
**9 Bahadur Shah Zafar Marg, New Delhi-110002, India**

**Subject: Request for Participation in the Technical Committee of the Bureau of Indian Standards (BIS) of ETD C 28.**

Dear Sir,

Greetings from the Solar Ancillary Manufacturers Association (SAMA).

We trust you are doing well.

SAMA is an association made to represent solar ancillary manufacturers. Our members are engaged in manufacturing of solar glass, Solar Aluminium frames, Junction Box, Solar encapsulants, copper ribbon etc. Which are key raw material used in manufacturing solar panels.

On behalf of our association, we deeply appreciate the critical role that BIS plays in maintaining and enhancing quality standards across various industries in India. Your efforts are instrumental in fostering growth, safety, and reliability, particularly in the rapidly expanding renewable energy sector.

Currently, Solar Glass has IS Standard but other like Encapsulant, Back sheet, Anodizing of Aluminium frame has no IS Standard, these RM are very critical to guarantee life of panel/ longevity of panel. We **request your good office to standardize the above mentioned products, we would be glad to be a part of the technical committee ETD C 28 (Electro Technical Division Council) such that this can be done.**

We kindly request you to consider our (SAMA's) proposal. We are confident that our participation will not only benefit to our members but also this will provide support to BIS in achieving its mission of promoting standardization and quality assurance across the solar energy industry.

SAMA proposes Mr. Aajish Shah to represent us in the technical committee. We are prepared to provide any additional information or documentation required to facilitate it. Please let us know if there are specific procedures or criteria that we need to fulfil to move forward with this request.

Thank you for considering our request. We look forward to the opportunity to work closely with BIS and contribute to the advancement of quality standards in the solar ancillary manufacturing sector.

**Regards,**

Aajish Shah

SAMA



1101, Crescenzo, G-Block,
Opp. MCA Club,
Bandra Kurla Complex,
Bandra ( East), Mumbai - 400 051,
Maharashtra, India.

+91 22 6740 6334

**Praveen Krishnan**
#117 Behind Navadeep school, R T layout
Lakshmipura, Devasandra, K.R. Puram, Bangalore Karnataka, India 560036
Online- Personal Correspondence**:**
**Praveenmanju.shree@gmail.com** \ **Praveen240691@hotmail.com**
Phone: +91 8867495405
Date: 06-May-2024

## Personal Summary:

Dynamic and result-oriented professional with **10+ years of experience** in **Product Safety and Compliance Testing**. Providing esoteric support to team members on ensuring compliance with company's objectives and to collaborate well with all organizational levels. As a born leader comfortable of being in a position that carries with it a great deal of responsibility, and where I can make decisions that encourages the company's betterment.

## Experience:

Enphase Energy, a global leader in solar technology, entrusted me with the critical role of overseeing compliance activities throughout the product lifecycle, from design conception to testing, certification, and product launch across various geographical regions.

### *SENIOR COMPLIANCE ENGINEER*

2023 – Present

- Led compliance initiatives from the initial design phase, ensuring adherence to regulatory standards and industry specifications.
- Collaborated closely with cross-functional teams, including design, engineering, and manufacturing, to integrate compliance requirements seamlessly into product development processes.
- Conducted thorough assessments and audits to identify potential compliance issues and mitigate risks proactively.
- Managed the testing and certification process, liaising with external laboratories and regulatory agencies to obtain necessary approvals for Enphase products.
- Developed and maintained documentation, including compliance reports, test plans, and certification records, to demonstrate conformity with applicable regulations.
- Stayed abreast of evolving regulatory requirements and industry standards, providing guidance and recommendations to support Enphase's ongoing compliance efforts.
- Played a pivotal role in the successful launch of new solar products across diverse global markets, ensuring compliance with regional legal frameworks and market-specific requirements.

REACT Laboratories is an ISO/IEC 17025 accredited laboratory by the National Accreditation Board for Testing and Calibrating Laboratories (NABL) since 2014. And recognized by the Bureau of Indian Standards (BIS) since 2015 under its Laboratory Recognition Scheme (LRS). It is also designated as Conformity Assessment Bodies (CAB) By the Telecommunication Engineering Centre (TEC) Under the Department of Telecommunications (Dot), Ministry of Communications And IT, Government of India, for Testing Telecom Products Under the safety Requirements.

**TECHNICAL MANAGER – REACT LABORATORIES**
2020 – 2023

- Laboratory Business Operations
- Laboratory Development
- Technical Expert and solution handler for the enquiries related to products under regulatory requirements
- Prudent on Audit's and Accreditation activities with National and International Bodies.
- Correspondence with customers and suppliers
- Establishing management information system to get the feedback of all the activities such as equipment's calibrated, equipment's procured, etc.,
- Authorized signatory for approval and issue of all Test Reports.
- Extending technical information and training to the technical staff and identification of Training needs
- Review of customer requests, tenders and contracts
- Identifying and fulfilling the training needs for Test Engineers and Trainee Engineers.

**TECHNICAL REVIEWER – REACT LABORATORIES**
2015 – 2020

- Laboratory Development, In-house Testing & Generating Test Reports
- Establishing management information system to get the feedback of all the activities such as equipment's calibrated, equipment's procured, etc.,
- Extending technical information and training to the technical staff and identification of Training needs
- Reviewing Test Reports
- Authorized for supervision of Senior and trainee test engineers.

**SENIOR PRODUCT SAFETY TEST ENGINEER – REACT LABORATORIES**
2014 – 2015

- Laboratory Development, In-house Testing & Generating Test Reports
- Establishing management information system to get the feedback of all the activities such as equipment's calibrated, equipment's procured, etc.,

- Calibration and maintenance of test equipment with traceability records
- Evaluation of Measurement Uncertainty
- Extending technical information and training to the junior staff and identification of Training needs
- Following the management system and laid down Standard Operating Procedures
- Maintaining the Technical records pertaining to ISO / IEC 17025: 2017 standard
- Maintaining the standard publication and technical literatures
- Reviewing Test Reports
- Authorized for supervision of Test Engineers and trainee test engineers.

**PRODUCT SAFETY TEST ENGINEER – REACT LABORATORIES**
2013 – 2014

- In-house Testing
- Following the management system and laid down Standard Operating Procedures
- Maintaining measurement data sheets of tests and copy of calibration certificates for equipment
- Generating Test Reports
- Handling meticulously and maintaining good condition of all Test equipment's
- Evaluation of Measurement Uncertainty
- Maintaining the Technical records pertaining to ISO / IEC 17025: 2017 standard
- Housekeeping of the laboratory
- Maintaining the standard publication and technical literatures
- Authorized for supervision of trainee test engineers.

## IS/IEC Standard Core Competency:

- **IS 16221 (Part 1&2) IEC 62109-1& 2: Safety of Power Converters for use in Photovoltaic power systems – General Requirements and Particular Requirements**
- **IS 16169/IEC 62116: Utility-Interconnected Photovoltaic Inverters — Test Procedure of Islanding Prevention Measures**
- **IS/IEC 60529: Degrees of protection provided by enclosures (IP Code)**
- **Environmental Testing Standards: QM333, IS 9000 series, JSS 55555, IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-14, IEC 60068-2-30, IEC 60068-2-64**
- **IS/IEC 62368-1:2018 Audio /Video, Information and Communication Technology Equipment- Safety Requirements**
- **IS 16270: Secondary Cells and Batteries for Solar Photovoltaic Applications-General Requirements and Methods of Test**
- **IS 13252/IEC 60950-1-1: Information Technology Equipment – Safety Requirements**
- **IS 616/IEC60065: Audio, Video and Similar Electronic Apparatus - Safety Requirements**
- **IS 16242 (Part 1)/IEC62040-1: General and Safety Requirements for UPS**
- **IS 16046 (Part 1)/IEC 62133-1: Secondary Cells and Batteries containing Alkaline or other non-acid Electrolytes-Safety Requirements – Nickel Systems**
- **IS 16046 (Part 2)/IEC 62133-2: Secondary Cells and Batteries containing Alkaline or other non-acid Electrolytes-Safety Requirements – Lithium Systems**
- **IS 16047 (Part 3)/IEC 61960-3: Secondary Cells and Batteries containing Alkaline or other non-acid Electrolytes – Prismatic and cylindrical lithium secondary cells and batteries made from them**
- **IS 16333 (Pert 3): Mobile Phone Handsets – Indian Handset Language support for Mobile phone**
- **IEC 61010-1: Safety Requirements for Electrical Equipment for Measurement, Control, And Laboratory Use**
- **IEC 60601-1: Medical electrical equipment - Part 1: General requirements for basic safety and essential performance**
- **IS 302/IEC 60335: Safety of Household and similar electrical appliances - General requirements**
- **Immunity Standards: IEC61000-4-4 -EFT, IEC61000-4-5 -Surge, IEC61000-4-8, -4-11 - Voltage Dips and Interruptions, IEC61000-4-8 – PMFT & IEC61000-4-9 -Pulse PMFT**
- **Awareness on CISPR 11/EN 55011: Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement**
- **Awareness on CISPR 14 -1 / EN 55014-1 & 2: Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1 and Immunity**
- **Awareness on CISPR 32/EN 55032- Electromagnetic compatibility of multimedia equipment - Emission requirements**
- **BEE – Standards and Labeling Program: Schedule 11, 13, 17 etc.**

## Hands on-experience with Test equipment:

- **Grid Simulator**
- **PV Simulator**
- **Electronic Load Banks -Linear & Non-Linear**
- **Climatic Simulators – Rain, Dust, Heat, Cold and Damp**
- **Hi-pot & Surge testers**
- **ESD &PFM testers**
- **Leakage Testers & Oscilloscopes.**

## Skills:

- Management skills:
  - Good operational planning and time management skills; able to manage projects simultaneously without compromising on standards and quality
  - Excellent project management skills, including managing profitable delivery of professional services

- Problem-Solving:
  - Good problem solving and critical thinking, with good business acumen and a strong sense of value selling

- Interpersonal skills:
  - Ability to be creative under pressure with technical solutions and workflows.
  - Focused in National & International Regulatory compliance and Testing requirements. And fascinated in encountering the challenges.

- Leadership:
  - Ability to lead a team, be patient, be organized and pay attention to details with active Listening.

- Computer skills:
  - Strong computer skills, including proficiency in Microsoft Office and the ability to quickly learn proprietary software systems
  - Programming Languages: C, C++
  - Designing tools: "**Altium-PCB Designer, AUTO DESK, CATIA, HYPERMESH**".

## Education:

| Degree/ Examination | School/Institute | Year of Pass out | Board/University |
|---|---|---|---|
| **Bachelor's Degree in ELECTRICAL & ELECTRONICS** | **R.R. INSTITUTE OF TECHNOLOGY** | **2012-2013 (Academic Year)** | **Visvesvaraya Technological University, Karnataka, India** |

## Strengths:

- Strong working knowledge adaptable to testing environment.
- Keen to face challenging situations.
- Dedication in the work, quick grasping and adjustable to new Environments.
- Successful experience in Managing and Developing a Knowledgeable Testing team.

## Professional Developments:

- Confederated in the webinar organized by BIS on ***"This week That day' Compulsory Registration Scheme (CRS)" on 18 June 2021.***

- Extended my support to Technical Advisory Committee of ***Meity – Ministry of Electronics and Information Technology – Govt of India*** on 7th Oct 2020, For the process of formulating the Series Guidelines for products notified under Phase V of **"*Electronics and Information technology Goods (Requirement of Compulsory Registration) Order, 2012"*** covering 07 additional product categories to Schedule of Order vide Gazette Notification dated 01.10.2020.

- Presented myself on 22nd May 2018 on the ***Minutes of the Stakeholders Consultation meeting to deliberate on the implementation of products covered under Phase III of "Electronics and Information Technology Goods (Requirements for Compulsory Registration) Order, 2012.***

- Presented myself on 22nd Jan 2018 on the ***Minutes of the Stakeholders Consultation meeting to deliberate on the implementation for products covered under Phase III of "Electronics and Information Technology Goods (Requirements for Compulsory Registration) Order, 2012.***

- Active involvement in the discussion held by Telecom Engineering Centre, Department of Telecom, on the ***Mandatory Testing Consultative Forum (MATCOF) of IT Division.***

## Personal Details:

| | |
|---|---|
| Father name | : Krishnan. S |
| Date of Birth | : 10-11-1991 |
| Gender | : Male |
| Nationality | : Indian |
| Marital Status | : Married |
| Passport Validity | : 07-07-2029 |
| Interested to Relocate | : Yes |

## Language Skills:

- English (Fluent), Hindi (Intermediate), Kannada (Fluent), Tamil (Native), Telugu (Conversational).

## Declaration:

I hereby declare that the abovementioned information about me is true and correct to the best of my knowledge and belief.

Place: Bangalore, Karnataka, India

Praveen Krishnan

ENPHASE.

To,
The Director,
Bureau of Indian Standards
(Central Mark Department-3
Room No. 557, 5th Floor,
Manakalaya Building,
9, Bahadur Shah Zafar Marg,
New Delhi-110002 (India)

**Subject:** Authorization for **Mr. Praveen Krishnan** to sign all the documents.

Dear Sir/Madam,

I, **Mr. Sunil Thamaran,** Managing Director of M/s Enphase Solar Energy Private Limited having its registered office address at 'Indiqube golf view homes', ward no. 73 Airport, NAL Wind Tunnel Road, Murugeshpalya, Bengaluru, Karnataka 560017, India. hereby authorize Mr. Praveen Krishnan would act on my/our behalf in all manners solely relating to Bureau of Indian Standards (BIS) product Registration Scheme – Whereas Govt. Of India, Department of electronics and IT (DeitY) has issued the "Electronics and Information Technology Goods (Requirements for Compulsory Registration) Order, 2012", including signing of all documents relating to these matters.

Any and all acts carried out by **Mr. Praveen Krishnan** on my/our behalf in relation to the BIS product Registration Scheme shall have the same effect as acts of my/our own.

This authorization is valid until further written notice from: **Mr. Sunil Thamaran**
Thanks & Regards,

| | | |
|---|---|---|
| Specimen Signature of Authority Holder(s) | : | |
| Name of Authority Holder | : | Mr. Praveen Krishnan<br>Sr. Compliance Engineer |
| Mailing Address | : | prkrishnan@enphaseenergy.com<br>'Indiqube golf view homes', ward no. 73 Airport, NAL Wind Tunnel road, Murugeshpalya, Bengaluru, Karnataka 560017 India |

ENPHASE SOLAR ENERGY PRIVATE LIMITED ★ BANGALORE

Sincerely,
Mr. Sunil Thamaran,
Managing Director
Enphase Solar Energy Private Limited

# Richie Brian Stephen


**Address:** 2-K, Church Compound, Sukhdev Vihar, New Delhi - 110025, India
**E-mail:** richie.stephen@gmail.com
**Phone:** +91-9891707492
**LinkedIn:** www.linkedin.com/in/richie-stephen/


I have worked in various laboratories for more than 10 years as Quality Manager, Technical Manager and Laboratory In-charge. I have vast experience of Testing and Certification of Solar PV, Water Pump, Battery and Lighting systems as per IEC, ISO and BIS standards. I have actively worked on projects related to Sustainable Development, Rural Electrification, Capacity Building and Data Analysis.

## Skills:

• Renewable Energy • Solar Photovoltaic Energy • Photometry • Rotating Machines • Capacity Building

• Sustainable Development • Quality Management System • Data Analysis • Rural Electrification

## Educational Qualifications

| | |
|---|---|
| 2010 - 2013 | M.Tech. (Energy and Environmental Management), Indian Institute of Technology (IIT) Delhi, GPA – 7.4 |
| 2004 - 2008 | B.Tech. (Computer Science & Engineering), IEC College of Engineering. and Technology, affiliated to U.P. Tech. Univ., 1st Division – 63.5% |
| 2003 - 2004 | Senior Secondary School Examination, St. Columba's School (C.B.S.E. Board), New Delhi, 1st Division – 69.5% |

## Professional Experience

| | |
|---|---|
| Jan 2023 - Present | Senior Standards Specialist, UL Standards & Engagement, UL India Pvt. Ltd. |
| Sep 2021 – Jan 2023 | Technical Manager & Head-R&D, Maxop Research and Testing Institute (MRT), Gurugram |
| Aug 2019 - Aug 2021 | Fellow & Quality Manager, The Energy and Resources Institute (TERI), New Delhi |
| Sep 2017 - Aug 2019 | Associate Fellow & Quality Manager, TERI, New Delhi |
| Dec 2012 - Aug 2017 | Research Associate & Quality Manager, TERI, New Delhi |
| Feb 2010 - Nov 2012 | Project Fellow, National Institute of Solar Energy (NISE), Gurugram |

## Membership of Professional Societies

- Member, ETD-28 (Solar Photovoltaic Systems), Bureau of Indian Standards
- Member, ETD-50 (LVDC Distribution Systems), Bureau of Indian Standards

- Delegate member, TC-82 (Solar photovoltaic energy systems), International Electrotechnical Commission

## Certifications

- Certification training on ISO/IEC 17025:2017 (Titled: General requirements for the competence of testing and calibration laboratories) from National Institute of Training for Standardization, Bureau of Indian Standards (NITS, BIS), Jun 2019
- Online training on Standard Operating Procedure for Installation of SPV Plant conducted by Skill Council for Green Jobs, Oct 2021
- Online course on Solar Water Pumping and PM-KUSUM Yojana, Jul 2021

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## Computer Expertise

- Simulation Tools: PVsyst, AutoCAD, ECOTECT, Google SketchUp, TRNSYS, LabView
- Office Applications: MS Office, Adobe Photoshop, Dreamweaver, MS Visual Studio
- Programming Languages: Python, C++, Java, HTML, CSS, PHP

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## Projects Undertaken

I am currently working as the Senior Standards Specialist at the UL Standards & Engagement to work with stakeholders to develop and publish consensus standards that help guide the safety, performance, and sustainability of new and evolving products, technologies, and services that range from household appliances, smoke alarms, and batteries to building materials, cybersecurity, and autonomous vehicles.

- Worked as Technical Manager and Head-R&D at the Maxop Research and Testing Institute, (NABL accredited for ISO 17025:2017), for the testing and certification of Solar Water Pumping Systems as per IEC 62253:2011 and MNRE guidelines.
- Worked as Quality Manager and Lab in-charge at the TERI's Solar Lighting Laboratory, (NABL accredited lab) since August 2014, for the testing and certification of Off-grid Solar Lighting System as per IEC 62257 series standards and MNRE guidelines.
- Worked as team member on 'Concurrent Monitoring & Evaluation/Impact Assessment of Central Sector Scheme on Promotion of Agricultural Mechanization for In-situ Management of Crop Residue in the States of Punjab, Haryana, Uttar Pradesh and NCT of Delhi' for Ministry of Agriculture & Farmers Welfare, Govt. of India.
- Worked as team member on 'Market Assessment for Re-powering of Utility Scale Solar PV and Wind Projects in India' for The International Finance Corporation (IFC).
- Worked as Project Co-Principal Investigator on the project titled 'Testing and performance assessment of thin-film (CdTe) solar modules for various applications' for First Solar India.
- Worked as team member on the project titled 'Testing and long-term performance evaluation of SPV lighting systems' for TERI and Ministry of New and Renewable Energy, Govt. of India
- Worked as team member on the preparation of DPR for 'Developing Quality Infrastructure in Photovoltaics' for NISE, Gurugram.
- Worked as team member on the project titled 'Pilot Study on Portable PV for lighting in Rural Areas in India' for TERI and Nippon Electric Company (NEC), Japan
- Worked as team member on 'Develop a recycling plan for solar PV module and new battery technology used in micro-grids applications' for Norwegian Ministry of Foreign Affairs

- Worked as team member on 'Simulation based comparative Study of various Solar Photovoltaic (SPC) Technologies' for Defence Research and Development Organization (DRDO), Govt. of India.
- Worked as team member on 'Conducting Market Assessment of Power Roll in the Indian and South Eastern Asia markets' for Big Solar Limited, UK.
- Conducted 4-days training programme on 'Institutional Development for Energy in Afghanistan (IDEA)' for TERI and IT Power Technical Solutions.
- Worked as Project Principal Investigator for two training programs on 'Solar Photovoltaic and its Application' for Ministry of Railways, Govt. of India.
- Worked as a Trainer and Supervisor on 'Surya-Mitra Skill Development Training Programme' for National Institute of Solar Energy (NISE), Ministry of New and Renewable Energy, Govt. of India.
- Organized 2-days workshop on 'Appropriate Battery Technologies for Small Scale Solar Applications' for various battery manufacturer and entrepreneur.
- Worked as team member on the project titled 'Development of Web-GIS Tool for estimating the Rooftop Solar Power potential for Indian Solar Cities' for TERI and Shakti Sustainable Energy Foundation, India
- Worked as team member on the project titled 'Management Information System for State Plan Outlays, Resources and Expenditure Management' developed at NIC Unit, Planning Commission, Government of India

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## Publications:

- 'Degradation Analysis of Different PV Modules after Prolonged Field Operation', 26th European Photovoltaic Solar Energy Conference and Exhibition, September 2011
- 'Degradation in Performance Ratio and Yields of Exposed Modules under Arid Conditions', 26th European Photovoltaic Solar Energy Conference and Exhibition, September 2011.
- 'Comparative Performance Assessment of Different Battery Technologies Used for Solar Lighting Applications', IEEE International Conference on Renewable Energy and Sustainable Energy, December 2013
- 'Laboratory Testing and Long-Term Performance Assessment of various Solar Lighting Systems', 40th IEEE Photovoltaic Specialists Conference, June 2014
- 'Comparative Performance Assessment of different Solar PV Module Technologies', International Journal of Innovations in Engineering and Technology (IJIET), Volume 5 Issue 1 February 2015, pp. 230-235
- 'A Study of Absorption Correction in Lighting Products by an Integrating Sphere', Lux Pacifica, International Conference on Green Lighting, November 2015, pp. 548-552

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I, the undersigned, certify that to the best of my knowledge and belief, these data correctly describe me, my qualifications and my experience.

**Richie B. Stephen**

REGISTRAR

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SARDAR PATEL ROAD, CHENNAI - 600 025.
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Fax : +91 - 44 - 2235 1956
E-mail : registrar@annauniv.edu

## TO WHOMSOEVER IT MAY CONERN

This is to certify that the application of Dr. C. Sharmeela, Professor, Department of Electrical and Electronics Engineering, College of Engineering, Guindy Campus, Anna University to participate and contribute to the BIS working groups may be considered. She is applying for the following BIS Technical Committees:

| Technical Department | Technical Committee |
|---|---|
| Electro Technical Department | Solar Photovoltaic and Energy Systems (ETD 28) |
| Electro Technical Department | Wind Turbines (ETD 42) |
| Electro Technical Department | Grid Integration of Renewables (ETD 46) |
| Electro Technical Department | Electro Technology in Mobility (ETD 51) |
| Electro Technical Department | Electrical Energy Storage Systems (ETD 52) |

Dr. C. Sharmeela handled the subjects (Renewable Energy Technology, Grid Integration of Renewable Energy, Electric Vehicle Charging Infrastructure, Energy Efficient Buildings, Waste to Energy and Energy Storage Technologies) to Master Students at Anna University. She is also currently doing research and development in the above fields.

She is a Fellow in Institution of Engineers (IE), India, Senior Member of IEEE and Working Group Member in the IEEE P1729 - Recommended Practice for Electric Power Distribution System Analysis standards and various other IEEE working groups.

REGISTRAR
ANNA UNIVERSITY
CHENNAI-600 025.

एमएसएमई परीक्षण केंद्र
सूक्ष्म, लघु और मध्यम उद्यम मंत्रालय
भारत सरकार
65/1, जीएसटी रोड, गिंडी, चेन्नई - 600032

**MSME TESTING CENTRE**
Ministry of Micro, Small & Medium Enterprises
Government of India
No. 65/1, GST Road, Guindy, Chennai - 600032

No. MSMETC/PAD/JD/2022-23 Date : 19.09.2022

# To Whomsoever It May Concern

This is to certify that, Shri. S.Dharmaselvan, Presently working as Joint Director, MSME Testing Station, Puducherry, has worked in various positions in this organization and other Government Departments as follows. This experience certificate is issued on his request to submit to NABL.

| S. No. | Employer detail | Period (with dates) | Position held |
|---|---|---|---|
| 1. | MSME Testing Station, Puducherry | From 27.01.2021 To Till Date | Joint Director |
| 2. | MSME Development Institute (MSME DI), Chennai | 19.09.2018 to 26.01.2021 | Deputy Director |
| 3. | MSME DI, Mumbai | 29.12.2016 to 19.09.2018 | Deputy Director |
| 4. | MSME Testing Centre (MSMETC), Chennai | 1.4.2007 to 22.12.2016 | Deputy Director |
| 5. | MSME DI, (Formerly Small Industries Service Institute - SISI), Imphal | 12.10.2004 to 29.3.2004 | Deputy Director |
| 6. | MSMETC (Formerly Regional Testing Centre ), Chennai | 1.4.2001 to 27.9.2004 | Asst. Director |
| 7. | MSMEDI (Formerly SISI), Chennai | 11.05.1999 to 31.3.2001 | Asst. Director |
| 8. | Aryabhat Polytechnic, D/o D.T.T.E, Delhi | 20.3.1996 to 11.05.1999 | Lecturer |
| 9. | Central Workshops, Golden Rock, Southern Railway | 17.3.1986 to 18.3.1996 | Various capacity |

Yours sincerely

(V.Govindaraj)
Joint Director / HOO
MSME Testing Centre,
Chennai

**Telephone:** 044 – 22500284 / 22500634 **E-Mail:** dctc-sr@dcmsme.gov.in

SELF DECLARATION

This is to declare that, I Shri. S.Dharmaselvan, Presently working as Joint Director, MSMETS, Puducherry, has worked in various positions in this present organization under M/o MSME and other Government Departments as follows.

| S. No. | Employer detail | Period (with dates) | Position held | Major responsibilities | Experience related to Accreditation of CAB |
|---|---|---|---|---|---|
| 1. | MSME Testing Station | From 27.01.2021<br>To Till Date | Joint Director | Administrative In-charge | HOO for MSME Testing Station |
| 2. | MSME Development Institute(MSMEDI) (Addl. Charge MSMETC Chennai) | 19.09.2018 to 26.01.2021 | Deputy Director | Technical support to MSMEs & (Authorized Signatory) | Electrical, Electronics & Related (Electro Technical calibration & Electrical Testing) |
| 3. | MSME DI, Mumbai | 29.12.2016 to 19.09.2018 | Deputy Director | Technical support to MSMEs | Electrical, Electronics & Related |
| 4. | MSME Testing Centre (MSMETC), Chennai | 1.4.2007 to 22.12.2016 | Deputy Director | Authorized Signatory | Electro Technical calibration & Electrical Testing |
| 5. | MSME DI, (Formerly SISI), Imphal | 12.10.2004 to 29.3.2007 | Deputy Director | Technical support to MSMEs | Electrical, Electronics & Related |
| 6. | Regional Testing Centre (Presently MSMETC), Chennai | 1.4.2001 to 27.9.2004 | Asst. Director | Authorized Signatory | Electro Technical calibration, Thermal Calibration & Electrical Testing |
| 7. | Small Industries Service Institute (SISI), Chennai | 11.05.1999 to 31.3.2001 | Asst. Director | Technical support to MSMEs | Electrical, Electronics & Related |
| 8. | D.T.T.E, Delhi | 20.3.1996 to 11.05.1999 | Lecturer | In charge for switch gear & Protection and Machines Lab | Testing & Evaluation |
| 9. | Southern Railway | 17.3.1986 to 18.3.1996 | Various capacity | Modernization and Diesel Electric Locomotive | Testing & Evaluation |

S.Dharmaselvan

**Sivaraman P**

Email Id: sivaramanp@ieee.org

Contact No: +919738440833

LinkedIn Profile: https://www.linkedin.com/in/sivaraman-p-smieee-peng-india-53347b99/

**Power system engineer with around 10 of industrial experience in power system studies and grid code compliance for renewable energy systems.**

Skill Summary

- Power system studies and grid code compliance studies such as load flow analysis, power factor compensation studies, short circuit analysis, harmonic analysis, relay coordination, arc flash analysis, and dynamic analysis for renewable power plants including DERs & EV charging infrastructure
- Design and detail engineering of Solar PV system: rooftop system, ground-mounted system, and floating system
- Microgrids, hybrid systems and large-scale battery energy storage system
- Equipment sizing such as solar PV modules, solar inverters, cable sizing, bus duct sizing, electrical panel sizing, DG sizing, transformer sizing, CT & PT sizing, switchgear sizing, and UPS system sizing
- Power quality audits, Harmonic studies, and Harmonic filter sizing
- Techno-commercial solutions including solar microinverters for the location with higher shading effects
- Proposals and strategic roadmap preparation
- Data collection and requirements from site
- Knowledge of national and international codes/standards and policies
- Working group member of IEEE standards and taskforce, national study committee member of CIGRE
- Organized events for renewable energy, energy storage system and electric vehicle
- Others: published technical findings in articles/books/book chapters; trained more than 500 working professionals, research engineers, students in renewable energy and power systems

## Academic Qualifications:

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|---|---|
| Institution | Anna University, Chennai |
| Qualification | PhD in part time (pursuing) |
| Year of Graduation | 2022 onwards |

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|---|---|
| Institution | Anna University, Chennai |
| Qualification | Master of Engineering in Power Systems Engineering |
| Year of Graduation | 2014 |

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|---|---|
| Institution | Anna University, Chennai |
| Qualification | Bachelor of Engineering in Electrical and Electronics Engineering |
| Year of Graduation | 2012 |

## Professional Membership:

- Senior Member of Institute of Electrical and Electronics Engineers (IEEE) (Mem. No: 96339095)
- Member of International Council on Large Electric Systems (CIGRE) (Mem. No: 620210003)
- Associate Member of Institution of Engineers (India) (Mem. No: AM1914845)

## Professional Engineer Certification:

- Received Professional Engineer (India) certification from Institution of Engineers India. Certificate no: 7005372, Valid up to Feb 2027

## Standards Association and Study committees:

He has been involved in the following IEEE standards and taskforce working group's

- IEEE P2800.2 – Recommended Practice for Test and Verification Procedures for Inverter Based Resources (IBRs) Interconnecting with Bulk Power Systems
- IEEE P2844 – Recommended Practice for Limiting Voltage Imbalance in Electric Power Systems
- IEEE P2418.5 – Standard for Blockchain in Energy
- IEEE P1854 – Guide for Smart Distribution Applications

- IEEE P3001.9 – Recommended Practice for the Design of Power Systems Supplying Lighting Systems in Commercial and Industrial Facilities
- IEEE taskforce on Energy Storage

**Publications:**

Google scholar link:

https://scholar.google.com/citations?user=XLdd0mgAAAAJ&hl=en

Authored the following books,

- **P. Sivaraman**, C. Sharmeela, P. Sanjeevikumar, **"Fast Charging Infrastructure for Electric and Hybrid Electric Vehicles: Methods for Large Scale Penetration into Electric Distribution Networks"**, Wiley-IEEE Press. ISBN: 978-1119987741.
- **P. Sivaraman**, C. Sharmeela, A. Thaiyal Nayagi and R. Mahendran, **"Basic Electrical and Instrumentation Engineering"**, Scrivener-John Wiley publication, 2020. ISBN: 978-1119764465.

Edited the following books,

- P. Sanjeevikumar, C. Sharmeela, **P. Sivaraman**, **"Power System Operation with 100% of Renewable Energy Resources"**, Academic Press (Elsevier publication), (in progress).
- P. Sanjeevikumar, **P. Sivaraman**, C. Sharmeela and Jens Bo Holm-Nielsen, **"Artificial Intelligent based Smart Power Systems"**, Wiley-IEEE Press, 2022. ISBN: 9781119893967.
- P. Sanjeevikumar, C. Sharmeela, Jens Bo Holm-Nielsen and **P. Sivaraman**, **"Power Quality in Modern Power Systems"**, Academic Press (Elsevier publication), 2020. ISBN: 9780128233467.
- C. Sharmeela, **P. Sivaraman**, P. Sanjeevikumar and Jens Bo Holm-Nielsen, **"Microgrid technologies"**, Scrivener-John Wiley publication, 2021. ISBN: 978-1119710790.
- P. Sanjeevikumar, C. Sharmeela, **P. Sivaraman** and Jens Bo Holm-Nielsen, **"Residential Microgrids and Rural Electrification"**, Academic Press (Elsevier publication), 2021. ISBN: 9780323901772.
- **P. Sivaraman,** C. Sharmeela, Meera K. Joseph and P. Sanjeevikumar, **"IoT, Machine learning and Blockchain Technologies for Renewable Energy and**

**Modern Hybrid Power Systems"** River publication, 2022. ISBN: 9788770227247.

Authored/co-authored the following book chapters,

- **P. Sivaraman** and C. Sharmeela, **Power Quality Problems Associated with Electric Vehicle Charging Infrastructure**, in P. Sanjeevikumar, C. Sharmeela, Jens Bo Holm-Nielsen and P. Sivaraman, Power Quality in Modern Power Systems, Academic Press (Elsevier), pp.151-161, United Kingdom, 2020.
- **P. Sivaraman** and C. Sharmeela, **Power System Harmonics**, in P. Sanjeevikumar, C. Sharmeela, Jens Bo Holm-Nielsen and P. Sivaraman, Power Quality in Modern Power Systems, Academic Press (Elsevier), pp.61-103, United Kingdom, 2020.
- **P. Sivaraman** and C. Sharmeela, **Power Quality and its Characteristics**, in P. Sanjeevikumar, C. Sharmeela, Jens Bo Holm-Nielsen and P. Sivaraman, Power Quality in Modern Power Systems, Academic Press (Elsevier), pp.1-60, United Kingdom, 2020.
- **P. Sivaraman**, C. Sharmeela and S. Elango, **Load Flow Analysis for Micro Grid**, in C. Sharmeela, P. Sivaraman, P. Sanjeevikumar and Jens Bo Holm-Nielsen, Power Quality in Modern Power Systems, John Wiley & Sons and Scrivener Publishing LLC, pp.177-195, United States of America, 2021.
- **P. Sivaraman** and C. Sharmeela, **"IoT based Battery Management System for Hybrid Electric Vehicle",** Artificial Intelligent Techniques for Electric and Hybrid Electric Vehicles, Scrivener-John Wiley publication, 2020.
- **P. Sivaraman** and C. Sharmeela, **"Existing issues associated with electric distribution system"**, New solutions and technologies in electrical distribution networks, IGI global publication, 2019.
- **P. Sivaraman** and C. Sharmeela, **"Introduction to electric distribution system"**, New solutions and technologies in electrical distribution networks, IGI global publication, 2019.
- **P. Sivaraman** and C. Sharmeela, **"Solar Micro-Inverter"**, Handbool of research on recent developments in electrical and mechanical engineering, IGI global publication, 2019.

- **P. Sivaraman**, C. Sharmeela, and S. Logeshkumar **"Charging Infrastructure Layout and Planning for Plug-in-Electric Vehicles",** Cable Based and Wireless Charging Systems for Electric Vehicles: Technology, Control, Management & Grid Integration, IET, 2021.
- R. Zahira, D. Lakshmi, G. Ezhilarasi, **Sivaraman P,** C N Ravi and C Sharmeela, "**Standalone Microgrid concept for Rural Electrification**" in P. Sanjeevikumar, C. Sharmeela, P. Sivaraman and Jens Bo Holm-Nielsen, "Residential Microgrids and Rural Electrification", Academic Press (Elsevier publication), 2021.

Conference: He has presented the research papers in the following conference

- C. Sharmeela, **P. Sivaraman** and S. Balaji, **"Design of Hybrid DC mini-grid for educational institution"**, 4th International Conference and Exhibition on Smart Grid and Smart Cities ISGW2018 organized by Indian Smart Grid Forum
- **P. Sivaraman** and C. Sharmeela, **"Power quality assessment for rooftop solar PV system: case study"**, GRIDTECH 2019, CIGRE, April 2019
- **P. Sivaraman**, C. Sharmeela and D. P. Kothari, **"Enhancing the Voltage Profile in Distribution System with 40GW of Solar PV rooftop in Indian Grid by 2022: a review"**, 1st International Conference on Large Scale Grid Integration of Renewable Energy in India, September 2017

**Training program:**

Invited Talks:

- Delivering the lecture on the title of **"Challenges of Solar PV Integration into Distribution System"** to research engineers of Council on Energy, Environment and Water (CEEW), New Delhi, India. Date: 29.09.2017
- Training program on the title of **"Hands-on training in symmetrical fault analysis using ETAP / MATLAB"**, College of Engineering, Guindy, Anna University, Chennai, India. Date: 30.05.2019
- Training session on the title of **"Power Quality Monitoring"** to the professional engineers of GE T&D India Limited, Hosur, Tamilnadu, India. Date: 29.08.2017

Training Attended:

- Training program on **"Storing energy for a sustainable future"** organized by The Institution of Engineers (India) held at Clarion Hotel President, Chennai, India. Date: 07/09/2019 to 09/09/2019
- UGC sponsored training on **"Solar photovoltaic systems"** held at Institute of energy studies, Anna University, Chennai, India. Date: 26/02/2014 to 01/03/2014
- Training program on **"Optimization algorithms in Power system engineering"** held at Sri Krishna College of Technology, Coimbatore, India. Date: 11/03/2013
- TEQIP-II sponsored training program on **"Optimization Techniques in Electrical power system"** held at Government College of Engineering, Bargur, India. Date: 04/12/2013 to 10/12/2013
- Training program on **"Implementation of software tools in Power Electronics and Power systems based projects"** held at Vivekanandha College of Engineering for Women, Tiruchengode, India. Date: 06/09/2013 to 07/09/2013

**Software and Hardware skills:**

Software skills:

- PSS/E
- DIGSILENT POWER FACTORY
- ETAP
- PSCAD
- MATLAB
- PVSyst

Hardware or equipment's skills:

- Power Quality Analyzers: Dranetz, Elspec, Fluke and Hioki
- Thermal Imagers: Fluke and Flir
- HIL: OPAL-RT

**Positions held, duties and responsibilities:**

Work Experience - 1

Organisation : **Schneider Electric Solar India Pvt Ltd**
Designation : Power Plant Control Engineer
Period : 14/08/2023 onwards

Conducting the power system studies and grid code compliance studies such as load flow, power factor compensation studies, short circuit, harmonics, and dynamic studies (LVRT, HVRT, Frequency control, Reference tests, reactive current (iq) studies) for solar power plants. Validation of simulation vs site test results.

Work Experience - 2

Organisation : **Vysus Consulting India Pvt Ltd**
Designation : Senior Power Systems Engineer
Period : 06/02/2023 – 11/08/2024

Conducting the power system studies and grid code compliance studies such as load flow, power factor compensation studies, short circuit, harmonics, and dynamic studies (LVRT, HVRT, Frequency control, Reference tests, reactive current (iq) studies) for renewable power plants.

Work Experience - 3

Organisation : **World Resources Institute (WRI) India**
Designation : Program Manager – EV charging Infrastructure
Period : 15/06/2022 to 31/01/2023

Conducting the grid impact analysis for distribution network due to large penetration of EV charging infrastructure including demand estimation, detailed power system studies such as load flow, power factor compensation studies, short circuit, protection & coordination, and harmonics analysis. Microgrids and renewable energy-powered EV charging stations.

Work Experience - 4

Organisation : **Vestas Technology R&D Pvt. Ltd, Chennai, India**
Designation : Assistant Lead Engineer
Period : 09/11/2020 to 14/06/2022

Conducting the power system studies and grid code compliance studies such as load flow, power factor compensation studies, short circuit, protection & coordination, arc flash, harmonics, and dynamic studies (LVRT, HVRT, Frequency control, Reference tests, reactive current (iq) studies) for wind power plants.

## Work Experience - 5

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|---|---|---|
| Organisation | : | **L&T Construction, Chennai, India** |
| Designation | : | Assistant Engineering Manager (Electrical) |
| Period | : | 19/12/2018 to 04/11/2020 |

Design and detail engineering of solar PV power plants (rooftop, ground-mounted, floating), microgrids and energy storage systems, conducting the power system studies & grid code such as load flow, short circuit, protection & coordination, and harmonic studies for solar power plants.

## Work Experience - 6

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|---|---|---|
| Organisation | : | **TECH Engineering Services, Chennai, India** |
| Designation | : | Sr. Engineer |
| Period | : | 03/09/2014 to 13/12/2018 |

Design and detail engineering of commercial and industrial power systems, rooftop solar PV systems, power quality studies, finding the root cause for troubleshooting problems, conducting the power system studies such as load flow, short circuit, protection & coordination, arc flash, and harmonics studies.