REPORT

TWO DAYS WORKSHOP ON

BUILDING INTEDRATED PHOTOVOLTAIC SYSTEM

In Association With

Sustainability & Energy Practitioners Association

CARES RENEWABLES

20th & 21st, Feb'25, 10:00 AM – 5:30 PM

Cares Center for Energy Studies, PSGR Krishnammal College for Women, Coimbatore

Overview – Building Integrated Photovoltaics (BIPV) Workshop

The BIPV Workshop was designed as a specialized training initiative focused on the integration of photovoltaic technology into building structures, bridging the gap between solar energy generation and sustainable architecture. As India moves towards net-zero energy buildings and energy-efficient urban planning, BIPV emerges as a transformative solution that combines functionality, aesthetics, and renewable energy generation.

This training program aimed to equip participants with the technical knowledge, design principles, financial viability, and policy frameworks essential for the successful implementation of BIPV solutions. The sessions covered critical aspects such as BIPV system design, thermal performance, grid connectivity, standards, cost-benefit analysis, and market potential, offering a holistic view of this innovative technology. The workshop also emphasized the challenges and opportunities in the BIPV sector, addressing aspects such as regulatory policies, industry adoption, and financing mechanisms.

Led by industry experts, policymakers, and a representative from EY, the training program ensured an interactive and insightful learning experience. This initiative aligns with India's renewable energy goals, supporting the broader mission of integrating solar technologies into mainstream infrastructure. It also forms part of SEPA's commitment to skill development and capacity building in emerging solar applications, contributing to a more sustainable and energy-efficient built environment.

This report encapsulates the key takeaways and insights from the two-day workshop, which witnessed active participation from industry professionals, academicians, researchers, and policymakers, collectively working towards the advancement of BIPV adoption in India.

The two-day workshop on Building Integrated Photovoltaics (BIPV) brought together industry experts, researchers, and professionals to explore the potential of integrating photovoltaic technology into building structures. The sessions covered technical advancements, policy frameworks, and real-world applications of BIPV, providing participants with practical knowledge and strategic insights to drive sustainable infrastructure development.

The training session on **"Building Integrated Photovoltaics (BIPV): Concepts, Classifications, and Implementation"** provided a comprehensive understanding of BIPV technology and its role in sustainable architecture. Participants explored the key aspects of BIPV, including its integration into building structures, various classifications based on location, functionality, and appearance, and its economic and environmental benefits. The session also covered business models, financial viability, and real-world case studies showcasing successful BIPV projects. Emphasis was placed on the potential of BIPV to

enhance energy efficiency, reduce carbon footprints, and contribute to the future of green building solutions.

ADVANCEMENTS AND INTEGRATION OF BUILDING INTEGRATED PHOTOVOLTAICS (BIPV) IN SUSTAINABLE ARCHITECTURE

The session provided an in-depth understanding of Building Integrated Photovoltaics (BIPV), covering key components, grid connectivity, and future innovations. Discussions emphasized the technical aspects of BIPV, including photovoltaic modules, inverters, mounting systems, and monitoring tools, highlighting their efficiency, durability, and compliance with building standards. The importance of seamless grid integration was explored, focusing on regulatory compliance, inspection procedures, and testing protocols to ensure safety and performance. Looking ahead, emerging trends such as advanced photovoltaic materials, smart building integration, and evolving market dynamics were examined, showcasing BIPV's growing role in sustainable architecture. Overall, the sessions reinforced BIPV's potential to drive energy-efficient building solutions, contributing to a greener and more resilient future.

OPTIMIZING THERMAL PERFORMANCE AND SAFETY IN BIPV SYSTEMS

The discussions covered critical aspects of BIPV systems, focusing on thermal effects and system design. Effective thermal management is essential for maintaining photovoltaic efficiency, minimizing heat build-up, and reducing cooling loads. Strategies such as material selection, ventilation, and thermal modeling play a key role in optimizing energy performance. Additionally, system design considerations, including capacity assessment, string designing, and safety measures, ensure the seamless integration and secure operation of BIPV in buildings. Emphasizing compliance with safety standards and risk mitigation strategies, the sessions highlighted the importance of a well-planned approach to enhance both efficiency and durability in BIPV applications.

POLICY FRAMEWORKS AND MAINTENANCE STRATEGIES FOR BIPV SYSTEMS

The discussions explored key aspects of policy and regulatory frameworks, as well as operations and maintenance (O&M) strategies for BIPV systems. A strong policy environment is essential for widespread BIPV adoption, with recommendations including streamlined approval processes, financial incentives, and standardized net metering regulations. Addressing regulatory challenges can enhance investor confidence and drive sustainability in urban development. On the operational front, structured maintenance schedules, proactive system monitoring, and timely repairs ensure long-term efficiency and reliability. Safety considerations and proper documentation further support the seamless integration and upkeep of BIPV systems, maximizing their impact on sustainable architecture.

SPEAKERS PROFILE

MOHAMMED SUBHAN KHAN

Associate Vice President – Strategy & Transactions, Ernst & Young LLP

Mohammed Subhan Khan is an energy and climate finance professional with over eight years of experience in energy transition, decarbonization, and sustainable finance. Currently serving as Associate Vice President at EY, he specializes in financial modeling, energy consulting, and ESG frameworks. His career spans key roles at PwC India and TERI, where he contributed to renewable energy projects, clean energy technologies, and policy advisory. With expertise in project management, due diligence, and business model innovation, he has played a crucial role in strategizing and executing sustainable energy initiatives in India and beyond.

Dr. Raguram Arjunan

President, SEPA | Founder & Managing Director, Cares Renewables

Dr. Raguram Arjunan is the President of SEPA and a visionary leader in the renewable energy and sustainability sector, with over a decade of experience in driving clean energy adoption and net-zero strategies. As the Founder & Managing Director of Cares Renewables, he has been instrumental in developing sustainable solutions and fostering industry-academic collaborations. He also serves as a Governing Council Member at SCGJ, contributing to policy development and workforce training in the green energy sector. With expertise in business development, finance, and research, he has played a key role in executing large-scale renewable energy projects. His commitment to innovation and capacity building continues to shape the future of clean energy in India.

Dr. Vivek

Managing Director, Green Turn Clean & Waste Energy Pvt. Ltd.

Dr. Vivek is a seasoned professional in clean energy technologies, specializing in waste-to-energy and solar solutions. With a strong background in engineering and renewable energy management, he has led numerous projects focusing on sustainable urban infrastructure. His expertise includes system design, grid integration, and policy frameworks for renewable energy deployment.

Dr. Vidhya

Associate Professor

Dr. Vidhya brings an academic perspective to renewable energy and building-integrated photovoltaics. With extensive research experience in energy-efficient building materials, she has contributed to multiple studies on BIPV performance, thermal regulation, and energy optimization in urban infrastructure. Her expertise lies in bridging the gap between academia and industry, ensuring that new advancements in photovoltaic technology are effectively translated into practical applications

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