



Solar Energy and its Applications



Due to the increasing interest in renewable energy, the demand of solar energy is expected an unprecedented growth around the world. Since Sri Lanka is close to the equator, we (Sri Lankan) are experiencing relatively large solar energy potentials compared to many of other nations. Solar PV and thermal systems are currently being used for residential, commercial, and industrial applications. As the current global drive is towards replacing conventional energy sources with renewables due to environmental implications, therefore it is necessary to harness the maximum energy potential of solar irradiation to minimize the specific energy cost. Geographic location, climatic conditions, and system design affect the annual energy yield of a solar energy system. Proper sizing, design, and management is necessary to reap the expected environmental as well as social and economic benefits of solar energy usage. Thus, it is important for both industry stakeholders and researchers in this arena to understand the basics of solar energy applications, the conventional and emerging technologies, and the state-of-the-art research avenues for enhancing the performance of solar PV and thermal systems used in different applications. Even with the widespread use of solar energy, there is still a significant potential for improvement with regards to adapting solar systems to local conditions and applications while optimising system design and operations.

This workshop aims to provide the relevant knowledge on the solar resource and its potential estimation, solar PV and thermal technologies, system configurations and sizing, efficiency enhancement, economic and environmental impact assessment of solar systems, and future directions. The content will be useful to researchers, industry practitioners, and other stakeholders interested in clean energy technologies.

Speakers

Dr. Saliya Jayasekara

Senior Lecturer, Department of Mechanical Engineering, University of Moratuwa, Sri Lanka

Dr. Hirushie Karunathilake

Lecturer, Department of Mechanical Engineering, University of Moratuwa, Sri Lanka

Mr. Rachitha Muthukumarana

Chief Operating Officer, Alta Vision (Pvt) Ltd, Sri Lanka

Participation is

FREE
of charge!

Workshop Objectives

The goal of this workshop is to provide a holistic understanding of the solar energy resource, the basics of solar energy applications, the conventional and emerging technologies, and the avenues for enhancing the performance of solar PV and thermal systems used in different applications. At the conclusion of the workshop, it is expected that the participants will have gained the necessary knowledge and skills to assess the feasibility of implementing solar energy systems in different contexts, determine the suitable sizing and configuration of a system to serve a particular application, conduct a simple economic assessment, and explore the potential for improving the performance of a solar system. Moreover, this workshop aims to generate a nationally relevant discussion on the practical challenges and opportunities for the Sri Lankan solar industry. Upon completion of this workshop, the participants should be able to:

- 1) Explain the basics of solar energy, its geometric and other constraints, solar system types, and conventional and emerging technologies
- 2) Apply the knowledge to assess the solar resource potential in a given location
- 3) Determine the best system type, sizing, and configuration of a solar system for a simple application
- 4) Assess the economic performance of a simple solar system
- 5) Discuss the potential for improving the performance of solar energy systems and provide recommendations for the implementation of such systems

Workshop Programme

Session	Topic	Resource Persons	Duration
1	The solar resource, demand and trends	Dr. Hirushie Karunathilake	30 minutes
2	Solar resource potential assessment	Dr. Hirushie Karunathilake	30 minutes
3	Solar PV and thermal system sizing and installation	Dr. Saliya Jayasekara	30 minutes
4	Economic assessment of solar energy systems	Dr. Hirushie Karunathilake	30 minutes
5	Group activity	Dr. Saliya Jayasekara Dr. Hirushie Karunathilake	30 minutes
6	Sri Lankan solar industry – opportunities and challenges, emerging trends, and research directions	Mr. Rachitha Muthukumarana	1 hour
7	Experience sharing and practical examples	Dr. Saliya Jayasekara Dr. Hirushie Karunathilake Mr. Rachitha Muthukumarana	30 minutes
8	Q&A session	Dr. Saliya Jayasekara Dr. Hirushie Karunathilake Mr. Rachitha Muthukumarana	30 minutes

WORKSHOP 7

7th International Multidisciplinary Engineering Research Conference

29th
July 2021

**8.30 am -
12.30 pm**

