

**3 Day- Training & Capacity Building Programme
on**

Performance Evaluation Tools for Sustainable Buildings

In accordance with Codes, Standards and Rating Systems

12th to 14th March, 2020

at TERI-Southern Regional Centre, Bengaluru



The Energy and Resources Institute

Knowledge Partners:



Organized by

TERI's Building Science Training Centre

The Energy & Resources Institute

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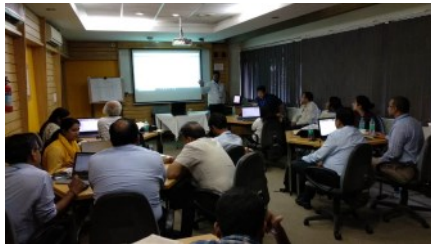
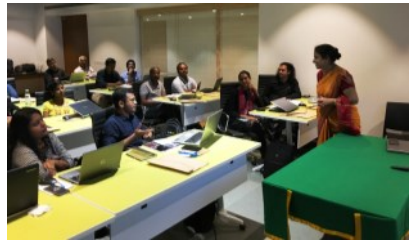
The Energy and Resources Institute

*...towards global
sustainable development*

The construction industry has a mix of organized and unorganized players right from construction workers to contractors, engineers, architects, material manufacturers etc. 82.45% of construction industry players are unskilled. Percentage of Professionals with capacities to undertake sustainable development, further comes down to less than 10%.

Enhancing capacities of Indian Architects and Engineers- TERI's contribution

For more than two decades, the Sustainable Habitat Division in TERI has been involved in carrying out Research and Facilitation of Sustainable Construction and Green Buildings in India. The knowledge obtained through Research and Consultancy is disseminated through training programs to building industry stakeholders for enhancing their capacities to achieve sustainable construction in the country.



One of such initiatives is the 3-Day Training and capacity building program on "Performance Evaluation Tools for Sustainable Buildings" designed to create capacities of professionals to undertake sustainable and green development.

Professionals will be equipped to evaluate and predict the performance of their building designs throughout the design stage by use of software tools and numerical calculation methods that will be taught during the training program. The intense training is based over the duration of 3 days, where the technical sessions cover all the concepts involved in performance evaluation of different aspects of green building along with hand holding exercises for both simulations and manual calculations.

DAY - 1

Introductory Session:

Overview and Concepts of Sustainable Development, Codes and Standards in India

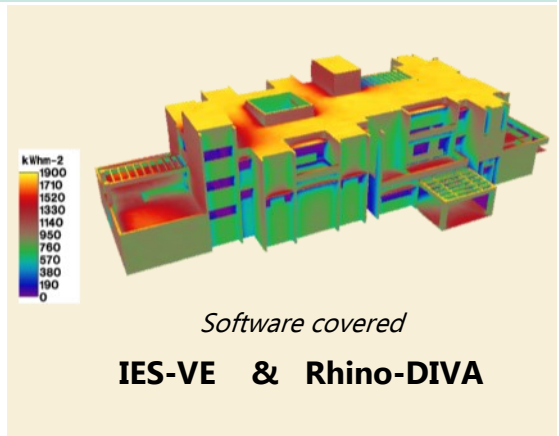
The session sets the context for the program with topics such as Solar Passive Architecture, Climate Responsive Design, Efficient Lighting Design, Low Energy Cooling/Heating Systems, Efficient HVAC, Integration of Energy Systems. It intends to enable the participant to understand design goals so as to meet the requirements of major Indian codes, International Standards and Green Building Rating systems.

Session I:

Climate Responsiveness, Sustainable Site planning and Microclimate Analysis

The session will start with learning to understand climate and interpretation of hourly weather information through use of simple software tools and spreadsheets.

This will be followed by microclimate analysis comprising of prediction of solar radiation access on built form and prediction of air-flow at campus level.



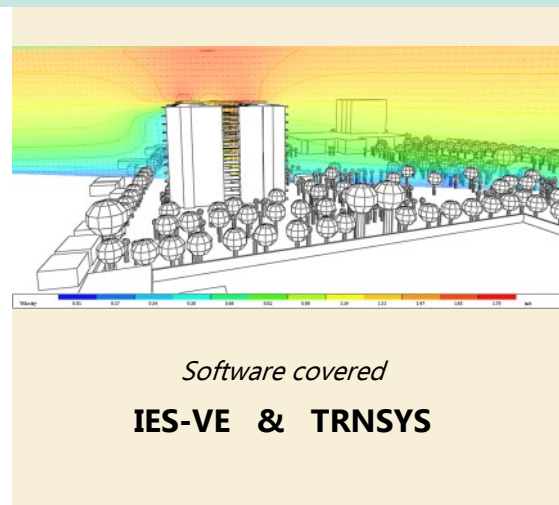
Session II:

Use of software tool for Air-flow and Envelope Specifications

This session will deal with understanding thermodynamic aspect of building physics. This will involve learning of concepts of thermal comfort and heat transfer.

This will be followed by using software to predict thermal comfort achieved by using different types of materials for building envelope.

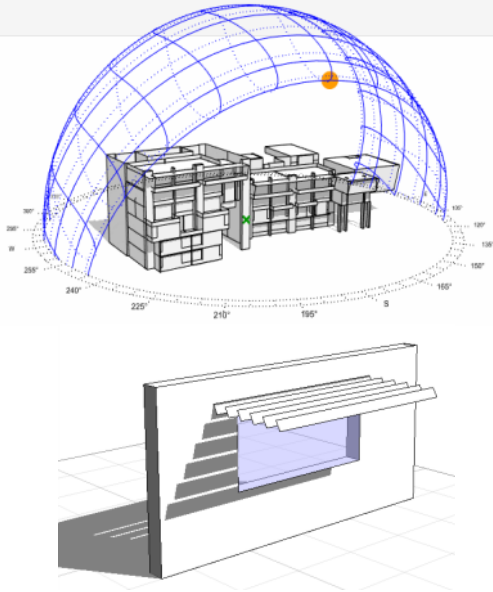
This session will also cover simulation of natural ventilation for indoors.



DAY - 2

Session III

Planning the Built Form and Designing Efficient Fenestration using Solar Geometry



The orientation, form and placement of a building plays a key role in determining its heating or cooling demand, In this session, participants will learn how to optimize buildings based on Sun-path.

As fenestration contributes massively to the overall building heat gains and has a major impact on thermal and visual comfort of occupants, the design of efficient fenestration system will also be covered in this session.

Software covered

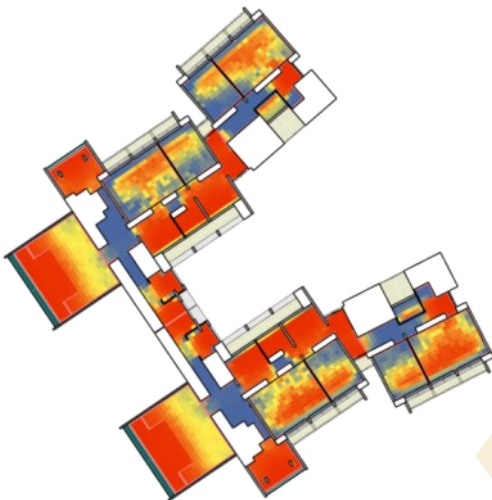
Solar Tool & Rhino-DIVA

Session IV:

Optimizing Daylighting for Visual Comfort

This session will cover techniques to optimize daylighting levels in interiors, based on national and international building standards , energy codes and green rating systems.

The concepts of annual daylighting simulation through metrics such as Daylight Autonomy (DA), Useful Daylight Illuminance (UDI), Spatial Daylight Autonomy (sDA), Annual Sunlight Exposure (ASE) and techniques to use software to analyze them. The session will also include interactive exercises and demonstration of actual examples to understand these concepts in a better way.



Software covered

Rhino-DIVA

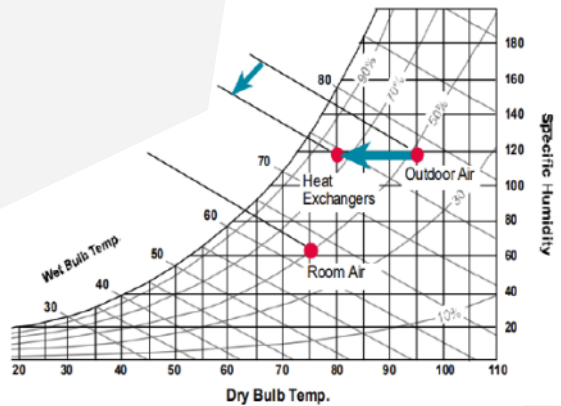
DAY - 3

Session V:

Efficient Cooling Technologies and Whole Building Energy Performance Simulation

The session will showcase HVAC systems and types, with focus on energy efficient strategies of cooling and low energy cooling systems such as evaporative cooling, geothermal cooling and radiant cooling systems. Concepts of psychrometry are also explained in a thorough but simplified manner.

The programme concludes with training on Whole Building Energy Performance Simulation using a DOE based simulation engine which is open-source. Through simple examples, participants will learn how to compute the whole building energy requirement based on various heat loads such as envelope, lighting and equipment and building usage



Software covered

eQuest

The programme concludes with distribution of Participation Certificates and Training materials, followed by Question and Answer Sessions, Interaction with participants and Group Photograph.

Faculty

Minni Sastry

Kiriti Sahoo

Hara Kumar Varma

Santhi Sree Nadimpalli

Siva Rama Krishna E.

Vini Halve

Who should participate

Architects, MEP Engineers, Contractors , PMC Consultants, PHE Engineers, Civil engineers, Structural Engineers, Technical Heads, Researchers, Academicians, Graduate Students, Government Officers, ULB officials etc.

Registration Fee

INR 14,500 (Early bird offer until 1st March 2020)

INR 16,500 (2nd March 2020 onwards)

The fee is non-refundable and inclusive of GST.

Registration can be done either online or offline.

Online registration: If you wish to opt for online registration, please click [here](#) to visit the website and click Register now. You will be redirected to the online payment page and your participation will be confirmed once the online payment of fee is complete.

Offline Registration: For offline registration, kindly write to us at r.kumar@teri.res.in. In the email, please mention: your name, contact number, address, designation and company name. You will be guided through further registration process.

Note:

- 1 Certificate will be provided upon successful completion of the training program
- 2 Limited to 35 participants per training program.
- 3 The registration fee includes cost towards course material, lunch and refreshment.
- 4 Accommodation shall be arranged upon request on payment basis. Please write to: r.kumar@teri.res.in

For any other query, please feel free to contact us.

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About TERI's Building Science Training Centre in Bengaluru

The Sustainable Habitat Division, Bengaluru carries out research, consultancy, facilitation for certification and outreach to mainstream sustainable buildings in India. The group consists of Architects & Engineers who have worked with corporates & PSUs like ITC, Ingersoll Rand, SATTVA, Zuari, HUDCO, HAL, ISRO, BARC, to help them build green campuses and green buildings. The group has been carrying out research for sustainable built environment covering wide spectrum of areas such as urban heat island, climate resilient designs, sustainability index of building materials, passive and low energy design. The knowledge gained through research & consultancy is disseminated through various training programs, hand holding workshops to various stake holders in the building industry. TERI's Building Science Training Centre in Bengaluru has been the hub of activities for all training programs.

Applied Research has been carried out by the centre to mainstream sustainable building materials and energy efficiency measures by partnering with Wienerberger, Saint Gobain Research India, Sharp, Jepeva, BPS, Ishaan Industries to carry out efficiency performance analysis of their products. At neighbourhood level, research is being carried out to establish relationship between urban planning, building designs and climate change due to higher air temperatures and Urban Heat Island Effect and to mitigate climate change due to buildings. The group is currently carrying out research projects under the funding of DST and DBT, Government of India.

Policy Interventions have been carried out by the group's work with Urban Local Bodies to integrate Sustainability measures in the building bye laws and sanction processes. Such activities have been carried out for Bengaluru, Hyderabad and Chennai.

Green Building Consultancy: The group has been providing research based green building consultancy as well as facilitation for green building certifications for a wide range of corporates and PSUs.

Climate resilient low cost building designs has been carried in various geographical location, the built environment is exposed to various climate vulnerabilities, in order to provide safe and comfortable indoor environment. projects have been carried out in Nepal and Bangladesh, project with HUDCO to quantify sustainability, affordability and replicability of various efficiency measures, for their integration in affordable housing sector

Outreach The group has been organizing training programs for Architects, Engineers and Students to enhance capacities in designing sustainable buildings and to disseminate the benefits of sustainable buildings. The group also organizes an annual event in South India to disseminate the outcomes of various research activities carried out.