

## **Advanced Course on Sustainable Lighting Practices**

organised by

TERI and PHILIPS

Date 8–11 October 2012

Venue: Seminar Hall, Ground Floor, TERI, IHC, Lodhi Road, New Delhi

Good lighting aims at illuminating the task effectively and the general surroundings appropriately. Good lighting design enhances architecture but energy-efficient lighting design enhances both the design and the performance of building. Energy-efficient lighting design focuses on methods and materials that improve both quality and efficiency of lighting. A good lighting design should be able to provide desired quantity and quality of light at minimum energy consumption. Lighting contributes to significant energy consumption in buildings. In air conditioned buildings lighting energy consumption may be as high as 20-25% of total energy consumed, whereas in non-air conditioned buildings, share of lighting energy consumption may be as high as 60% of net energy consumption. Hence it is important to design and operate lighting systems efficiently.

Philips is one of the prominent leaders in lighting innovations in the industry and TERI has long standing experience in enabling energy efficient lighting solutions for buildings and outdoor applications. Philips and TERI have joined hands to offer this unique course on sustainable lighting solutions that shall enable participants understand the tools and techniques of efficient and effective lighting solutions, enable understanding of GRIHA (Green Rating for Integrated Habitat Assessment: The National Rating System for Green Buildings in India) requirement for energy efficient lighting including integration of control strategies as per requirements of the Energy Conservation Building Code of India. The course has balanced content of theory and practical exercises. Participants shall be given exposure to use of software tools for design of efficient lighting systems. Practical training on audit of existing lighting system and derivation of retrofit solutions shall be done. The course shall have equal emphasis on indoor and outdoor lighting solutions.

*Energy efficient lighting is also visually pleasing:*

*The USP of the course is to reinstate the above with suitable examples and cases.*

The faculty shall be drawn from renowned lighting professionals from Philips and TERI.

### **From Philips India:**

Sudeshna Mukhopadhyay - Director & Head, Philips Lighting University

Kalyan Ray Chaudhuri - Senior Application Specialist, Urban Lighting

Ashish Bahal - Manager, Architect ,Program

Indranil Goswami- Director , Lighting Control Systems

### **From TERI**

Pradeep Kumar, Senior Fellow and Associate Director, Centre for Research on Sustainable Building Sciences, Sustainable Habitat Division

Mili Majumdar, Director, Sustainable Habitat Division

Rana Pratap Poddar, Research Associate

Ashish Jindal, Research Associate

## Who should attend?

Professionals involved in offering sustainable lighting solutions; architects; electrical engineers; interior designers; green building consultants.

## Prerequisites:

Professional should have basic understanding of lighting principles, and should be familiar with the lighting terminologies; laptop/computer essential for participation in the practical training.

## Course Fee:

14,045 INR (Inclusive of all taxes)

## Agenda (subject to minor modifications)

Timing	Programme
<b>Day 1 : Indoor Lighting Principles</b>	
	<b>Registration 9.00 AM</b>
9.30AM to 5.30PM	<b>Overview of sustainable buildings and relevance of lighting</b>
	<b>Design Principles, Key Lighting Specification, Photometric Data &amp; Optical Distribution</b> <ul style="list-style-type: none"><li>➤ Lighting Design Trends and Techniques, insight into Glare, Luminance, Spatial Lighting, Light Distribution &amp; Photometric Data , Codes and standards</li></ul>
	<b>Green Products : what does it entail (Cradle to Grave Concept) New Generation Lamps &amp; Gear &amp; Luminaire Trends</b> <ul style="list-style-type: none"><li>➤ LED -Key Performance Specs, New Gen TL Lamps, Luminaire</li></ul>
	<b>Introduction to GRIHA / Green Building Standards - Scope &amp; Lighting Requirements</b> <ul style="list-style-type: none"><li>➤ Inefficiency to efficiency and efficiency to optimised lighting design:<ul style="list-style-type: none"><li>○ GRIHA Criteria 6,13 &amp; 14 lighting requirements, compliances &amp; appraisals</li></ul></li></ul>
	<b>Lunch</b>
	<b>Lighting control design as per ECBC &amp; GRIHA</b> <ul style="list-style-type: none"><li>➤ Methodology &amp; analysis, case studies of GRIHA certified buildings</li></ul>
	<b>Lighting Controls, Daylight Integration &amp; Case Studies</b> <ul style="list-style-type: none"><li>➤ Daylighting analysis, lighting controls including daylight integration mechanism.</li></ul>
	<b>Auditing an Existing Building : Template for Evaluation &amp; Report</b> <ul style="list-style-type: none"><li>➤ Energy audit methodology, instrumentation, measurements, analysis and evolving energy efficiency measures.</li></ul>
<b>Day 2 : Indoor Lighting Practical Workshop</b>	
9.30AM to 5.30PM	<b>Workshop on "Concept Lighting for Offices : Lighting Concept, Lighting Parameters, Products and a Design Concept"</b>  Case Study will be provided by Philips
	<b>Dialux Training : Indoor Lighting/daylighting/artificial &amp; daylight integration</b>  Demonstration of Software
	<b>Case Study : Lighting Designing of sample Areas with Software</b> <ul style="list-style-type: none"><li>➤ Participants work on a few Sample Areas, does Calculation using Dialux</li></ul>
	<b>Lunch</b>
<b>Day 3 : Outdoor Functional</b>	
9.30AM to 5.30PM	<b>Case study on Lighting control integration as per ECBC: Practical exercise by participants</b>
	<b>Lunch</b>
	<b>Road Lighting - Lighting Principles, Mesopic Vision, Light Pollution, Lighting Standards in Road Lighting</b> <ul style="list-style-type: none"><li>➤ Night Vision of Human Eye, Lighting Principles, Existing /New Standards, Techniques in Road Lighting</li></ul>
	<b>Sustainable Road Lighting</b>

	➤ GRIHA Criterion and Energy efficiency standard, integration of solar PV , case study
	<b>Photometric Tools &amp; Optical Design for Outdoor Luminaries (typical products used)</b>
	➤ Optical Distribution, Product Performance & Safety Specs
	<b>Area Lighting Techniques: Apron, Parking Lot, Toll Plaza Light trespasses and light pollution</b>
	<b>Software Demonstration : Road &amp; Area Lighting</b>
<b>Day 4 : Outdoor Architectural</b>	
9.30AM to 5.30PM	<b>Modern Techniques in Architectural Lighting of Buildings</b>
	<b>Modern Techniques in Landscape Lighting &amp; Product Design Trend</b>
	<b>Lunch</b>
	<b>Project Installations worldwide</b>
	<b>Design Workshop on Building Façade &amp; Landscape Lighting</b>
	<b>Feedback and closure/distribution of certificates</b>