



LIGHT

the official

NEWSLETTER

of the Indian Society of Lighting Engineers

GOVERNING BODY

Mr. Gulshan Aghi	President
Mr. Dilip Kumbhat	Vice President
Mr. A.K. Jain	Hon. General Secretary
Mr. Bipin Dattani	Hon. Treasurer
Mr. P.C. Barjatia	
Mr. J.N. Bhavani Prasad	
Mr. S. Chakraborty	
Ms. S. Mukhopadhyay	
Mr. Rajat Roy	
Dr. A.D. Kulkarni	Immediate Past President

Ex-officio Members from State Centres

Mr. A.P. Joshi	Chair, Kolkata
Mr. N. Nagarajan	Chair, Delhi
Mr. P.V. Mavinkurve	Chair, Mumbai
Mr. R. Balasubramanian	Chair, Chennai
Mr. M.S.N. Swamy	Chair, Karnataka
Mr. R.S. Saxena	Chair, Rajasthan
Mr. Akhilesh Jain	Chair, M P

Ex-officio, President, ELCOMA:

Mr. C.G.S. Mani

Permanent Invitees:

Mr. H.S. Mamak
Mr. V.P. Agrawal
Mr. Ashish Rakheja

Directors of Committees:

Ms. S. Mukhopadhyay	CIE India
Mr. Dilip Kumbhat	Conference & Exhibition
Mr. J.N. Bhavani Prasad	Education & Training
Mr. R.S. Saxena	Finance
Mr. M.S.N. Swamy	Membership
Mr. Akhilesh Jain	Publication & Publicity
Mr. S. Chakraborty	Standardisation

EDITORIAL COMMITTEE

Mr. H.S. Mamak	Editor
Mr. P.K. Mukherjee	Associate Editor
Mr. P.C. Barjatia	
Ms. Rohini Mani	
Mr. M.S.N. Swamy	
Mr. A.K. Jain	Ex-officio
Mr. B. Dattani	Ex-officio

Printed & Published by Mr. Harcharan S. Mamak, A 274, Defence Colony, New Delhi 110 024 on behalf of Indian Society of Lighting Engineers and printed by him at Graphic Point Pvt. Ltd., WZ-429 B, Naraina Village, New Delhi.

FROM THE PRESIDENT'S DESK

The recently concluded Rio+20 Summit has thrown open certain challenges which need further deliberation and tinkering with our thought process. There has been a major exodus from rural areas to urban centres in search of employment, education and better living conditions.

The heavy influx of population to urban centres (read cities) is putting lot of pressure on already depleting resources to feed so many. At present a 3.5 billion people (or half of humanity) live in urban habitat which by 2030 shall further inflate to at least 60% of the entire world population. Out of this 95% of urban expansion will take place in the developing world.

Among the developing countries, India is witnessing the fastest growth rate in terms of energy consumption. Primary electricity consumption is expected to grow the fastest at over 6.5% annually over the period 2010 to 2020, driven by increased appliance ownership in the residential sector and increase in equipment penetration and floor space development in the commercial sector.

Electricity has the widest variety of uses, with industry other than energy intensive ones representing 23%, agricultural pumping 18%, residential appliances 18% (among which fan is 6%, television is 3%, and refrigerator is 3%), residential lighting 13% and services 12%. The remaining primary electricity consumption consists in energy intensive industry demand, and small quantity of transport activities (railways mostly).

ISLE has been in the forefront of the drive to conserve energy through initiatives taken at the grass root level. Many of you will remember the display and promotion of CFLs at Prakash 91 and subsequent efforts to garner support from the Government to adopt this new technology.

In 2002, ISLE took up another challenge to promote the newly emerging technology of Solid State Lighting with



Smart solutions.
Strong relationships

Smart solutions for your lighting needs



Our International Partners



Crompton Greaves Limited Lighting Division

Kanjurmarg(East),Mumbai-400042, (Maharashtra)

Tel: +91 22 6755 8542,67558506,67558000 | Fax : +91 22 25787283

Email: lighting@cgglobal.com | Web: www.cgglobal.com

Regional Sales Office : Delhi: +91 11 23460780,23460787 | Kolkata: +91 33 22829681,22829682 | Mumbai: +91 22 67558697,67558622 | Chennai: +91 44 42247500, 42247505

a special session on LEDs at the Lux Pacifica Conference. Since then the exponential advances in the technology have brought LEDs to the forefront of all discussion on lighting.

The initiatives taken by ISLE such as the recently concluded North East Local Centre in Guwahati amplified the resolve to take the measures to tier I /II / III cities and not only restrict its activity to Metros. The session at Guwahati was a well attended seminar on National Lighting Code.

And I have just returned from Jaipur where we had a seminar on LEDs under the auspices of the Rajasthan State Centre. Well attended by a large audience of people concerned with lighting at the state level, it has provided a template for future workshops at other locations. We are now looking forward to more such programmes in the course of the year.

As all of you are aware ISLE is publishing the 7th edition of its Lighting Directory. There are only a few days left for closing and I would urge all of you to help make it a success by sending in your ads and entries and ensuring that it is as comprehensive as the earlier editions. Please also encourage non members to be a part of this important publication.

Gulshan Aghi
President
gaghi@ho.surya.in

EDITORIAL

This issue contains reports on the programmes organised by the State Centres at Delhi, Mumbai, MP and the new Local Centre at Guwahati.

There is also a paper by Y. Zhang and Dr. Warren Julian on a predictive tool for gloom which will be of use in the development of lighting standards as well as improving lighting design. This paper was presented at the CIE Session in South Africa last year.

You will find updates on the CIE programmes in September in China as well as in Vienna. The training programme in Vienna permits participants with a live streaming option. Interested members should check this out.

The Elcoma-Messe Frankfurt collaboration for organising an international Lighting Exhibition and Conference is proceeding well and contact details for participation and attendance are given in this issue.

As we do every year we are featuring some of the projects from this year's IALD awards.

And most importantly we have extended the date for the ISLE Directory till the end of August. Please immediately rush your ads and entries to avoid being left out. Please also inform all interested parties of this opportunity to be a part of this established publication with an extended shelf life. We need the help of all members to make this edition a success.

I request readers to please interact with us on subjects that you would like to see reported in the newsletter so that we can try to include them in future issues.

H.S. Mamak
Editor

ISLE ACTIVITY

7th Edition of the ISLE Directory

Established for over twenty years, the Directory of the Lighting Industry in India, continues to provide a highly visible platform for businesses involved in all aspects of lighting to a clearly defined audience. The Directory is distributed to key decision makers in the government and private sectors, including lighting designers, architects and interior decorators.

The Directory recognises the progress and contributions that lighting has made in recent years and its transition from a mere witness of national and international development to becoming a proactive partner in highlighting almost every application in society. A constant upgradation of the Directory has been necessary to keep pace with the ever changing world of lighting.

The lighting industry in India has been growing at nearly 17 to 18% per annum over the last 3 years to an annual turnover of Rs. 7500 crores and more. One of the emerging lighting trends is eco-friendly and energy saving solutions. This has brought forward an immediate need for more energy efficient products and also has pushed the market towards LEDs and Solar Lighting.

In its 7th edition, the Directory covers most of the contemporary concerns such as lighting standards, testing requirements, environment and health, sustainability and the green movement, lighting design as a delivery tool for architects and consultants, and requirements for export etc. In addition, there is insightful analysis, evaluation and critiques by renowned lighting authorities.

In brief, the Directory is your reference book for lighting. This edition of the Directory attempts to cover both vital information required by lighting practitioners

and a knowledge presentation on the where, whys and wherefores of Indian and international lighting.

For further information:

ISLE
A 274 Defence Colony, 1st Floor
New Delhi 110 024
Tel: 46562981/82
Email: isledel@vsnl.com

DELHI STATE CENTRE

Lecture on Green Buildings May 5, 2012, Delhi

Following the Governing Body meeting in Delhi on May 5 at the India Habitat Centre, ISLE Delhi State Centre organised a lecture on green buildings at the same venue after lunch. The invited speaker was Mr. Ashish Rakheja, COO of Spectral Consultants who made a presentation on Green Buildings. Mr. Rakheja is a permanent invitee to the ISLE Governing Body. He is also the Vice President of the Indian Green Building Council.

Mr. Sudesh Gupta, Treasurer and Master of Ceremonies for the occasion called upon all the dignitaries to take their seats on the dais. The distinguished persons were Dr. Ajay Mathur, Director General, BEE who was the Chief Guest for the function., Mr. H.S. Mamak, Past President ISLE, Mr. Ashish Rakheja, the speaker of the day, Mr. Gulshan Aghi, President ISLE and Mr. B.M. Bhatia, Hon. Secretary, ISLE DSC.

All the dignitaries were welcomed with a bouquet of flowers. Mr. Bhatia welcomed the participants and then introduced the speaker Mr. Rakheja to the audience.

The audience was held spellbound by the presentation made by Mr. Rakheja. It brought the lighting professionals a new perspective on achieving energy efficiency in buildings in a holistic manner, looking beyond lighting. He presented future trends and discussed the LPDs that are being forecast by rating agencies like LEED.

The audience participated enthusiastically in Q&A session which followed the lecture session. The questions were many and were answered not only by Mr. Rakheja, but also by the Chairman of the session, Dr. Ajay Mathur.

Mr. B.M. Bhatia proposed a vote of thanks and the programme concluded with a high tea.

Lecture at Tata Power June 1, 2012, Delhi

ISLE organised a lecture session along with the Alliance for an Energy Efficient Economy (AEEE) on

lighting technology for Tata Power (TPDDL) employees at on June 1st in their corporate office located in Kingsway Camp, New Delhi. It was attended by around 20 people from the organisation. The objective was to familiarise the people with various aspects of lighting technology, standards and new trends, and how the innovations in this field can be utilised for DSM.

The speakers were Mr. Sudesh Gupta, Business Head, Thorn Lighting, representing ISLE and Mr. Bhaskar Natarajan, Advisor, AEEE.

Mr. Natarajan set the pace by giving an overview of lighting as a technology and lighting and electrical power systems, impact on peak load and energy and energy conservation opportunities available with us today.

Mr. Gupta then took the baton from Mr. Natarajan to cover following topics.

- Need and role of lighting in daily life
- Technical concepts of lighting - lux, lumen, candela, colour temperature etc.
- Benefits of lighting, impact
- History of lighting
- Lighting technology - different lamp characteristics and their performance (power factor, harmonics and reactive power)
- Sectors for lighting demand - residential, commercial, industrial, municipal and street lighting.
- Standards for lighting
- Future lighting technologies, LEDs, induction lamp
- Case study of a project in EE lighting retrofits

The program was quite interactive and audience participated enthusiastically, sharing their experiences and seeking answers for their questions from the speakers.

The duration of the programme was around three and a half hours. At the end, Mr. Jayanta Chatterji, DGM, TPDDL and coordinator for the programme presented mementos to both the speakers and thanked them as well as the audience for making the programme successful and meaningful.

Sudesh Gupta
Hon. Secretary
Delhi State Centre

MUMBAI STATE CENTRE

Lecture on the Philosophy of Conservation February 26, 2012

A lecture was given by Dr. Sharad Kale Sr. Scientist, BARC at Sardar Patel College of Engineering in February.



Dr. Sharad Kale speaking to the students

Before the lecture Mr. Prakash Mavinkurve, Chairman ISLE MSC welcomed the students gathered. Mr. Stan Alvares, Hon. Secretary of the State Centre gave a briefing on ISLE and its objectives followed by Mr. Amal Auddy, Hon. Treasurer who spoke on the underlying theme of the programme 'Energy Conservation'. Mr. Arvind Mule, Programme Coordinator ISLE MSC then introduced the speaker Dr. Sharad Kale to the audience. Dr. Kale oriented the students on the basic facts of conservation and how they can develop a Philosophy of Conservation based on improved habits and lifestyles. He presented simple examples of steps that can be taken at home to conserve energy.

The program ended with a vote of thanks to Principal, Dr. P.H. Sawant, Vice-Principal, Dr. Shubha Pandit and the HOD, Mrs. Vidyullata Joshi and members of the faculty Mrs. Roshni Easow and Prof. Waheed Raye who were present and enabled the program.

Breakfast with Light May 6, 2012, Mumbai

This interactive series on Lighting Design and Applications was launched on Sunday 6th May 2012 with an inaugural presentation on Induction Lighting by Mr. Vinit Singh, Assistant Manager Sales & Marketing on behalf of Mr. Satish Nanadikar, Asst.Gen.Manager, Mahindra Hinoday Ind. Ltd. and assisted by Mr. Mahesh Sonawane, Sales Executive.

After all present had a hearty breakfast, Mr. Arvind Mule, Programme Coordinator ISLE MSC welcomed the Members and the guests and introduced the programme.



Mr. Vinit Singh

Mr. Stan Alvares, Hon. Secretary ISLE MSC spoke on the importance of the programme in bringing the members of lighting fraternity together and exchanging their views and experience.

Mr. Vinit Singh presented the concept of induction lighting and its advantages with respect to other lighting sources. He presented a case study showing how induction lighting is an energy efficient light source with instant switch-on and a long operating life exceeding 50,000 hours. There was good participation by the audience in the question and answer session that followed.

Mr. Arvind Mule thanked Mr. Vinit Singh and Mr. Mahesh Sonawane for the interesting presentation. They were then felicitated by Mr. Amal Auddy, Hon. Treasurer ISLE MSC. The State Centre looks forward to continuing this series of interactive meetings for the benefit of lighting enthusiasts.

Stan Alvares
Hon. Sec. ISLE MSC

MP STATE CENTRE

Monthly Lecture April 14, 2012, Indore

As a lead step in the direction of 'Going Green', a lecture programme on "India's Global Leadership in the Green Building Movement" was jointly organised on 14.04.2012 at Hotel Fortune Landmark, Indore by ISLE M P State Centre, Indian Institute of Interior Designers (IIID) and Indian Society of Heating Refrigerating and Air Conditioning Engineers (ISHRAE).

Dr. P.C. Jain, an authority in the green building movement in India and Founder Chairman of ISHRAE and Ar. Rohini Mani, a leading architect and former Member of the Governing Body of ISLE were invited to speak.



Ar. Rohini Mani

Introduced by Mr. Akhilesh, Jain, Chairman, ISLE, MPSC, Ar. Rohini Mani made a presentation on lighting sensibility, a topic that is extremely relevant to members of ISLE and IIID. The 45 minute presentation highlighted the dos and don'ts of lighting, energy conservation and effective use of lighting. The presentation was concise, technically rich and yet presented in an easy to understand manner. In addition to this she made a video presentation of lighting which emphasised the impact of judiciously designed lighting.

The next presentation was from Dr. P.C. Jain, who without any formal slide show kept the audience



Dr. P.C. Jain

spellbound for another 45 minutes with a most thought provoking and heart-touching speech that revealed why he has unparalleled achievements to his account. He spoke on India's Global Leadership in the Green Building Movement with facts and figures. His passion to preserve mother earth and ignite similar feelings among people from different generations across the globe was deeply felt. He gave details of schemes, which have been used in India from the olden days. It was heartening to know that India has so much potential when it comes to green building. At the end of lecture there were many people pledging conservation of the natural resources.

These two outstanding presentations sensitised the members of these three leading organisations at Indore to the green building movement.

At the end, Dr. Jain and Ar. Rohini were pleasantly surprised to receive their portraits painted by Mr. Vinay Babar, a leading architect and Fellow member, ISLE and Chairman, IIID, Indore.

Messrs. Rajendra Raje, Shailendra Kulkarni and Bharat Rawlani from ISLE MPSC made significant contributions in organising this event.

Bharat Rawlani
ISLE, MPSC

ISLE Monthly Lecture on Green Building and Lighting May 26, 2012, Indore

The 31st uninterrupted monthly meeting and lecture of ISLE MPSC on "Green Building and Lighting" was organised on Saturday May 26, 2012 at Hotel Fortune Landmark in Indore. This event was jointly organised by the Institute of Indian Interior Designers (IIID), Indore Chapter, and the Indian Society for Heating, Refrigeration and Air Conditioning Engineers (ISHRAE), Indore Chapter



Messrs Hemant Jain, Akhilesh Jain, Dhruv Bhaskar, Vinay Babar and Ashish Rakheja

and ISLE, MPSC. The event was sponsored by KeraKoll India Pvt. Ltd. a leading manufacturer of building materials for the construction of Green Buildings.

The programme started with the keynote address of Mr. Hemant Jain, CEO of KeraKoll India Ltd. He informed the audience that his organisation is into the manufacturing of floors and wall installations, external and internal cladding, fast track renovations, sports facilities, industrial and public facilities, etc. which are all green in nature. These deliver significant advantages in terms of protecting the environment, the health and well-being of people and economic benefits as well as leading to improved energy efficiency.



Ar. Dhruv Bhaskar

The lecture on Natural Buildings was delivered by a young Architect Dhruv Bhaskar, who specialises in Mud Architecture. Mr. Dhruv Bhaskar, is an alumnus of Daly College, Indore and presently works with Auroville Foundation, Pondicherry. He started his presentation with the Auroville Charter explaining that all the buildings in Auroville are made by using rammed earth foundations and walls are also made up of rammed earth while terracotta tube vaults (Guna Tubes) and terracotta jack arches are used in roofing applications. He added that natural materials like Chettinad Lime Plaster is used for plastering the walls and handmade Attangudi tiles are used for flooring and sand cast murals along with mud plaster are used for creating artistic designs on walls.

Mr. Dhruv Bhaskar showed the photographs of his projects and highlighted that Green Buildings are not only intended to use local material and indigenous building concepts, but to harmoniously blend in and have essential unity with the nature environment. As far as possible, only local or recycled building material is used for construction. The green buildings are equipped with enclosed 'kund' for storing rain water in the courtyard. The 'kund' has steps running down to it, shaped like an amphitheatre, which can be used as a sitting area. The surrounding area is used for organic farming, vermi-composting, a paper recycling plant, mushroom farming, solar and wind hybrid energy generating unit. For ensuring adequate day lighting and ventilation in green buildings a very effective use of verandahs, courtyards, jalis and jharokas is done.

The presentation on "Tradition to Technology" was delivered by Mr. Ashish Rakheja, COO, Spectral India Ltd. and Vice-Chairman Technical Committee of the Indian Green Building Council (IGBC). In his presentation he highlighted the five sacred elements of nature i.e. water, sun, air, earth and sky and said that our buildings are

equipped with these five elements. He stressed the importance of combining nature with technology and said that the need of hour was to harmonise the five basic elements which make up the universe by orienting the buildings in the right way for saving energy.



Mr. Ashish Rakheja

Stressing the need for measuring thermal radiation, Mr. Ashish Rakheja said that it was required to optimise wall and roof insulation, optimise glazing area, daylight enhancing and guiding air movement by utilising the state of the art simulation software to get an authentic idea of the real world situation and then design the buildings. He felt that the coming years would witness green buildings with sky gardens, vertical farms, green walls and hydroponics.

The program was attended by members of IIID, ISHRAE and ISLE. Mr. Rajendra Raje, Executive Committee Member of ISLE, Mr. Vinay Babar, Chairman of IIID Indore and Fellow Life Member ISLE and Mr. Akhilesh Jain, Chairman, ISLE, MPSC coordinated the program.

Dr. Alok Mittal
Executive Committee Member
ISLE, MPSC

Monthly Lecture June 30, 2012, Indore

The 32nd uninterrupted monthly meeting and lecture of ISLE MPSC was titled "Conservation of Green Buildings and Lighting". The monthly meeting and lecture was organised on Saturday June 30, 2012 at Hotel Fortune Landmark, Indore. This event was jointly organised by Institute of Indian Interior Designers (IIID), Indore Chapter, and Indian Society of Lighting Engineers (ISLE), Madhya Pradesh State Centre (MPSC). It was a hat-trick of jointly organising programmes during April, May and June!

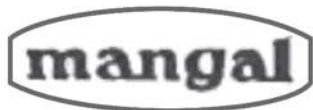
The programme started with the keynote address of Mr. Vinay Babar, Chairman, IIID, Indore Chapter and Fellow Life Member ISLE. He gave a brief introduction about the importance of green buildings and conservation of the natural environment. He



Mr. Vinay Babar

emphasised the advantages of recycling of materials as it helps in reduction of pollution and promotes ecological balance. He mentioned that there should be development

TESTING INSTRUMENTS FOR LAMPS, LEDs & LIGHTING



MANGAL INSTRUMENTATION

134, Apna Bazar, Nehru Nagar, New Delhi - 110065
Phone: + 91-11-65845192 Fax: +91-11-29841033
Mobile: +91-9811117940
E-mail: mangal_india@vsnl.com

www.mangalinstrumentation.com

based on need rather than greed of man which is the main cause of the fast depletion of natural resources and polluting the environment.

The lecture on Conservation of Heritage Buildings was delivered by the prominent conservation architect from Mumbai, Mr. Vikas Dilawari. Ar. Vikas Dilawari is a practicing conservation architect who completed his G.D. Arch from L.S. Raheja School of Architecture, Mumbai and M. Arch (Architectural Conservation) from School of Planning and Architecture, New Delhi. He also holds a M.A. in Building Conservation from the Institute of Advanced Architectural Studies, University of York, UK. He has worked on several national and international projects as conservation architect.



Ar. Vikas Dilawari

Ar. Vikas Dilawari said that Mumbai is made up of Traditional Housing Typologies, Colonial Apartments, Planned Residential Areas, Planned Community Housings, Urban Villages and Chawls. He observed that Mumbai's housing fabric stock has approx 16142 properties out of which more than 5000 are more than 100 years

old. These houses were well planned with mixed use which made them vibrant and safe places till the 1940's. After that due to frozen rents there is very little or no maintenance. Marine Drive has rents of Rs 2/sq ft whereas ownership buildings of same area command Rs 20000/sq ft. No government incentives are given to conserve traditional heritage or housing stock. MHADA or Housing board repairs was supposed to be an alternative solution but with passage of time it started doing more harm than good by selling the salvage and replacing it with inferior materials. Interestingly the government incentives are for demolition and reconstruction by increasing the FSI.

He highlighted the importance of conserving Heritage vis-a-vis new development and said that heritage buildings bear a testimony of our rich Indian culture and tradition and also promote the Green Building movement. He discussed case studies on conservation of Bombay Municipal Corporation Building Assembly Hall, YMCA Building, North Goa Church, etc. to name a few. He also explained how to make adequate lighting arrangements in Heritage buildings and monuments without tampering with their sanctity and keeping their original form intact.

After Ar. Dilawari's presentation, Dr Alok Mittal, Executive Committee Member ISLE MPSC made a special presentation on the Directory of Lighting Industry in India, highlighted its contents and the benefits of listing and advertising in this directory and solicited participation through advertisements.



The list of classifications and listings in the Directory along with advertising rates and other important information to the advertisers were also given to the audience.

The programme was attended by members of IIID, and ISLE, MPSC. Mr. Bharat Kumar Rawlani, Executive Committee Member of ISLE, MPSC and Mr. Vinay Babar of IIID coordinated the event. The programme ended with dinner and distribution of plant saplings to promote the Green Movement and create awareness about conservation issues.

Dr. Alok Mittal,
Executive Committee Member
ISLE, MPSC

NORTH EAST LOCAL CENTRE

Seminar on NLC and NEC June 30, 2012, Guwahati

The newly instituted ISLE North East Local Centre organised a day long Technical Seminar on the National Lighting Code 2010 and National Electrical Code 2011 at NEDFI House on the 30th of June 2012, in association with Bureau of India Standards (BIS) and Indian Electrical & Electronics Manufacturers Association (IEEMA).



L-R: Mr. Surojit Barooa, Mr. Bipin Dattani, Mr. R.K. Trehan, Mr. A. Goswami and Mr. Jayanta Barkakati

The seminar was inaugurated by the Chief Guest, Mr. Jayanta Barkakati, Chairperson, Assam Electricity Regulatory Commission. Participating in the seminar were Mr. R.K. Trehan Head ETD BIS, Mr. D. Goswami, Scientist F ETD, Mr. Bipin Dattani Treasurer ISLE, Mr. Amitabh Sarkar, IEEMA, Mr. P. Dhar IEEMA, and others.

In his inaugural address, Mr. Barkakati spoke about important provisions of the National Lighting and Electrical Codes for improving the safety, reliability and efficiency of the electrical and lighting systems. Mr. Surajit Barooa, Chairman of the Centre delivered the keynote address. Mr. R. K. Trehan, Head, Electro-technical Department of BIS spoke about the objective of the seminar. Mr. Bipin Dattani, Treasurer of ISLE also addressed the gathering. Earlier, the distinguished guests and participants were welcomed by Mr. A. Goswami, Honorary Secretary of the Centre. The vote of thanks was proposed by Mr. Giriraj Kakarania, Treasurer of ISLE N E Local Centre.

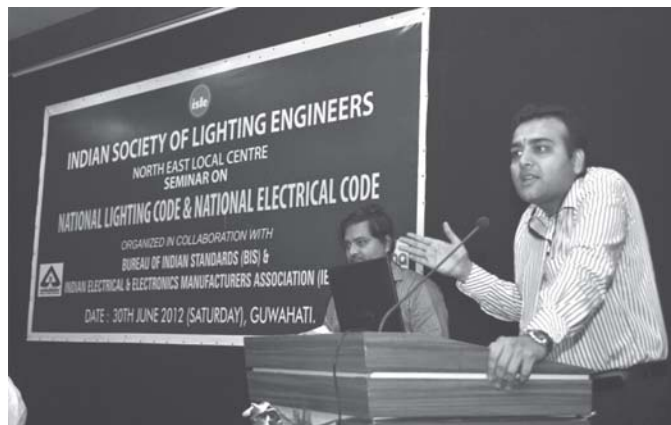
In the technical session on the National Lighting Code, presentations were made by Mr. D. Goswami of BIS, Mr. Sugato Mukherjee from Havells India Limited and Mr. Vikash Rana from Philips Electronics India Limited covering different aspects and provisions of the code.



Mr. R. K. Trehan addressing the seminar

The technical session on National Electrical Code was addressed by Mr. D. Goswami from BIS, Mr. A. Sarkar from IEEMA and Mr. A. Goswami from IIT Guwahati. Both the technical sessions were chaired by Mr. R.K. Trehan of BIS.

The Seminar was attended by 170 delegates including engineers from various government departments, industries, architects, consultants, academicians and traders. The sponsors of this programme were Havells India Limited, Legrand India Limited, Indo-Asian, Anchor Electricals Limited, RR Kabel Limited, Hager, Control &



Vote of thanks by Mr. Giriraj Kakarania

Switchgears Limited, Polycab Wires & Cables Limited, Kolors Switches and Philips Electronics India Limited,

The seminar closed with the felicitation of Committee Members, Mr. Trilokya Borah, Mr. Pinak Pani Chakraborty, Mr. Giriraj Kakarania and Mr. Amit Roy of BIS for their active support in organising the seminar.

Giriraj Kakarania
Hon. Treasurer
ISLE N.E. Local Centre

CIE NEWS

Update on CIE 2012 Lighting Quality & Energy Efficiency September 19-21, 2012, Hangzhou, China

CIE 2012 will feature the latest achievements in the science and technology of light and lighting and we would like to give you a flavour of what CIE 2012 will be about:

"The Applications of Quantum Control Technologies in LEDs for Lighting" will be presented by Prof Yiping Cui, CIE Vice-President, Advanced Photonics Center, School of Electronic Science and Engineering at Southeast University (CN). Steve Fotios, Professor of Lighting and Visual Perception, University of Sheffield (UK) will give an inside view of "Research on Lighting for Pedestrians", whereas Andrew Stockman, Professor of Investigative Eye Research at the Institute of Ophthalmology, University College London (UK) will have his lecture on "CIE2006 Cone Fundamental Based Colorimetry". The "Colour Rendering Index" will be the focus of Lorne Whitehead's Keynote, Professor in the Department of Physics and Astronomy at the University of British Columbia (CA).

CIE 2012 will in addition to those keynotes offer a wide range of workshops which will deal among others

Continued on page 22

Towards A Predictive Tool for Gloom

Y. Zhang and W.G. Julian

Abstract

This paper reports on the results of recent research into those room surface conditions that result in the assessment of an interior as being gloomy or under lit. The research revisits that done twenty years ago (Julian, 1988; Shepherd, 1990) but with the advantage of new technology that allows the detailed examination of luminances, contrasts and brightnesses. Extensive analysis of digital images was used to test various light technical parameters as correlates for gloom.

This paper concentrates on the outcomes for windowless rooms where it was found that the proposed metric, mean room surface luminance, was a good predictor and it also supports Cuttle’s (2008) proposals regarding room surface exitance as a design tool. In the case of rooms with windows, mean surface exitance, is not a sufficient condition and room brightness is proposed. Preliminary testing of the model indicates its potential as a design aid.

Keywords: e.g. Brightness, Lighting Design methods, Room Surface Luminance, Psychophysical Responses to Light, Exitance

Introduction

The lighting of an interior should facilitate task performance and create a pleasant atmosphere. Interior lighting standards have provided numerical criteria, which if achieved, should ensure task performance. With the possible exception of minimising the possibility of discomfort glare, there are no predictive tools for the outcome of a lighting design with respect to the appearance of a space. Thus, most lighting design is still centred on the achievement of task illuminances. This is probably because it can be calculated whereas “atmosphere” cannot. Further, whilst illuminance recommendations are really for tasks, they are routinely interpreted as being for the whole of the space in which the task occurs.

Illuminance recommendations have remained high, despite most “normal” tasks becoming visually easier over the past decades. Lighting energy targets, often in watts/m², have led to return to downlighting in commercial spaces, not unlike that of the period when poorly designed computer screens dominated the design of working interiors.


Designers and some researchers have emphasised the importance of lighting the room surfaces but this has fallen on mostly deaf ears, since most interior lighting design is still dominated by excessively and uniformly high working plane illuminances. The only benefit to come from this is that the ceiling and walls are lit, accidentally from inter-reflected light, making most interiors acceptably bright. However, dimming and switching, to reduce energy consumption can result in unpleasant interiors, often described as gloomy or dark, especially those with windows. In some cases, users over-ride or sabotage control systems.

There is no way of predicting the likely appearance of a space by calculation; experienced designers mostly get reasonable results from craft rather than calculation. Standards often give clues to success by recommending ranges of reflectances or the ratios of wall and ceiling (il)luminances to those of the working plane.

This paper reports on the results of recent research into those room surface conditions that result in the assessment of an interior as being gloomy or under lit. The research revisits that done twenty years ago (Julian, 1988; Shepherd, 1990) but with the advantage of new technology that allows the detailed examination of luminances, contrasts and brightnesses.

Gloom is a shared experience

The first stage investigated four lighting conditions, in a real interior, and the possible experience of gloom. The room was photographed using a calibrated camera and lens allowing luminances to be determined. Other parameters, derived from luminances, were calculated. 46 subjects completed a “yes/no” questionnaire comprising a list of 53 words based on that of Flynn et al (1979). The four conditions (Figure 1) were judged as dim, well-lit (best of the four), well-lit and gloomy (Table 1).

Condition 1	Row	Left	Middle	Right	Row Mean
The luminaires were off The opaque blinds down The OH projector was on Some spill light from corridor 	1	4,9	12,9	14,2	10,7
	2	6,0	11,6	12,1	9,9
	3	6,0	8,1	8,7	7,6
	4	3,7	5,7	11,2	6,9
	5	3,5	5,6	5,7	4,9
	6	3,5	5,2	4,6	4,4
	7	3,1	4,1	7,5	4,9
	Mean	4,4	7,6	9,1	7,0
	SD				3,4

**For a glow like
the Sun,**

G-12 Lamps

 Wattages: 70, 150

**choose
any one...**

**Integrated Ballast
System**




**VENTURE
LIGHTING**

An Advanced Lighting Technologies Company-USA

Metal Halide Systems


Lamps ♦ Ballasts ♦ Ignitors ♦ Luminaires
 ♦ Colour Lamps ♦ Integrated Ballast System

Elliptical Lamps

 Wattages:
 50, 70, 100, 125, 150,
 200, 250, 320, 350, 400
 Colour : Blue & Green - 150W
 E 27, E 40

**Double
Ended
Lamps**

 Wattages: 70, 150, 250

Tubular Lamps

 Wattages:
 E 27 70, 100, 150,
 200, 250, 320,
 E 40 400, 600, 1000

**Colour Lamps
(Tubular)**

 Wattages:
 400W
 Green, Blue,
 Pink and Magenta
 150W - Blue & Green



International Approvals



VENTURE LIGHTING INDIA LTD. Plot No. A30 & D5, Phase II, Zone B, MEPZ, Tambaram,
 Chennai 600 045, India. Tel. : (044) 2262 5567 / 2262 3094, Fax : (044) 2262 5569,
 E-mail : baranee@vlindia.com, Website : www.venturelighting.com

MAKHIJA 5378




Condition 2	Row	Left	Middle	Right	Row Mean
The luminaires were on The opaque blinds down The OH projector was off Some spill light from corridor 	1	69,7	66,0	62,7	66,1
	2	69,1	61,8	71,3	67,4
	3	64,6	68,5	53,6	62,2
	4	79,6	86,9	70,4	79,0
	5	68,5	59,6	51,6	59,9
	6	82,1	64,0	45,2	63,8
	7	61,1	55,7	50,0	55,6
	Mean	70,7	66,1	57,8	64,9
	SD				10,5
Condition 3	Row	Left	Middle	Right	Row Mean
The luminaires were on The light blinds were down The OH projector was off Some spill light from corridor 	1	80,0	82,8	83,1	82,0
	2	80,0	82,8	78,3	80,4
	3	77,7	81,2	81,2	80,0
	4	81,2	83,8	80,2	81,7
	5	76,8	76,1	73,9	75,6
	6	73,2	74,2	75,2	74,2
	7	77,7	80,2	80,0	79,3
	Mean	78,1	80,2	78,8	79,0
	SD				3,2
Condition 4	Row	Left	Middle	Right	Row Mean
The luminaires were off, The light blinds were down The OH projector was off Some spill light from corridor 	1	11,3	16,9	26,6	18,3
	2	13,6	19,9	28,6	20,7
	3	12,1	17,2	27,5	18,9
	4	16,9	18,7	25,1	20,2
	5	14,1	21,7	23,7	19,8
	6	13,8	23,5	26,8	21,4
	7	20,4	25,8	29,3	25,2
	Mean	14,6	20,5	26,8	20,6
	SD				5,8

Figure 1. The four lighting conditions and associated average surface luminances, L_{av} ($cd\ m^{-2}$).

The words, selected by at least 67 % of the subjects, associated with each condition are shown in Table 1.

Table 1. Words with a positive response by at least 67 % of subjects for each lighting condition

Condition	Words with a 67 % positive response
1	dim, undisturbing, even, positive, pleasant, comfortable, non-glaring, quiet, simple, uniform, informal, balanced
2	spacious, even, undisturbing, cheerful, positive, details distinct, pleasant, comfortable, adequately lit, non glaring, simple, uniform, bright, informal, inviting, quiet, sunny, warm, light, balanced, objects clear
3	details distinct, diffuse, comfortable, adequately lit, simple, uniform, informal, inviting, warm, light, balanced, objects clear, interesting
4	dim, non-glaring, simple, gloomy, informal, subdued, shaded, quiet, uninviting, enclosed, inadequately lit

A hierarchical cluster analysis was also undertaken and Table 2 shows the results for each condition.

Table 2. The clustering of words with gloomy (first 3 levels). Numbers in parentheses refer to the “yes” count for the word

Condition	Level 1	Level 2	Level 3
1	gloomy(9), inadequately lit(11)	depressing(6), unpleasant(9), negative(11), uncomfortable(7)	dark(11)
2	gloomy(0), depressing(0), disturbing(0) dim(0), dark(0)	details indistinct(2), negative(1), inadequately lit(1)	objects obscured(2), mottled(3)
3	gloomy(3), sombre(5)	formal(7)	glaring(3), objects obscure(3), inadequately lit(1), mottled(5), depressing(2), dark(0), cold(3), details indistinct(4), negative(4)
4	gloomy(22), subdued(24)	dim(25)	dark(18)

This suggests that the gloom experience may result from:

- an inadequately lit environment, described by *dim*, *dark* and *shaded*; producing
- a physiological disability, described by *details indistinct* and *objects obscure*; and
- a psychological discomfort, as described by *negative*, *depressing*, *enclosed*, *subdued* and *sombre*.

Relevant light technical parameters for windowless rooms

The second stage attempted to clarify the lighting parameters that might predict the onset of gloom.

The four conditions shown in Figure 1 were photographed using a Nikon camera and fisheye lens that had been calibrated so that luminances could be calculated from the images. Figure 2 shows luminance maps for each condition. The maps were produced using Matlab functions.

Mean surface luminances, L_{mrs} , were calculated by replacing self-luminous surfaces (luminaires and windows) with the mean luminance of the non-self-luminous surfaces. Surface contrasts, $C_s = (L_{surface\ luminance} - L_{mrs}) / L_{mrs}$, were calculated and surface brightnesses, calculated using Marsden’s (1970) scale $B_s = L_{surface}^{0.6} / L_{brightest\ surface}^{0.25}$.

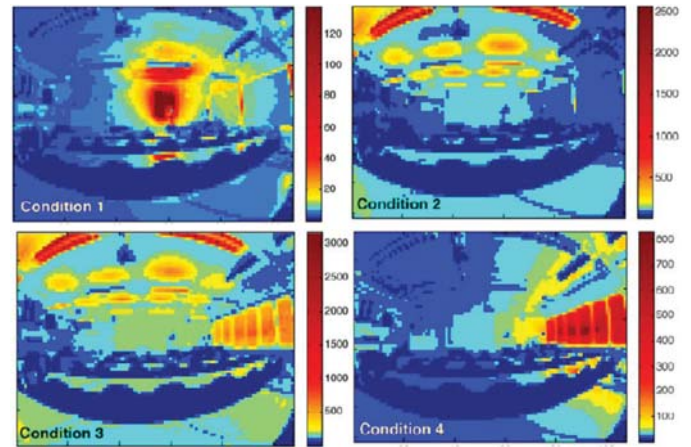


Figure 2. Luminance maps (different ranges) in Conditions 1-4. The scales are luminance in $cd\ m^2$.

It was found that the mean surface luminance (L_{mrs}) was very important when judging the appearance of the interior. Dim and gloomy conditions resulted from low L_{mrs} . Importantly, the gloomy condition provided more limited surface contrasts, C_s , than dim and well-lit conditions. It was also found that gloomy and dim conditions produced low surface brightnesses, B_s .

Gloomy and dim conditions showed less dramatic changes of surface brightnesses than well-lit conditions and the gloomy condition had small changes of surface contrast than dim and well-lit conditions. Finally, the gloomy condition provided smaller relative changes of surface luminance than the dim and well-lit conditions.

In summary:

- The calibrated camera with image processing techniques can be used to determine the lighting parameters associated with the experience of gloom
- The dim and the gloomy conditions tend to provide lower mean luminances, greater rod intrusion, lower luminance variability, lower surface luminances and gentler surface luminance changes than the well-lit conditions.
- The gloomy condition tends to provide more limited surface contrasts and gentler surface contrast changes than the dim and well-lit conditions.
- The dim and the gloomy conditions tend to provide lower surface brightnesses and gentler surface brightness changes than the well-lit conditions.
- Gloom was likely if $L_{mrs} < 30\ cd\ m^2$.

A predictive model for gloom in windowless rooms

Various authors have made suggestions, the most recent of which is mean surface exitance, M_{rs} , in Cuttle’s (2008) book (Table 3). Table 4 shows L_{mrs} and the calculated value of M_{rs} for the four conditions.

Continued on page 22



BROKEN LIGHT ROTTERDAM, NETHERLANDS

Broken Light was developed in response to a design competition for Rotterdam's Katendrecht neighborhood. Rudolf Teunissen and Marinus van der Voorden of Daglicht & Vorm proposed an immersive experience using light as art to reflect the neighborhood's fiery past.

"A very unconventional and original solution to an every-day situation," one judge praised of the project. "Lighting can be fun!"

Katendrecht, also known as the Cape, had been home to sailors, pirates, prostitutes and other unsavory individuals from its establishment in 1895 through approximately 1980, when the last harbor activities have moved on to bigger, newer harbors along the Nieuwe Waterweg. Since then, the area has completely transformed itself into an appealing residential district.

Broken Light partly took over the public lighting and transformed the look and feel of Atjehstraat, creating an interior, cathedral-like space. Tall columns rise up along facades, reaching for the sky. Static and tight, the beams are balanced by pools of light reflecting on the ground.



What looks like graffiti from above pedestrians experience as pools of light and dark. The light motifs are inspired by flowers and birds, and are conveyed by the light system as high-yield light effects and patterns.

"Especially impressive are the adjustable fixtures, with moving shutters and patterns, providing individual solutions for the different lighting challenges along the street," one judge commented.

The optical system and luminaire are custom made. The vertical and horizontal projections are operated by one lamp in a fittingsituated at a height of 6 meters. An extra standard road light armature has also been added. The designers used the system to

vary the size, pattern and intensity of projections to customize space between windows, creating glare-free street lighting.

One judge summed up the final design as "technically fascinating, and an equally ambitious solution to an often mundane lighting commission."

Broken Light has rejuvenated a street that until a few years ago was rife with crime. It exists as a social sculpture for the street's residents, who literally and figuratively have welcomed a little light into the neighborhood.

LIGHTING DESIGN

RUDOLF TEUNISSEN
MARINUS VAN DER VOORDEN
DAGLICHT & VORM

PHOTOGRAPHY

© RUDOLF TEUNISSEN
© HANS WILSCHUT
© LIESELOT IJZENDOORN



LIGHTING DESIGN
HIROYASU SHOJI, IALD,
KAZUHIRO NAGASHIMA
MICHIKO YOKOTA
LIGHTDESIGN INC

PHOTOGRAPHY
© TOSHIO KANEKO

© AKANE KURODA, ASSOCIATE IALD



FUTAKO TAMAGAWA RISE

The Futako Tamagawa Rise near Tokyo was opened in March 2011, only weeks after the 11 March 2011 earthquake struck Japan. The residual nuclear and environmental concerns after the earthquake meant the designers needed to quickly reevaluate and reconfigure the building's energy load. As a result, most of the lighting in the space was never turned on from lack of nuclear power. The project has been designed with moderate darkness and intonation which is typically absent in the Japanese commercial lighting environment.

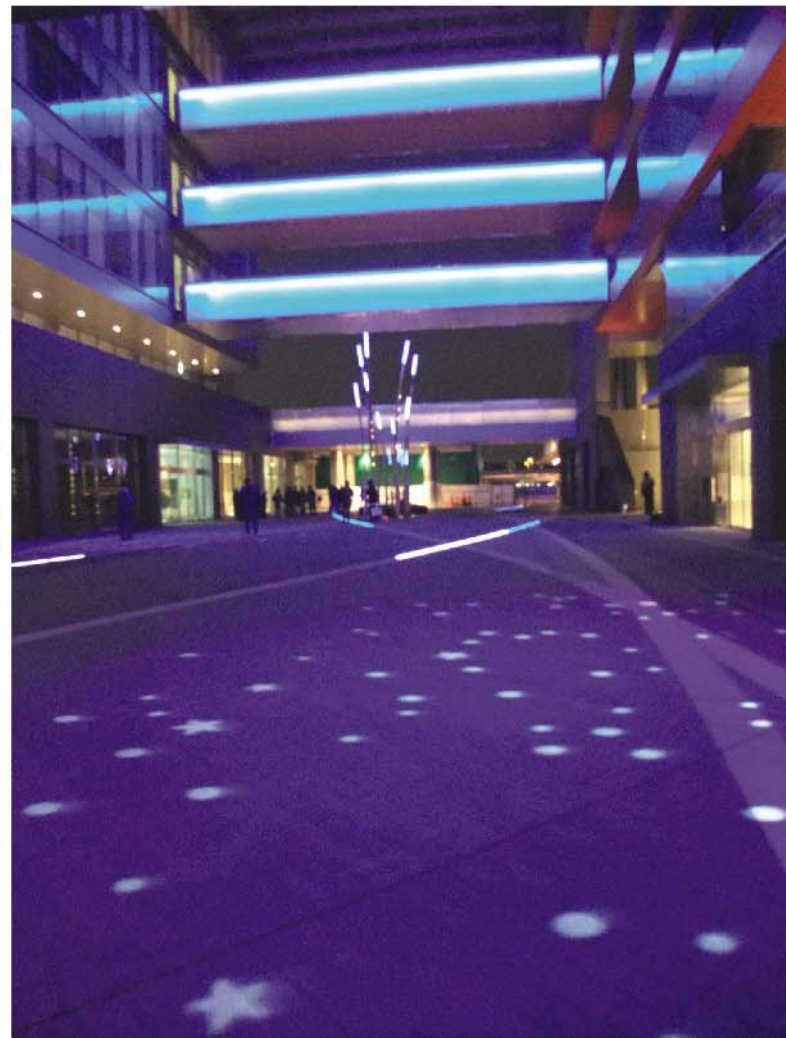
"This successful combination expresses emotion through light. It is an elegant solution that defines the plaza as both playful and thoughtful," one judge stated of the project.

With a 40-meter-high glass ceiling, enough light is usually generated during daytime. For lighting after dark, the designers reexamined and redesigned the space to come up with a comfortable margin of darkness in a commercial public space. Vertical light levels in the main concourse of Futako Tamagawa operate at approximately 30% of the brightness of other stations in Japan.

Three months after the disaster, the lighting designers reprogrammed the lighting sequence of the bridge fascia, linear light stream on the ground and reed-inspired light pole motif to darker light levels to preserve energy. The new sequencing eliminated the metal halide general lighting from above, creating the scene with the LED linear indicator and accent lighting. Reprogramming the scene used 31% of the original design's total energy consumption.

"An evolution in consciousness caused by a natural disaster," one judge stated of the project.

Most commercial space in Japan requires 500 lux; however, users of this Galleria enjoy the beautiful environment created with just 10 lux. The bridge fascia changes its color, beginning with a warm incandescent color at early nighttime, changing red-purple to blue as the night progresses. After 22:00, star dust flows down via projected light.



OUR PRODUCT SELECTION IS AS BRIGHT AS THE SPECTRUM ITSELF.

TridonicAtco control gear and lighting management technology provide a colourful spectrum of solutions to our customers. A combination of reliable tried and tested products with a strong technical and service support provide a brilliant and dynamic solution for every kind of lighting. For our customers, this means durable products with safety and reliability in mind. For more products please visit our website www.tridonicatco.com

www.tridonicatco.com

a world of bright ideas®

TRIDONIC.ATCO

Power supply units

Control gear for high pressure discharge lamps

Emergency lighting modules for fluorescent lamps

Digital Dimming

Control gear for fluorescent lamps

LED modules and control gear

Transformers

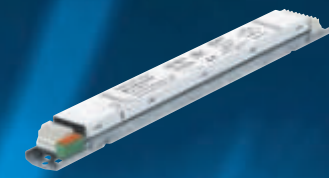
Connection technology



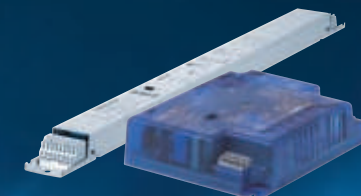
powerCONTROL PCI



powerCONTROL PCI



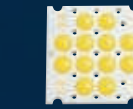
EM PRO / SELFTEST



PCA EXCEL one4all



PC PRO



powerLED EOS



TE one4all



SKL 3/5



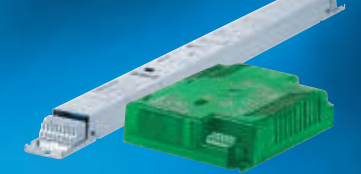
OM PAK



OMBIS



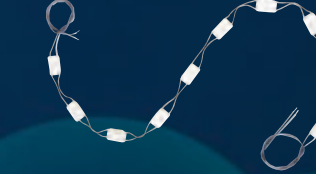
EM BASIC



PCA ECO



PC INDUSTRY



powerLED chains



TE speedy



Concut



D61



OGLIS



PC COMBO



DSI control gear



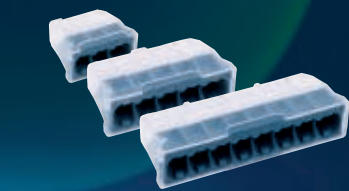
PC PRO sr



powerLED strip modules



TE-DC



SDK 3/5/8



D96



OGLIS



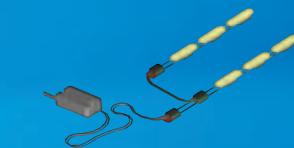
PC COMBO-CONNECT



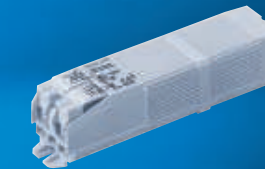
DALI control gear



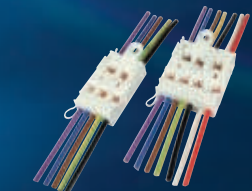
PC BASIC



spaceLED



TMDD



LBK



Batteries



winDIM@net



EC



powerLED control gear



OMTA



ZRM terminals



LIGHTING BEIRUT ARCHITECTURE

Lighting Beirut Architecture is the first project of its kind to permanently illuminate a large urban area using image projection. Tailor-made projectors trace the features of 28 heritage and contemporary building façades along a special heritage trail in the heart of historic Beirut.

"The scale of this lighting project is simply impressive," said one award judge. "The execution and detail [are] remarkable."

Gobos were designed based on a special photographic survey of each individual building's façade. Using oversized glass gobos allowed the designers to design high-definition images and projections. The resulting close relationship between the lighting concept and the architecture preserves the specific identity of each building.

All fittings are located on the roofs of buildings facing chosen façades. A special fitting was developed to maintain the simplicity of the projector's mechanics, while modifications made permanent exterior installation and uniform distribution of light possible.

The façades of more contemporary buildings utilize a different concept. Modern buildings are treated with abstract frescos that introduce colored elements and textures derived from the original composition.

The project allows maximum flexibility, as changing the gobo inside the projector provides a new image of the façade for different events. The project aims to turn the city's center into a live platform for creative expression. Beirut's nightscape has taken on a new image - one that hopes to contribute to the capital's urban development.



LIGHTING DESIGN

ELENA DALLAI
ALEJANDRA GOMEZ
VICTOR GARCIA
MARTINA BORDINI
HAVISHA RATORE
LIGHT CIBLES

PHOTOGRAPHY

© GÉRARD HARLAY



LED
ETERNITY



LED
DOWNLIGHT
LUMINAIRES



LED
MODULAR CEILING
LUMINAIRES



LED
STREET LIGHT
LUMINAIRES



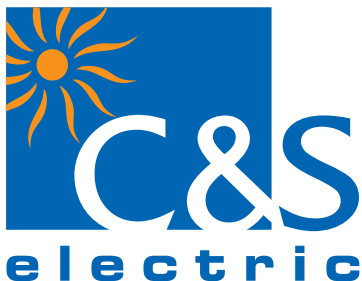
LED
FLOOD LIGHT
LUMINAIRES



LED
POST TOP LANTERN
LUMINAIRES



*Also available in conventional lamp.



COMPARISON OF LT GL 32-27X1 HP LED/W WITH 70W MH-E/CDM-G12 POST TOP LANTERN

DESCRIPTION	MH-T/ HPSV-TCDM-G12	LED	SAVING
Lamp Wattage	70W	27W	54W
Ballast Wattage	14W	3W	
Total Wattage	84W	30W	



For more detail on other range of products

Please mail us at: marketing.lwa@cselectric.co.in, Visit us at www.cselectric.co.in

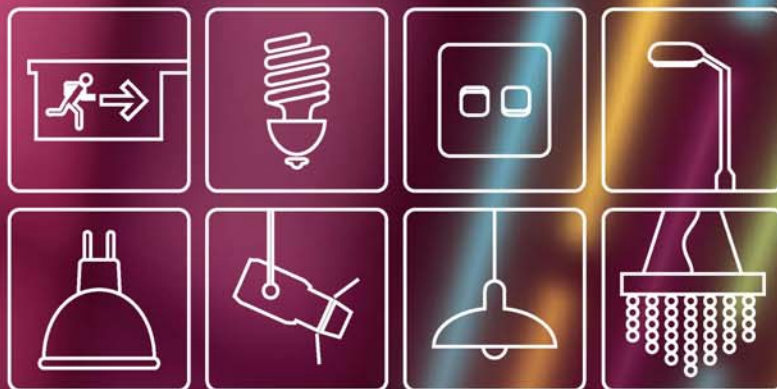
Join us on www.facebook.com/CSElectricLimited

light

INDIA

Business Visitor Registration Now Open.

5 – 8 October 2012
Pragati Maidan
New Delhi, India



Featuring green lighting technology

www.light-india.in

For space booking, please contact:

rasheedanwaar@light-india.in

+91 9990 10 1000



Get a glimpse into the future of lighting.....

DIRECTORY
OF THE LIGHTING
INDUSTRY IN INDIA

7th edition

Rush your ads
and entries

- Established for over twenty years
- Provides a highly visible platform for businesses involved in all aspects of lighting.
- An opportunity to promote your products and services to a clearly defined audience.
- A reference book/guide for lighting with vital information required by lighting practitioners.

Be found where people search

Published by
indian society of lighting engineers



2012

Contact:
Indian Society of Lighting Engineers
A 274, Defence Colony, New Delhi 110 024
Tel: 46562981/46562982 Fax: 46580884
e-mail: isledel@vsnl.com
website: www.isleind.org

Table 3. Appearance of ambient illumination related to M_{rs} , after Cuttle (2008).

Appearance of ambient illumination	M_{rs}
Lowest level for reasonable colour discrimination	10 lx
Dim appearance	30 lx
Lowest level for "acceptable bright" appearance	100 lx
Bright appearance	300 lx
Distinctly bright appearance	1000 lx

Table 4. L_{mrs} and M_{rs} for the four conditions.

	L_{mrs}	M_{rs}
Condition 1	6 cd m-2	19 lx
Condition 2	81 cd m-2	254 lx
Condition 3	129 cd m-2	405 lx
Condition 4	25 cd m-2	79 lx

Conditions 1 and 2 were windowless and, from Table 4, there is good agreement between the L_{mrs} proposal in this research and Cuttle's proposed M_{rs} . Conditions 3 and 4 had windows and whilst Condition 3 showed good agreement, Condition 4 was borderline.

Further research was needed in the case of windowless rooms. This will be reported in detail elsewhere but the criterion that was developed was B_r , relative brightness. $B_r = L_{mrsuw} / L_{brightest\ area}$ where L_{mrsuw} is the mean room surface luminance, including windows but excluding luminaires and $L_{brightest\ area}$ is the luminance of the brightest of those surfaces. If $B_r < 0.2$, the room is likely to be judged as gloomy.

Testing the model

The final stage measured a wide range of real rooms to test the reliability the tool; results show that the lighting predictions for the gloomy condition were met using the parameters proposed. The model has not been tested at the design stage. That work is underway.

Conclusions

In conclusion, the experience of gloom is a strong negative psychological response which is associated with low mean surface luminance, limited surface contrasts, low surface brightnesses, small relative changes of surface luminances, as well as gentle changes of surface contrasts and surface brightnesses. The tool proposed in the study is validated for predicting the experience of gloom in real interiors. The tool also helps to clarify some aspects of a

space that contribute a person's impressions of the environment. The study has practical implications in the development of lighting standards and improvements of lighting design.

References

- CUTTLE, C. 2008. *Lighting by Design, 2nd ed.* Amsterdam, London: Architectural Press.
- FLYNN, J.E., HENDRICK, C., SPENCER, T.J. & MARTYNIUK, O. 1979. A Guide to the Methodology Procedures for Measuring Subjective Impressions in Lighting. *Journal of the Illuminating Engineering Society*, 8(2), 95-110.
- JULIAN, W.G. 1988. Considerations in modern lighting design. *Lighting in Australia*, 8(4), 14-23.
- MARSDEN, A.M. 1970. Brightness - Luminance Relationships in an Interior. *Lighting Research and Technology*, 2(1), 10-16.
- SHEPHERD, A.J. 1990. *Gloom In Buildings*. MSc(Arch) thesis. Sydney: The University Of Sydney.

Authors:

Zhang, Y. and Julian, W.G.
 Faculty of Architecture, Design and Planning,
 University of Sydney, Australia,
warren.julian@sydney.edu.au

Continued from page 9

with "Mesopic Photometry and Application", "Rapid Urbanization in Asia and Daylight Design Issues for Cities" as well as discussing the current lighting levels on streetlighting.

Presented Papers and the Poster Exhibition provide an ample selection of what is being done worldwide to ensure Lighting Quality without sacrificing Energy Efficiency.

You will find the full programme at
<http://hangzhou2012.cie.co.at>

Discomfort Glare Issues discussed in Sun City

Limitations to the predominant models for discomfort glare prediction for electric lighting, the Unified Glare Rating and the Visual Comfort Probability, are well known. There is no single widely-accepted model as yet for discomfort experienced from daylight. Overhead glare from small, bright light sources is a newly-identified problem that has the potential for becoming more frequent with the use of LED systems. We have no metric to predict discomfort from such sources. Against this background, Division 3 held a workshop at the CIE Session in Sun City to animate a discussion of these issues among the world-wide lighting community there assembled. Five expert panellists presented their perspectives on the issues and there was lively audience participation. The full workshop report is available at the CIE Website and will appear in Volume 2 of the Proceedings, but here is a summary of the discussion:

1. Glare criteria and levels used in previous studies have typically mixed issues of comfort and acceptability. These should be clearly separated as the experience of discomfort is independent of whether or not someone accepts the discomfort experienced. One might, for example, accept a certain level of discomfort from daylight when there is a mitigating factor, such as a great view out across a wonderful landscape or the ocean. It might thus be useful to describe situations under which glare might be tolerated. This could also help in the design process.
2. When lighting technology (especially light sources and the respective luminaire) changes, the impact of that change on discomfort glare needs to be carefully studied. LEDs clearly pose a challenge, as their small size and high luminance present conditions very different from those studied while current metrics were developed. These mostly relied on larger areas of lower luminous intensity.
3. To study glare phenomena in real-world situations, better measurement protocols are needed so that the measurements from various studies can be compared and carefully assessed. Currently, different researchers or assessors appear to measure different things. Further development of measurement equipment seems also an important consideration.
4. Of special importance might be the transient adaptation, i.e. the changes in adaptation luminance a person experiences when moving around in a space or changing view directions. Current discomfort prediction models assume a fixed position and viewing direction to which an observer is adapted.
5. There is a great need to get a better handle on the fundamental mechanisms underlying the experience of discomfort. This should include work on physiological pathways between eye and brain. The current discomfort glare models may be too simple. Once more complex models can be understood, there might be a chance to simplify them again on a different basis, leading to better prediction models.

Further discussion of these issues is expected among members of Division 3, leading to the possible development of new technical committees following the completion of ongoing work in TCs 3-39 (Discomfort Glare from Daylight in Buildings) and 3-50 (Lighting Quality Measures for Interior Lighting with LED Lighting Systems), whose work also will benefit from the open discussion in Sun City.

Jennifer Veitch
 Director, Division 3
 (Interior Environment and
 Lighting Design)

Training on CIE 203-2012: A Computerized Approach to Transmission and Absorption Characteristics of the Human Eye

September 5, 2012, Vienna

This training will take place between 09:00 am and 04:00 pm in Vienna at the CIE Central Bureau and will be chaired by Dr D Jack Lund

Brief Outline:

- Overview of the structure of the eye
- Methods of measuring the spectral transmittance of the pre-retinal ocular media
- Direct transmittance vs total transmittance of the pre-retinal ocular media
- The data from which the spectral transmittance of the rhesus and young human eye are derived
- A discussion of the tabulated data included in CIE 203-2012
- The aging human eye and the changes in preretinal ocular media with age
- The equations describing the optical density of the aging human eye as derived by van de Kraats and van Norren (2006)
- Brief overview of the structure of the retina
- Retinal absorbers and action spectra for light-induced retinal effects.

Click <https://www.dm-and-c.at/eicm.esp?id=50&pageid=3AR0RP49G> for participation in real-life or choose our live streaming facility which is readily available via his link: <https://cie-training.webex.com/cmp03061dwebcomponents/widgetdetect.do?siteurl=cietraining&LID=1&RID=2&TID=25&rnd=8408117419&DT=330&DL=enGB&isDetected=true&backUrl=%2Fmw03061d%2Fmywebex%2Fdefault.do%3Fsiteurl%3Dcie-training>.

Note: places are limited and will be assigned on a first come, first served basis. Registration for both, real-life and live streaming, is open till Monday, August 20, 2012.

Price: EUR 600,+20% VAT. (On discounts for students and corporate packages for companies please contact the CIE Central Bureau at ciecb@cie.co.at).

CIE PUBLICATIONS

CIE Draft Standard DS 014-6/E:2012 Colorimetry - Part 6: CIEDE2000 Colour-Difference Formula

The three-dimensional colour space produced by plotting CIE tristimulus values (X, Y, Z) in rectangular coordinates is not visually uniform, nor is the (x, y, Y)

space nor the two-dimensional CIE (x, y) chromaticity diagram. Equal distances in these spaces and diagrams do not represent equally perceptible differences between colour stimuli. For this reason the CIE has standardised two more-nearly uniform colour spaces (known as CIELAB and CIELUV) whose coordinates are non-linear functions of X, Y and Z. Numerical values representing approximately the relative magnitude of colour differences can be described by simple Euclidean distances in these spaces or by more sophisticated colour-difference formulae that improve the correlation with the relative perceived size of differences. The purpose of this CIE Draft Standard is to define one such formula, the CIEDE2000 formula. The Draft Standard is based on CIE Technical Report 142-2001.

The formula is an extension of the CIE 1976 L*a*b* colour-difference formula (ISO 11664-4:2008(E)/CIE S 014-4/E:2007) with corrections for variation in colour-difference perception dependent on lightness, chroma, hue and chroma-hue interaction. Reference conditions define material and viewing environment characteristics to which the formula applies.

The Draft Standard is applicable to input values of CIELAB L*, a*, b* coordinates calculated according to ISO 11664-4:2008(E)/CIE S 014-4/E:2007. The Draft Standard may be used for the specification of the colour difference between two colour stimuli perceived as belonging to reflecting or transmitting objects. This includes displays, if they are being used to simulate reflecting or transmitting objects and if the tristimulus values representing the stimuli are appropriately normalised. The Draft Standard does not apply to colour stimuli perceived as belonging to areas that appear to be emitting light as primary light sources, or that appear to be specularly reflecting such light.

The Draft Standard has been sent to CIE National Committees for comments and sales to interested parties. It is still subject to changes and may not yet be referred to as a CIE Standard. When approved by the CIE NCs, it will be published as a CIE Standard and later on as a joint ISO/CIE Standard.

NEWS ABOUT MEMBERS

New Book on LEDs by Anil Valia

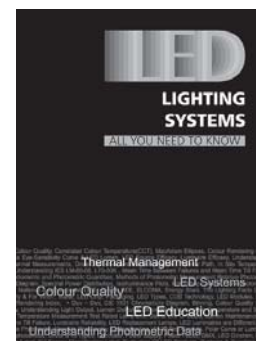
Former Vice President of ISLE, Mr. Anil Valia has just released his new book, LED Lighting Systems -All that You Need to Know. The first of its kind in India, the book in 4 colour printing on art paper with soft cover perfect

binding, has twenty chapters covered in around 300 pages, with more than 600 figures, graphs, charts and illustrations.

The chapter titles are: SSL - The Lighting Revolution, OLED, LED - A Light Source, Colour Quality of Light, Efficacy & its Evaluation, Useful Life of LEDs & Luminaires, Thermal Management Optical Management, Drivers for LED Luminaires, Lighting Control & Protocol, LED Replacement Lamps, LED Luminaires, Indoor Lighting Application, Street & Roadway Lighting, Outdoor Utility Area & Architectural Lighting, Solar Powered LED Lighting, LEDs for Signage, Evaluation of LED Product Systems & Suppliers, LED Standards & Regulations, Driving the Demand- Legislation, Policies, and Incentives.



The book explains the theoretical and practical aspects of LED Lighting Systems and answers to most FAQs. It has easy to understand language and will bridge the gap between the lighting and electronics (non lighting) industry professionals. This book would act as a guide to the practicing professionals - specifiers, lighting design consultants, electrical consultants, etc. in designing and specifying LED Lighting Systems and also help in assessing the LED products, systems and suppliers.



The book is available at Rs.1,800 for payment made by cash at the office of ILA. The handling and courier charges will be Rs.100.00 extra if required.

For further information contact:

International Lighting Academy
9, Omex Apartment
64, Sahar Road, Koldongri
Andheri (East)
Mumbai 400 069

Tel.: 91-22-26838413; 66922443

email: internationallightingacademy@gmail.com

OTHER NEWS

Elcoma and Messe Frankfurt Organise International Exhibition and Conference

The 2012 edition of Light India (www.light-india.in), co-organised by Messe Frankfurt and the Electric Lamps

& Components Manufacturers' Association of India (ELCOMA), has received strong interest from the international community. The debut fair, which will be held from 5-8 October at Pragati Maidan in New Delhi is expecting 20,000 Trade visitors and another 50,000 general visitors. It will cover an exhibition space totaling 16000 square metres.

The 2012 show has, so far, confirmed 130 exhibitors from China, India, Japan, Taiwan, Saudi Arabia, Singapore, the UAE, Germany, Italy and the US. Big brand exhibitors currently include Philips, Osram, Bajaj, Surya Roshni, Crompton, Anchor, BAG Electronics, Wipro and Energetic Lighting. The majority of exhibitors intend to focus on energy efficient lighting and LED technology.

Concurrent events to enrich India's knowledge on lighting trends

With the support of international associations such as Global Lighting Association, Light.asia, En. Lighten of United Nations Environment Program (UNEP) and the Department of Heritage and Environment - Australia, Light India will host two days of technical seminars and concurrent events, focusing on emerging technologies and their application. All the international organizations mentioned here will hold workshops on various topics. Some of the world's leading experts and business leaders will deliver papers on the industry's latest developments. Recommendations made by experts during the seminar will then form White Papers which will be submitted to the government for decision making and future policy guidelines.

Coinciding with Light India, the week from 4-8 October, 2012 has been deemed the National Energy Efficient Week in India, and will be supported by:

- Ministry of Power's Bureau of Energy Efficiency (BEE)
- Central Public Works Department
- Ministry of New & Renewable Energy
- Bureau of Indian Standards

Initiatives for promoting energy efficiency during the week will be coordinated with:

- Department of Electronics and Accreditation of Computer Classes (DOEACC)
- DOCC & EE, Government of Australia
- Light.asia
- En.lighten initiative of the United Nations Environment Program
- Global Lighting Associatio.

To find more about 2012 edition of Light India, please visit www.light-india.in

Dear Parkash,

Below we are reproducing a letter written by Past President Mr. P.K. Bandyopadhyay to the Chariman, Mumbai State Centre, Mr. Prakash Mavinkurve with request to forward it to other members.

As an internationally well-known thinker has said "All good things come to an end". So will end my long, very fruitful and eventful 42 years association with Bombay / Mumbai / Thane. We are now permanently moving to Kolkata next week.

Somehow, I was always connected with Lighting Professional Activities. I don't know why. But I enjoyed it all right!

Most of you may not even know that there was a body "Illuminating Engineering Society of India". When most of the stalwarts of this body moved to Bombay in 1968, I was made the Secretary of the Calcutta Chapter. We used to have regular meetings, even in the famous Firpo's (Mr. H.S. Mamak may remember). When I moved to Bombay in 1970, there was no activity of IES of I here. The stalwarts promptly made me the Secretary of the Bombay Chapter (I expect Anil Valia to remember, who used to come with Late N.S. Chari in those meetings planning for future). But Chapters couldn't do much, when the Central Body became terminally ill. IES of I died after conducting a good international seminar in Bombay to commemorate 100 years of Edison's Electric Lamp, which also coincided with the Silver Jubilee of IES of I. That seminar brought Late Manohar L. Dongre in the forefront as an organiser of a big lighting event. As a young engineer he and Late B.H. Mhatre were handpicked and trained by BEST to handle lighting. Dongre was also a big man in the Institution of Engineers (India), Maharashtra Chapter (he became President as well). But this international lighting seminar must have created in his mind an interest for a professional body in lighting.

Meanwhile, Mr. Mamak and I undertook several trips to Delhi and Calcutta attempting simultaneously to revive IES of I, to obtain permission of key people in GoI to form a new lighting body when the old one was technically not dead, to make one of these key people to join the new body, and to make the President and Treasurer of the inactive IES of I agree to merge with the new body. It took us almost 3 years to reach a conclusion.

GoI gave permission, but politely declined to join stating rightly that our professional body should be free

from any direct influence. IES of I President readily agreed, but.....?!

So there was a meeting in my then office at Band Box House on 3rd May 1983, which was attended by all the people named in the foregoing plus Mr. G.A. Rao, Mr. Ajit Mirchandani, Mr. Rashmi Bhuta, Late Jayantilal D. Mahidharia, and Late V.P. Chhabria. Thus ISLE was born. The story after that is known to most of the members. I've also recounted most of it upto 2003 elsewhere.

In these years of association with the lighting fraternity in Bombay I had the opportunity of making so many friends. I learned so many things from all of you while working closely. All of you have enriched my life. I will never be able to express fully my gratitude.

Many unforgettable memories show the kind of founding members ISLE was fortunate to have. CIE 1987 at Venice and CIE 1991 at Melbourne are among the landmarks of ISLE. In both the places we bid for the next session at New Delhi. Ajit Mirchandani and I travelled together to Venice. From Venice airport to Lido Island where our hotel was, we had to go in a small motor boat taxi. We were carrying several large and heavy packages containing promotional materials. As Air India was a joint sponsor of our bid more than 100 kg wasn't a problem on the flight. While I was settling some matters with airport officials, where Air India had no presence, Ajit Mirchandani carted those packages plus our baggage in the boat. At Lido N.S. Chari and G.A. Rao were waiting having reached a day earlier and we all helped in unloading, and in carting the packages upto the hotel, in the absence of any transport not an inconsiderable distance.

Ajit Mirchandani was my roommate at Lido. He, Rao, Chari and Riaz Kagalwala (who came the next day) inspired me for my presentation at the Div 5 meeting, where I became first TC Chairman from any developing country. This was some consolation for all 5 of us having lost the bid to Australia. But in Melbourne we won against Germany, Poland and the USA.

My long stint as Hon. Secretary (1989-96) and President (1997-2003) helped me in meeting friends outside Bombay, which had Local Centres in Pune and Indore during those periods.

You will understand that naturally I'm feeling a bit sad and emotional while saying Goodbye to you, and the letter is becoming long. Nandita, who also knows many of you and your families, feels the same and joins me in wishing all the members and their families all the happiness, success and long healthy life.

Now off to the Calcutta State Centre, which was started as the first State Centre of ISLE in 1987. Hope

they will conduct programmes and remember to invite their first Chairman, so that I can meet another set of old friends.

Prakash, as you can see I don't have the current email ids of many of the members. May I take liberty of requesting you to kindly forward this mail to others.

Thanking you and with best regards,

Pranab K.Bandyopadhyay
anp_chhara.bhut@yahoo.com

MEMBERSHIP APPLICATIONS APPROVED BY GOVERNING BODY

New Members Admitted on 30th April 2012

M. No	Name & Addresses	Grade	Centre
I(L).0162	Centre of Excellence for Training in Energy Efficiency 6, SIDCO Industrial Estate Ambattur Chennai 600 098	Institutional (Life)	Chennai
IM.0162	P. Dharmalingam Director -AIP-CETEE-NPC Centre of Excellence for Training in Energy Efficiency 6, SIDCO Industrial Estate Ambattur Chennai 600 098	Institutional Representative	Chennai
M(L).1735	Gautam Ghosh O/o The Chief Engineer (EL) ER. CPWD, Nizam Palace Kolkata 700 020	Member (Life)	Kolkata
M(L).1736	Sukanta Maiti O/o The Chief Engineer (EL) ER. CPWD, Nizam Palace Kolkata 700 020	Member (Life)	Kolkata
M(L).1737	Prasun Ghosh 41D Shankar Ghosh Lane Kolkata 700 006	Member (Life)	Kolkata
M(L).1738	Gurla Ramprasad Rao Plot No. 2B, Merlin Towers 325, Raja Rammohan Roy Road Kolkata 700 008	Member (Life)	Kolkata
M(L).1739	Dinesh Sharma B-215 & 216 Somdukt Chamber-1 5, Bikaji Cama Place New Delhi 110 066	Member (Life)	Delhi
M(L).1740	Satyendra Kumar G-174 Delta - II Greater Noida 201 308	Member (Life)	Kolkata
A(L).1112	Binay Chaudhary A112, First Floor Ashoka Enclave II Faridabad	Associate (Life)	Delhi
A(L).1113	Shilpy Bhardwaj C4/3 Tata Steel Officers Enclave Sector -Beta 1 Greater Noida	Associate (Life)	Delhi
A.1114	Vibhu Tandon Lighting Science - India Dixon Technologies (India) Pvt. Ltd. C - 33, Phase - 2 Noida 201 305	Associate	Delhi

A.1115	Naman Chandrakant Shah Naman Luminaires India Gala no. 7, Bhuvan Singh Compound Shukla Industrial Estate Opp. Ajit Glass S.V. Road, Jogeshwari (W) Mumbai 400 067	Associate	Mumbai	S.0765	Deeksha Goyal	Student	Rajasthan
				S.0766	Deepak Khandelwal	Student	Rajasthan
				S.0786	Deepak Kumar Jangid	Student	Rajasthan
				S.0767	Dharnidhar Prasad	Student	Rajasthan
				S.0768	Dheeraj Sharma	Student	Rajasthan
S.0734	Ravi Teja Pedamallu Lakshman H. No. 2/51 Chanakyapuri Colony Elupu Andhra Pradesh 534 002	Student	Chennai	S.0769	Gajendra Singh	Student	Rajasthan
				S.0770	Ganesh Verma	Student	Rajasthan
				S.0771	Ganesh Chauhan	Student	Rajasthan
				S.0772	Gaurav Singhal	Student	Rajasthan
				S.0773	Harish Kumar	Student	Rajasthan
				S.0774	Indraj Kumawat	Student	Rajasthan
F.0763(L)	Omprakash Bishnoi E8/41 Chitrakoot Jaipur	Fellow (Life)	Rajasthan	S.0775	Jitendra Kumar	Student	Rajasthan
M(L).1741	Sanyog Rawat 268, Muktanand Nagar Gopalpura Bye Pass Tonk Road Jaipur	Member (Life)	Rajasthan	S.0776	Jitendra Nagar	Student	Rajasthan
				S.0777	Kailash Singh Kishnawat	Student	Rajasthan
				S.0778	Kamal Bhatia	Student	Rajasthan
				S.0779	Kamal Kant	Student	Rajasthan
A.1116	Puneet Grover Hi-Sense Technology (Hanzlite) CGF-12, Dilkhush Industrial Estate G.T. Karnal Road Delhi 110 033	Associate	Delhi	S.0780	Kana Ram Kumawat	Student	Rajasthan
				S.0781	Kavya Nair	Student	Rajasthan
				S.0782	Kuldeep Piloniya	Student	Rajasthan
				S.0783	Kundan	Student	Rajasthan
				S.0784	Laxman Singh	Student	Rajasthan
A(L).1117	Ashutosh Tripathi Amity University Dept. of ECE Amity School of Engineering & Technology Amity University Jaipur	Associate (Life)	Rajasthan	S.0785	Mahendra Singh Kasana	Student	Rajasthan
				S.0787	Major Deen	Student	Rajasthan
				S.0788	Manish Kumar Gupta	Student	Rajasthan
				S.0789	Manoj Lohar	Student	Rajasthan
				S.0790	Mayank Khandelwal	Student	Rajasthan
				S.0791	Mohit Garg	Student	Rajasthan
				S.0792	Mohit Sharma	Student	Rajasthan
				S.0793	Mukesh Chand Choudhary	Student	Rajasthan
				S.0794	Nitesh Kumawat	Student	Rajasthan
				S.0795	Nitin Sharma	Student	Rajasthan
				S.0796	Nitin Singh	Student	Rajasthan
				S.0797	Pankaj Kumar	Student	Rajasthan
				S.0798	Parvind Agarwal	Student	Rajasthan
				S.0799	Pawan Kumar	Student	Rajasthan
				S.0800	Pawan Kumar Nagar	Student	Rajasthan
				S.0801	Piyush Sharma	Student	Rajasthan
				S.0802	Pramod Kumawat	Student	Rajasthan
				S.0803	Pranshu Tiwari	Student	Rajasthan
				S.0804	Prateek Kumar Sain	Student	Rajasthan
				S.0805	Praveen Kumar Gocher	Student	Rajasthan
				S.0806	Pritam Solanki	Student	Rajasthan
				S.0807	Punit Bhardwaj	Student	Rajasthan
				S.0808	Pushpendra Singh Gurjar	Student	Rajasthan
				S.0809	Rahul Kumar Raushan	Student	Rajasthan
				S.0810	Rajkumar Sharma	Student	Rajasthan
				S.0811	Rajendra Kumar Chourasia	Student	Rajasthan
				S.0812	Rakesh Kumar	Student	Rajasthan
				S.0813	Ravi Bhushan Singh	Student	Rajasthan
				S.0814	Ravi Kumar Sharma	Student	Rajasthan
				S.0815	Ravi Shankar Sharma	Student	Rajasthan
				S.0816	Richa Choudhary	Student	Rajasthan
				S.0817	Sagar Rathor	Student	Rajasthan
				S.0818	Saket Anand	Student	Rajasthan
				S.0819	Sanket Mangal	Student	Rajasthan
				S.0820	Sanwar Mal Choudhary	Student	Rajasthan
				S.0821	Saurabh Yadav	Student	Rajasthan
				S.0822	Saurabh Prakash Sharma	Student	Rajasthan
				S.0823	Shashank Kapoor	Student	Rajasthan
				S.0824	Sheesh Ram	Student	Rajasthan
				S.0825	Shivani Sharma	Student	Rajasthan
				S.0826	Shyorajpal Bhati	Student	Rajasthan

New Members Admitted on 22nd June 2012

Transfer of grade

The following Student Members are from Poornima College of Engineering, Jaipur

S.0827	Sonu Singh	Student	Rajasthan	S.0890	Gyan Chand Lodha	Student	Rajasthan
S.0828	Surendra Muwal	Student	Rajasthan	S.0891	Man Singh	Student	Rajasthan
S.0829	Susheel Jajara	Student	Rajasthan	S.0892	Ramawatar Bairwa	Student	Rajasthan
S.0830	Veeramdev Choudhary	Student	Rajasthan	S.0893	Abhishek Sharma	Student	Rajasthan
S.0831	Vipul Rajpurohit	Student	Rajasthan	S.0894	Anil Pratap Singh	Student	Rajasthan
S.0832	Virender Singh Gurjar	Student	Rajasthan	S.0895	Ashish Karanpuria	Student	Rajasthan
S.0833	Virendra Sain	Student	Rajasthan	S.0896	Deepika Pareta	Student	Rajasthan
S.0834	Vishesh Agarwal	Student	Rajasthan	S.0897	Khemraj Sharma	Student	Rajasthan
S.0835	Vishvendra Vijay	Student	Rajasthan	S.0898	Loveneet Mahera	Student	Rajasthan
S.0836	Vivek Garg	Student	Rajasthan	S.0899	Mohammad Shafik	Student	Rajasthan
S.0837	Vivek Garg	Student	Rajasthan	S.0900	Saurabh Bisht	Student	Rajasthan
S.0838	Vivek Tyagi	Student	Rajasthan	S.0901	Shantanu Chaturvedi	Student	Rajasthan
S.0839	Yogendra Kumar Swami	Student	Rajasthan	S.0902	Vishnu Kumar	Student	Rajasthan
S.0840	Ajay Ram Yadav	Student	Rajasthan	S.0903	Dilip Kumar Mali	Student	Rajasthan
S.0841	Amit Kumar Bhardwaj	Student	Rajasthan	The Following Student Members are from Amity University, Jaipur			
S.0842	Anamika Sharma	Student	Rajasthan	S.0904	Ashish Singh Chaudhary	Student	Rajasthan
S.0843	Anil Kumar Choudhary	Student	Rajasthan	S.0905	Abhishek Malviya	Student	Rajasthan
S.0844	Ashok Kumar Saharan	Student	Rajasthan	S.0906	Akshay Kumar	Student	Rajasthan
S.0845	Dharmendra Kumar	Student	Rajasthan	S.0907	Alka Manhas	Student	Rajasthan
S.0846	Gitesh Kataria	Student	Rajasthan	S.0908	Anish Mishra	Student	Rajasthan
S.0847	Kamal Kishor Singh	Student	Rajasthan	S.0909	Anumala Kiran Kumar	Student	Rajasthan
S.0848	Manish Kumar Thori	Student	Rajasthan	S.0910	Anvi Sharma	Student	Rajasthan
S.0849	Manoj Kumar	Student	Rajasthan	S.0911	Apeksha Gupta	Student	Rajasthan
S.0850	Manoj Kumar Tyagi	Student	Rajasthan	S.0912	Avinash Upadhyay	Student	Rajasthan
S.0851	Manvendra Dagur	Student	Rajasthan	S.0913	Bhanu Sharma	Student	Rajasthan
S.0852	Mukesh Kumar Pareta	Student	Rajasthan	S.0914	Chahat Rana	Student	Rajasthan
S.0853	Neeraj Kumar	Student	Rajasthan	S.0915	Chitresh Sharma	Student	Rajasthan
S.0854	Rajji Singh	Student	Rajasthan	S.0916	Deeksha Purohit	Student	Rajasthan
S.0855	Rameshwar Singh	Student	Rajasthan	S.0917	Deepak Kumar	Student	Rajasthan
S.0856	Rishi Kumar Dagur	Student	Rajasthan	S.0918	Devendra Hapawat	Student	Rajasthan
S.0857	Satveer Singh Bhullar	Student	Rajasthan	S.0919	Divyvijay Singh	Student	Rajasthan
S.0858	Shyamveer Sharma	Student	Rajasthan	S.0920	Faizan A. Hasan	Student	Rajasthan
S.0859	Surender Kumar	Student	Rajasthan	S.0921	Parul Chandraprakash Garg	Student	Rajasthan
S.0860	Vikash Kumar Yadav	Student	Rajasthan	S.0923	Garima Tiwari	Student	Rajasthan
S.0861	Jitesh Kumar Meena	Student	Rajasthan	S.0922	Prasendatt Gaikwad	Student	Rajasthan
S.0862	Akshay Choudhary	Student	Rajasthan	S.0924	Indira Kundu	Student	Rajasthan
S.0863	Ankit Kumar Sharma	Student	Rajasthan	S.0925	Khushboo Talreja	Student	Rajasthan
S.0864	Devendra Kumar Singhal	Student	Rajasthan	S.0926	Lekhraj Yadav	Student	Rajasthan
S.0865	Ganesh Mangal	Student	Rajasthan	S.0927	Nalind Khandelwal	Student	Rajasthan
S.0866	Gaurav Khandelwal	Student	Rajasthan	S.0928	Naveen Tokas	Student	Rajasthan
S.0867	Gaurav Singhal	Student	Rajasthan	S.0929	Navneet Kaur Gill	Student	Rajasthan
S.0868	Gourav Pandya	Student	Rajasthan	S.0930	Nikhil Kumar Choudhary	Student	Rajasthan
S.0869	Indu Raj	Student	Rajasthan	S.0931	Pankaj Sen	Student	Rajasthan
S.0870	Jitendra Goura	Student	Rajasthan	S.0932	Saroj Kumar Jha	Student	Rajasthan
S.0871	Jitesh Parmar	Student	Rajasthan	S.0933	Prakash Patel	Student	Rajasthan
S.0872	Kailash Chand Bairwa	Student	Rajasthan	S.0934	Prakhar Bhatt	Student	Rajasthan
S.0873	Kamlesh Kumar Mali	Student	Rajasthan	S.0935	Pranjal Dubey	Student	Rajasthan
S.0874	Krishan Chander	Student	Rajasthan	S.0936	Prateek Singh Rathore	Student	Rajasthan
S.0875	Krishna Kant Tiwari	Student	Rajasthan	S.0937	Prity Kumari	Student	Rajasthan
S.0876	Lav Kumar Khandelwal	Student	Rajasthan	S.0938	Priya Hada	Student	Rajasthan
S.0877	Naveen Kumar Jain	Student	Rajasthan	S.0939	Radhika Jeswani	Student	Rajasthan
S.0878	Nitish Kumar	Student	Rajasthan	S.0940	Ramesh Kumar Ujjenia	Student	Rajasthan
S.0879	Nupur Nagpal	Student	Rajasthan	S.0941	Rashi Shrivastava	Student	Rajasthan
S.0880	Pawan Kumar	Student	Rajasthan	S.0942	Rishi Raj Yadav	Student	Rajasthan
S.0881	Piyush Garg	Student	Rajasthan	S.0943	Ritu Shekhawat	Student	Rajasthan
S.0882	Piyush Goyal	Student	Rajasthan	S.0944	Ruchi Singha	Student	Rajasthan
S.0883	Priyanshi Yadav	Student	Rajasthan	S.0945	Sachin Singh Tomar	Student	Rajasthan
S.0884	Puneet Saini	Student	Rajasthan	S.0946	Shail Kamal Bhatt	Student	Rajasthan
S.0885	Ratan Lal Yadav	Student	Rajasthan	S.0947	Shivraj Meena	Student	Rajasthan
S.0886	Rohit Kumar	Student	Rajasthan				
S.0887	Sachin Bansal	Student	Rajasthan				
S.0888	Shri Ram Sharma	Student	Rajasthan				
S.0889	Yogesh Bansal	Student	Rajasthan				

S.0948	Shubhangi Sharma	Student	Rajasthan	S.1005	Somanshi Ojha	Student	Rajasthan
S.0949	Shubhra Jain	Student	Rajasthan	S.1006	C.V. Sruthi	Student	Rajasthan
S.0950	Shweta Rani	Student	Rajasthan	S.1007	Sonika Rawat	Student	Rajasthan
S.0951	Surbhi Jain	Student	Rajasthan	S.1008	Renu Kumari	Student	Rajasthan
S.0952	Taru Sharma	Student	Rajasthan	S.1009	Priyanka Kumawat	Student	Rajasthan
S.0953	Tulika Tharad	Student	Rajasthan	S.1010	Shivam Dixit	Student	Rajasthan
S.0954	Twinkle Vyas	Student	Rajasthan	S.1011	Saksham Sapra	Student	Rajasthan
S.0955	Vishav Rattan Suri	Student	Rajasthan	S.1012	Tarun Kaushik	Student	Rajasthan
S.0956	Vivek Yadav	Student	Rajasthan	S.1013	Shubham Saxena	Student	Rajasthan
S.0957	Yuvraj Singh Pathak	Student	Rajasthan	S.1014	Mohammed Husnain Siddique	Student	Rajasthan
S.0958	Shrayansh Singh Chundawat	Student	Rajasthan	S.1015	Bhumi Anirudhdha Joshi	Student	Rajasthan
S.0959	Ajay Kumar Verma	Student	Rajasthan	S.1016	Vikash Choudhary	Student	Rajasthan
S.0960	Avinash Singh	Student	Rajasthan	S.1017	Shekhar Ranjan	Student	Rajasthan
S.0961	Kritika Sharma	Student	Rajasthan	S.1018	J. Raval Dhaivat	Student	Rajasthan
S.0962	Monika Rawat	Student	Rajasthan	S.1018	Dileep Yadav	Student	Rajasthan
S.0963	Soumya Mukhopadhyay	Student	Rajasthan	S.1020	Mohit Soni	Student	Rajasthan
S.0964	Srishti Shukla	Student	Rajasthan	S.1021	Bhuvnesh Khatri	Student	Rajasthan
S.0965	Shahnawaz Sheikh	Student	Rajasthan	S.1022	Vivek Yadav	Student	Rajasthan
S.0966	Tushar Durgapal	Student	Rajasthan	S.1023	Yusuf Patiwal	Student	Rajasthan
S.0967	R. Venu Madhava	Student	Rajasthan	S.1024	Shubham Khandelwal	Student	Rajasthan
S.0968	Rahul Meena	Student	Rajasthan	S.1025	Nitin Koundal	Student	Rajasthan
S.0969	Akhil Bojedla	Student	Rajasthan	S.1026	Srijani Basak	Student	Rajasthan
S.0970	Devendra Pareek	Student	Rajasthan	S.1027	Subodh Soni	Student	Rajasthan
S.0971	Divy Bhatia	Student	Rajasthan	S.1028	Mayank Tiwari	Student	Rajasthan
S.0972	Manish Jain	Student	Rajasthan	S.1029	Shashank Sharma	Student	Rajasthan
S.0973	Manan Jain	Student	Rajasthan	S.1030	Sumit Kumar	Student	Rajasthan
S.0974	Molugiri Koushik Murthy	Student	Rajasthan	S.1031	Shubham Saxena	Student	Rajasthan
S.0975	Murlidhar Mahato	Student	Rajasthan	S.1032	Anoop Kumar	Student	Rajasthan
S.0976	Pallav Kothari	Student	Rajasthan	S.1033	Sourabh Purohit	Student	Rajasthan
S.0977	Arunima Kailthya	Student	Rajasthan	S.1034	Abhinav Chanda	Student	Rajasthan
S.0978	Soumyojit Meur	Student	Rajasthan	S.1035	Aakashdeep Khandelwal	Student	Rajasthan
S.0979	Rishabh Kasliwal	Student	Rajasthan	S.1036	Debalaya Bhowal	Student	Rajasthan
S.0980	Saurav Kumar	Student	Rajasthan	S.1037	Rahul Yadav	Student	Rajasthan
S.0981	Rounak Raj	Student	Rajasthan	S.1038	Ashok Kumar Nitharwal	Student	Rajasthan
S.0982	Seerat Kaur Gill	Student	Rajasthan	S.1039	Arpit Joshi	Student	Rajasthan
S.0983	Satish Agrawal	Student	Rajasthan	S.1040	Dhaval Jain	Student	Rajasthan
S.0984	Sandeep Singh Shekhawat	Student	Rajasthan	S.1041	Dinesh Kumar	Student	Rajasthan
S.0985	Vipul Saurabh	Student	Rajasthan	S.1042	Jaiveer Yadav	Student	Rajasthan
S.0986	B. Ashish	Student	Rajasthan	S.1043	Navneet Singh Meena	Student	Rajasthan
S.0987	Shaik Mohammad	Student	Rajasthan	S.1044	Meghal Dave	Student	Rajasthan
S.0988	Dhananjay Kumar Singh	Student	Rajasthan	S.1045	Raunak Paliwal	Student	Rajasthan
S.0989	Shruti Sood	Student	Rajasthan	S.1046	Sachin Srivastava	Student	Rajasthan
S.0990	Prateek Tripathi	Student	Rajasthan	S.1047	Taranjeet Singh Gidda	Student	Rajasthan
S.0991	Sandra Felice	Student	Rajasthan	S.1048	Yash Tiwari	Student	Rajasthan
S.0992	Varnita Pandya	Student	Rajasthan	S.1049	Shubham Naik	Student	Rajasthan
S.0993	Pinky Yadav	Student	Rajasthan	S.1050	Suraj Singh Mehta	Student	Rajasthan
S.0994	Yash Ashok Savla	Student	Rajasthan	S.1051	Hemanth Kumar Yada	Student	Rajasthan
S.0995	Shuhail Ahamed Shaik	Student	Rajasthan	S.1052	Vivek John Ekka	Student	Rajasthan
S.0996	Rahul Verma	Student	Rajasthan	S.1053	Shivanand Vishnu Gupta	Student	Rajasthan
S.0997	Vishesh Singhal	Student	Rajasthan	S.1054	Chinmaya Thakore	Student	Rajasthan
S.0998	Yogesh Shayawar	Student	Rajasthan	S.1055	Vinod Panwar	Student	Rajasthan
S.0999	Yashu Poddar	Student	Rajasthan	S.1056	Ravindra Singh Palawat	Student	Rajasthan
S.1000	Suvi Dubey	Student	Rajasthan	S.1057	Ajeet Singh	Student	Rajasthan
S.1001	Shashank Mahera	Student	Rajasthan	S.1058	Aman Bansal	Student	Rajasthan
S.1002	Prashali Thakur	Student	Rajasthan	S.1059	Ankur Yadav	Student	Rajasthan
S.1003	Rashmi Gupta	Student	Rajasthan	S.1060	Debraj Roy	Student	Rajasthan
S.1004	Priyanka Labh	Student	Rajasthan	S.1061	Harshit Agarwal	Student	Rajasthan
				S.1062	Jitendra Yadav	Student	Rajasthan
				S.1063	Kulkeerty Singh	Student	Rajasthan

S.1064	Akash Gupta	Student	Rajasthan	S.1076	Tushar Gaur	Student	Rajasthan
S.1065	K.V.V.S.S. Narayana Murthy	Student	Rajasthan	S.1077	Varun Jain	Student	Rajasthan
S.1066	Pranjal Srivastava	Student	Rajasthan	S.1078	Utkarsh Singh	Student	Rajasthan
S.1067	Prashant	Student	Rajasthan	S.1079	Vijay Kumar Sharma	Student	Rajasthan
S.1068	Prashant Samadhiya	Student	Rajasthan	S.1080	Vivek Srivastava	Student	Rajasthan
S.1069	Raghav Tomar	Student	Rajasthan	S.1081	Deepak Kumar	Student	Rajasthan
S.1070	Ravikant Prasad	Student	Rajasthan	S.1082	Nityanand Yadav	Student	Rajasthan
S.1071	Sanjay Garg	Student	Rajasthan	S.1083	Pramod Kumar	Student	Rajasthan
S.1072	Akash Harjibhai Sardhara	Student	Rajasthan	S.1084	Sumit Gupta	Student	Rajasthan
S.1073	Sunil Rathore	Student	Rajasthan	S.1085	Zayaul Haque	Student	Rajasthan
S.1074	Surjeet Mohanty	Student	Rajasthan	S.1086	Arjun Singh Bhadoria	Student	Rajasthan
S.1075	Tarundeep Singh	Student	Rajasthan	S.1087	Khushwant Kaushik	Student	Rajasthan

ADVERTISING IN LIGHT NEWSLETTER

The Light Newsletter, published by the Indian Society of Lighting Engineers has a circulation of nearly 2000 in India and abroad.

The readers are all people with an overriding interest in lighting issues.

Advertising in Light Newsletter will give you access to the full spectrum of the lighting community - engineers, designers, architects, academicians, researchers, users and government and industry decision makers.

Mechanical Details

Full page	:	7¾" x 10"
Full page bleed	:	8¾" x 11½" (¼" bleed each side)
½ page Vertical	:	3½" x 10"
½ page Horizontal	:	5" x 7¾"

Advertising Tariff

Full page colour	Rs. 20,000
Full page b+w	Rs. 15,000
Half page colour	Rs. 12,000
Half page b+w	Rs. 8,000

Annual contract (4 issues) - 20% discount

For further information contact

ISLE C/o Thorn Lighting, A 274, 1st Floor, Defence Colony, New Delhi 110 024,

Tel: 46562981, 46562982 Fax: 46528477 E-mail: isledel@vsnl.com; www.isleind.org

TECEO

● THE GREEN LIGHT

LIGHTING IN A SUSTAINABLE
AND EFFICIENT MANNER

The Teceo range offers a minimum total cost of ownership for street and road lighting through high photometrical performance and energy savings.



Schröder Group

ABU DHABI | ALEXANDRIA | BASINGSTOKE (UK) | BEIRUT | BELGRADE
BOGOTA | BRUSSELS | BUDAPEST | BUENOS AIRES | CHICAGO
CLUJ-NAPOCA (RO) | COCHABAMBA | GUADALAJARA (SP)
HO CHI MINH CITY | KUALA LUMPUR | LIMA | LISBON | LES CULLAYES (CH)
MONTREAL | MOSCOW | NEW DELHI | PARIS | PRAGUE | PRETORIA | QUITO
RHENEN (NL) | SANTIAGO | SAO PAULO | TERNOPIIL | TIANJIN | TORINO
WARSAW | WENDLINGEN (D) | WIEN

www.schreder.com
Keselec Schröder Private Limited
E-mail: corporate@schreder.com



Sereno T5



Celino T5



Arano T5



Wing C T5



ActiLume T5 System

Big ideas matter

We understand your drive to create inspiring workplaces. Our T5 office lighting systems deliver outstanding aesthetics, ergonomics and efficiency, so you can design great spaces where sparks of inspiration can become big ideas that really matter. www.philips.com/lighting

PHILIPS
sense and simplicity