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of the **indian society of lighting engineers**

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FROM THE PRESIDENT'S DESK

As evidenced by the published reports, the last quarter has been extremely eventful for ISLE.

One of the major events has been the Lux Pacifica wherein ISLE was represented by Mr. H.S. Mamak (former ISLE President & Lux Pacifica Board member) and me. A report detailing the event has been reported in this publication. Also, as you would observe on your perusal of the report, ISLE has been invited to hold the next Lux Pacifica Conference in 2015.

Further, the CIE Centenary Conference was recently attended by Mr. H.S. Mamak and GB member Ms. Sudeshna Mukhopadhyay. However, it is unfortunate that most other ISLE members could not make it to this landmark event organised by CIE the world's foremost technical body of which ISLE has been a member since 1987.

Furthermore, we have recently inaugurated a new local ISLE centre at Bhubaneswar. The event was very well organised and it was my privilege and pleasure to inaugurate the centre. A greater geographical spread to carry the message of good lighting practice to the grass root level is of utmost importance for ISLE.

Also, we are now looking forward to the Lii 2013 being organised at Chennai in September by the Chennai State Centre. Efforts and continued support by one and all in getting exhibitors to the trade show along with interested attendees are required to ensure the success of this event.

The other important project on the anvil is the publication of the ISLE Directory now rechristened as the Indian Lighting Directory. This edition is due for launch during the upcoming Lii2013. The success of the 7th edition in 2012 has led to the making of this publication an annual one. Though this message has been

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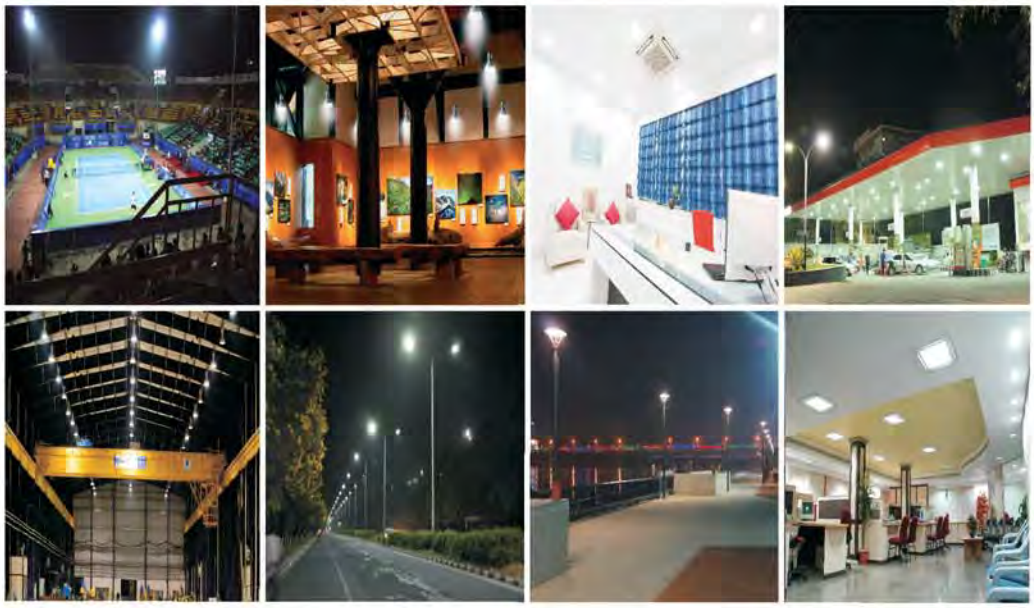

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communicated before but still to reiterate, the success of this publication is dependent on the efforts that we as members put into it, therefore, I would request all members to encourage their contacts to take advertisements and entries in the Directory.

Last but not the least, as always, I look forward to receiving your feedback and suggestions

Gulshan Aghi
President - ISLE
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EDITORIAL

There has been a flurry of activity in the lighting world in the past month both in ISLE as well as on the international front.

There is a brief report from the President on the Lux Pacifica conference held in Bangkok. In this issue we are also carrying two papers from the conference which are interesting because they are different from the technical papers usually presented. One is from the former GB member, Mrs. Rohini Mani the well known architect from Mumbai on the many issues involved in lighting for festivals and the other by Gauoliang Cai, Chinese architect and lighting designer on what we can learn from the traditional discipline Feng shui when designing lighting.

As the CIE President Dr. Ann Webb said at the start of the Centenary Conference "CIE is well known for its scientific rigour, its expertise in the fundamentals of light and lighting, and its thoroughly explored applications". This was very much in evidence in the two day event that I attended. I have given a brief report on the conference and hope that in due course we will be able to share more information with our readers in forthcoming issues. The conference served to reinforce my belief that we in ISLE need to get more involved in the technical work of the CIE.

Closer home, there is a report on the new Local Centre at Bhubaneshwar in addition to the activities of the different State Centres. In the coming months the level of activity is going to grow and we look forward in September to the Lii2013 in Chennai.

The ISLE Directory is being published once again this year and I would like to add my appeal to the President's for members to work towards the success of this publication.

H.S. Mamak
Editor

OBITUARY

J.F. Caminada

Eric (JF) Caminada was born to a Dutch father and a Norwegian mother in Paris in 1943. He studied architecture at the University of Delft, the Netherlands.

He started working at the international Lighting Design and Engineering Centre (LiDEC) at Philips headquarters in Eindhoven, the Netherlands at the end of the sixties of last century. He quickly developed himself into one of the leading lighting architects in the world. He travelled extensively in Europe, Asia and USA to give support to many impressive architectural lighting projects and to lecture about architectural lighting. At the end of the seventies he became the natural successor of Joh. Jansen and Prof. Dieter Fischer as the chief editor of the Lighting Journal, International Lighting Review, ILR. Under his leadership ILR maintained a very high level on graphics, photographic and written content. Caminada had the vision that ILR could only grow in importance by making part of its content available to other professional lighting journals. As a result, ISLE, incorporated in its Newsletter for many years a coloured reprint of ILR articles.

On the occasion of the 100th anniversary of the Philips company, Philips developed a large new building completely devoted to demonstrating professional lighting in real applications such as office lighting, shop lighting, industrial lighting, hotel lighting and all that combined with a light theatre to show the basics of light and lighting. Caminada was the responsible architect for both the building and the demonstration facilities. This so called Lighting Application Centre (LAC) in Eindhoven, the Netherlands, has received until today ten thousands of lighting professionals amongst them many from Asia and India.

JF Caminada passed away 13 March of this year at the age of 70. We wish his wife Rieteke, his son and daughter and three grandchildren strength with the loss of their man, father and grandfather.

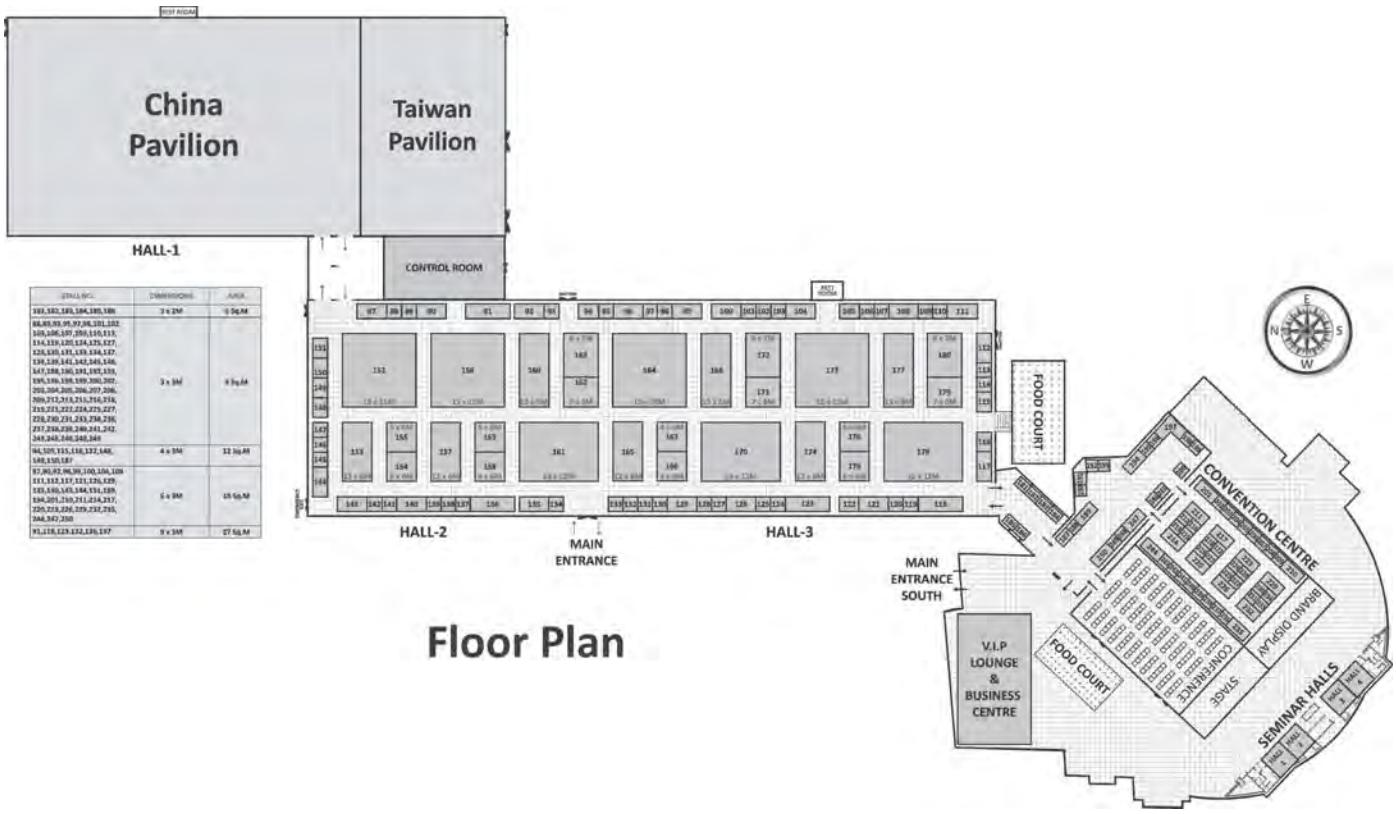
Wout van Bommel

ISLE ACTIVITY

Lii 2013
LIGHT INDIA INTERNATIONAL

September 13-16, 2013, Chennai

Following on the heels of the successful Lii2011International Exhibition and Conference, Chennai has been chosen for the second time as the



Floor Plan

venue for this prestigious event keeping in view vibrant economic pace of activity in the city as well as the growth potential.

It is expected that in Lii2013 more than 250 manufacturers including 100 from overseas mainly from China, Taiwan, Korea, Italy, Germany and USA will participate.

The fair is being organised against the backdrop of the remarkable growth that the Indian lighting industry is witnessing as a result of increased investments in the Infrastructure sectors, reduced import duty and improved living standards.

Light India International 2013 will publicise the developments taking place in the lighting industry and provide excellent marketing opportunities for all the products and services under the lighting industry.

The exhibition will showcase a wide range of products over 16,500 square metres in the Chennai Trade Centre, covering Residential, Commercial and Retail lighting; Industrial lighting; Street lighting; Security lighting; Environmental/Landscape lighting; City beautification lighting; Architectural lighting; Railway/Metro lighting; Airport & Runway lighting; Refinery/Mine lighting; LED lighting; Intelligent lighting; Lighting with non-conventional energy; Specialty lighting; Lighting accessories and controls; Power saving solutions; and Testing and measuring instruments.

IT, Publications and Consultancy services relating to lighting industry will also take part in the event.

Seminars and technical sessions; Theme pavilion and Special outdoor lighting will be the other salient features of the fair.

Mainly a B2B event, open to business visitors from 10 am to 3 pm, the fair will provide the exhibitors with opportunity to explore investment opportunities and locate partners for joint ventures and tie-ups. The fair will be open to the public in the evenings from 3.00 PM to 7.00 PM.

The previous edition of this event, Lii2011 held in March 2011 had 220 participants including 80 from overseas. More than 15,000 business visitors visited the event and on the spot business worth Rs. 200 million were reported to have been transacted.

Limited sponsorship opportunities are also available. For further information on participation and sponsorship contact:

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Directory 2013

Since its inception in 1991, the Directory of the Lighting Industry in India has always covered contemporary concerns such as energy conservation, lighting standards, environment and health, sustainability and the green movement. In brief, the Lighting Directory has served as a reference book to the lighting industry and many associated with it for 21 years. The overwhelming response that the 7th edition, which was released in October 2012, has received from the lighting fraternity has compelled us to turn the directory into an annual publication and the next edition, renamed 'The Indian Lighting Directory', will be released in October this year.

The directory attempts not only to list the organisations, manufacturers and dealers in the field of the Lighting Industry, but also provide a deep insight into the phenomenal progress that is being made in the field of lighting. The lighting industry in India is witnessing a robust 100% growth. The sector is projected to grow to Rs 20,000 crore in the next 5 years.

Keeping in mind the rapidly changing scenario in lighting, we feel that the Directory is an ideal platform to advertise and be seen in. The directory is a very useful reference book to locate key persons in the field of lighting. It is also an authentic source of information on different aspects of lighting and the developments taking place.

The Directory has not only served as a reference for new entrants to the lighting industry but also in the selection of vendors and raw material suppliers. In fact, the biggest demand for the Directory has come from emerging industries searching for marketing their goods and services.

The recipients of this publication include specifiers, architects, consultants, decision makers from government and industry, large users, academicians etc. The Directory is also distributed internationally.

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CALCUTTA STATE CENTRE

Lecture on Decorative Lighting
February 18, 2013, Kolkata

The Calcutta State Centre together with Philips in association with Ladhuram Toshniwal and Sons organised a lecture on Decorative Lighting at Nizam Palace, Kolkata.

The Calcutta State Centre Chairman, Mr. Kamal Sethia welcomed the ISLE members and CPWD engineers present and invited the speakers to make their presentations.

The meeting ended with a vote of thanks by Mr. T.K. Ghosal, Hon. Secretary of Calcutta State Centre.

Mr. Kunal Swarup, Asst. Manager Philips Electronics India Ltd, gave a presentation on various decorative lighting products mainly for domestic usage. He made very interesting observations on various new energy saving lighting products.

Mr. Pritam Mukherjee also from Philips gave a very educative presentation on professional LED lighting.

The meeting was well attended by ISLE Members and CPWD Engineers. There was a very lively question answer session after the lectures. The meeting ended with a vote of thanks by Mr. T.K. Ghosal, Hon. Secretary, ISLE. Calcutta State Centre.

Lecture on Electrical Distribution Systems
March 12, 2013, Kolkata

Calcutta State Centre in collaboration with Hager India organised a lecture on electrical distribution systems at Nizam Palace in Kolkata.

Mr. Kamal Sethia, Chairman Calcutta State Centre welcomed the ISLE members and thanked Hager India for arranging the technical lecture. He gave a brief preview of the forthcoming events being organised by the State Centre; a Business Meet at KIIT in Bhubaneshwar on April 6 and 7 together with the opening of a new Local Centre at Bhubaneshwar; a seminar on World Sun Day to be organised jointly by ISLE, Jadavpur University and the Solar Society of India ER on May 4-5; and the Lighting Conference, Seminar and Exhibition on December 13 and 14 at the National Library in Kolkata.

Mr. Hufeza Poonawala, Manager Marketing Operations, Hager India gave a lecture and demonstration of electrical distribution products and systems (MCCB, MCB, RCCB, ELCB etc.). The presentation was appreciated by the ISLE members.

Business Meet
April 6-7, 2013, Bhubaneshwar

On the occasion of the establishment of a new Local Centre in Bhubaneshwar, Calcutta State Centre organised a Business Meet on Lighting for Tomorrow at KIIT University, Bhubaneswar (Odisha).

The distinguished faculty of KIIT who participated included Prof. Dr. P.P. Mathur VC, Prof. Dr. D.K. Tripathy,

Dignitaries at the inaugural session

Pro VC, Prof. A.K. Dasgupta, Dean EE, Prof. Dr. C.K. Panigrahi, Associate Dean EE and Prof. Dr. S.M. Ali, EE.

The ISLE GB members in attendance were Mr. Gulshan Aghi, President, Mr. A.K. Jain, Hon. Gen Sec. Mr. B. Dattani, Hon. Treasurer and Mr. Kamal Sethia, Chairman CSC. Also present were former GB members Mr. H.S. Mamak, Mr. H. Mukherji, Prof. A.K. Datta, Dr. Biswajit

Release of the bulletin

Ghosh, and Mr. A.P. Joshi Past Chairman CSC. Other dignitaries included Mr. P.K. Bhaduri, DPCL, Prof. A.K. Tripathy, Silicon Valley and Mr. Sansar Pathak, CE CPWD Bhubaneshwar.

After the welcome address by Prof. A.K. Dasgupta, Dean EE KIIT, Mr. Kamal Sethia spoke on the philosophy behind the Business Meet. Dr. S. Samantha, Registrar KIIT addressed the delegates.

The new Local Centre was inaugurated by Mr. Gulshan Aghi.

This was followed by the release of the bulletin for the meet by the Chief Guest, Mr. H.S. Mamak. After the felicitation of the dignitaries Dr. P.P. Mathur addressed the delegates. The vote of thanks was given by Dr. C.K. Panigrahi.

The first technical session was chaired by Prof. D. K. Tripathy, Pro VC, KIIT and Mr. A.K. Jain, Hon. Gen. Sec. ISLE.

Mr. Kamal Sethia

The Chief Guest, Mr. H.S. Mamak gave the keynote address on Directions and Opportunities in Lighting.

The other papers in this session were Human Capital and Lighting Industries with reference to the Global Market by Ms. Sharmila Kumbhat, Director K-Lite and CPWD Initiatives in Lighting India by Mr. A.P. Joshi, Chief Engineer CPWD WB.

After the lunch break Dr. Achyut Samanta, founder of KIIT and KISS came to share his views with ISLE members present and offer his good wishes to the Conference and the Local Centre.

The second technical session was chaired by Prof. A.K. Dutta, Calcutta University and Mr. T.K. Ghosal, Hon. Secretary, ISLE, CSC.

- "Integration of architecture with lighting system: A methodology for energy conservation" – Mr. P.K. Bhaduri, DCPL Kolkata
- "Measurement of Light" – Pravin Kumar Sood, Regnant, New Delhi.
- Eco-friendly lighting systems: The coming age. – Mr. Vineet Rohatgi, M.D. Binay Opto, Kolkata

In the evening the delegates visited the campuses spread over 400 acres of KIIT and Kalinga Institute of Social Science (KISS), the largest education hub for the tribal students (20,000 tribal children from KG to PG) in the world. ISLE members were very impressed by the scale and quality of the work being carried out. This was followed by a cultural function by the students.

Session 3 was chaired by Prof. A. Dasgupta, Dean of EE, KIIT and Prof. A. K. Tripathy of Silicon Valley/ KIIT

- "Light-Light coupling a method for lighting the world" – Prof. Dr. B. Ghosh, Jadavpur University, Kolkata.
- "Community based lighting systems II" – Pravin Kumar Sood, Regnant, New Delhi.

Mr. A.P. Joshi

- "Energy conservation in electrical systems" – Mr. Sansar Patnaik, Chief Engineer CPWD.,BBSR
- "From primitive lamp to LED" – Prof. A. K. Dutta, Calcutta University

In the panel discussion that followed, all panelists (consisting of the distinguished guests, session chairman and speakers) expressed their satisfaction with the quality and content of the papers presented.

The panel for the Valedictory session consisted of Prof. S.M. Ali, Dr. S. Samantha, Prof. C.K. Panigrahi, all from KIIT, Prof. A.K. Tripathy from Silicon Valley, Mr. Kamal Sethia and Mr. T.K. Ghosal both from ISLE together with one student member. The members expressed their views on the two day meet and other related issues regarding the role of ISLE and the joint effort of ISLE, CSC and KIIT University.

After the panel the membership certificates were handed over to the 151 members of the new Bhubaneshwar Local Centre.

This was followed by the handing over of mementos by ISLE CSC to the faculty of KIIT.

Mr. B. Dattani, Hon. Treasurer ISLE made an announcement of the Light India International Exhibition LII2013 being organised by ISLE in Chennai from September 13-16, 2013 and invited the participation of all.

The two day event concluded with a vote of thanks by Prof. C.K. Panigrahi.

DELHI STATE CENTRE

Seminar on Transition to Solid State Lighting
March 1, 2013

In association with CPWD, Delhi State Centre organised a seminar at Vigyan Bhawan Annexe on the Transition to Solid State Lighting.

Mr. N. Nagarajan addressing the seminar

The Chief Guest was Dr. Sudhir Krishna, Secretary, Ministry of Urban Development, Government of India and the Guest of Honour was Mr. V.K. Gupta, Director General CPWD.

After tea, the programme started with the welcome address by the State Centre Chairman, Mr. N. Nagarajan.

Mr. V.K. Gupta, the Guest of Honour spoke of how CPWD exercised its civic responsibility by adopting energy saving systems and technologies. He suggested that in order to avoid repeating the "CFL story" (that is, delay in building confidence) standards should be established.

Dr. Sudhir Krishna emphasised the need to save energy and reduce pollution without compromising on the quality and quantity of light. He saw a great opportunity in implementing modern lighting in the 53 cities with a population of over one million. He recommended that some hand holding be provided especially to the smaller of the 400 municipalities. He expressed his eagerness to learn about the possibilities provided by the new technologies.

The presentation was made by the team from Osram India. Mr. Gagan Mehra, Managing Director explained that solid state lighting was well on its way to replacing a whole host of applications that are currently using traditional lighting systems. He explained that already 25% of their sales were in SSL products and systems. Mr. Mehra said that these applications were now standardized so that there would be no repeat of the CFL story of 15 years ago.


Mr. Mehra and Dr. Mandal demonstrating SSL technologies

Dr. Rajat Mandal, Cluster Head India continued the presentation and highlighted the challenges posed by SSL like the cost of installation, lumen per dollar cost, colour, beam angle, heat dissipation, driver compatibility etc and said that the countdown to 2015 had begun when it was expected that LEDs would have achieved the potential to replace all other lamps.

Mr. Nitin Saxena covered the topics of intelligent SQ systems, light engines and electronics, SSUs, ECU, sensors etc. while Ms Megha Soni spoke about the exciting new luminaire possibilities (projector/reflector solutions, asymmetrical wall washers etc.) indicating that by 2020 60% would be SSL

Mr. B.M. Bhatia, Hon. Secretary DSC gave the vote of thanks.

The seminar was attended by 90 people that included senior government officers, consultants and lighting industry personnel. ISLE President Mr. Gulshan Aghi, Hon. Gen. Secretary, Mr. A.K. Jain, GB member Ms Sudeshna Mukhopadhyay and Past President Mr. H.S. Mamak also participated in the seminar.

The seminar was followed by dinner. At the dinner venue there was a special counter set up by Osram where the new technologies were demonstrated and gave an opportunity to members and guests to understand these issues in a practical way. The seminar and dinner was sponsored by Osram India.

MUMBAI STATE CENTRE

Lecture on Lighting Design
January 27, 2013, Mumbai

In this very interesting session, the 8th in the Breakfast with Light series, Mr. Bhagwan Shirsekar extensively covered the subject of Lighting Design for Green Building Commercial Interiors. He illustrated the need of developing lighting concepts, design layout, BOQ, etc. as per LEED / Griha / IGBC norms and complying with ECBC and IS. Stress was laid on the need for understanding the requirements of the client and also to help them and the architect to develop energy efficient green buildings during design, development and operation stage, through

Mr. Bhagwan Shirsekar

implementation of good lighting design/ lighting control, system integration and integration with BMS.

Lecture on Lighting and Perception

February 24, 2013, Mumbai

The 9th Breakfast with Light lecture was give by Mr. Rohit Desai of Electro Tech Consultants on Lighting and Perception.

Today good lighting is perceived not just as an essential element of life but an extension of our lifestyle. Automation is used to control lighting and create different moods and scenes within the same space depending on whether it is used for meeting, relaxation or a party. Integration of lighting with security systems makes it further versatile, giving us a sense of 'secure comfort' when

Mr. Rohit Desai

we are in and out of our homes, by programming systems to put on lights to check intrusion as well as simulate occupancy, thus dissuading intruders. Automation also provides further advantages to save energy, to dim or switch of lights when not needed as well as to enable monitoring from a remote location via mobile or laptop. Thus lighting which was treated as a pure necessity has now acquired a new paradigm of comfort, security and energy efficiency to contribute to a 'green' planet Earth.

Programme for Engineering Students

March 20, 2013, Mumbai

A session was conducted by Mumbai State Centre for the Electrical Engineering students of Sardar Patel College of Engineering. Mr. Sudhir Kamat, Director Raylogic Control Systems spoke on Automation and Lighting Control.

Mr. Kamat effectively oriented the students to the need for automation and its advantages in bringing lighting control at our finger tips along with energy efficiency. Different light sources and their dimming techniques were illustrated. Protocols used for lighting control and their comparative advantages were explained. Implementation of automation, right from the design stage was brought out in a clear and simple manner to the students who were visibly impressed with the excellent presentation.

Breakfast with Light 10

March 31, 2013, Mumbai

The 10th Breakfast with Light lecture was given by Ms Jaspreet Chandhok, Partner, Ethereal Designs on Lighting Design: Communication in a visual language.

Ms Jaspreet Chandhok

"The human being himself, to the extent that he makes sound use of his senses, is the most exact physical apparatus that can exist" says Goethe. Our eye needs no certification; it has a mind of its own. When we start connecting with the experiential aspect of light, our entire approach to the subject shifts to being life-oriented. To apply the medium of light, one does rely on science and technology but once applied, it shares its own story. Whether or not the viewers and the users have the knowledge of the technology, they do have their own

experiences and emotions based on which they perceive a design.

During this session, several lighting terms (diffraction, refraction, intensity, etc.) and material properties were reinterpreted in the context of nature, in the human context and in the applied context through project references. Out-of-the box innovative ways of using shadows in lighting schemes were shared. This interactive session was an attempt to bridge the language barriers between 'the science of light' and 'the emotional experience of light'. It concluded with a lively Q&A session wherein the audience was really interested in knowing how lighting affects the 'shopping experience'. Examples were presented on how certain brands ensured a uniform but appealing experience across all their stores thus attracting customers.

CHENNAI STATE CENTRE

Seminar on Lighting Design
February 16, 2013, Chennai

A one day seminar on Lighting Design, Prospects and Perspectives at the AIEMA Technology Centre in Chennai was designed to increase the attendee's knowledge and awareness of the present day expectations with regard to lighting design and green lighting concepts.

The seminar was inaugurated by Vice President, ISLE Mr. Dilip Kumbhat and was conducted in two sessions. He gave a brief outline about the seminar and also introduced the two session Chairmen.

Mr. P.C. Barjatia addressing the seminar

The first session was chaired by Dr. Prakash Barjatia, ISLE GB member and Director, MIT School for Energy & Lighting, Pune. He gave an outline and background on the topic chosen for the seminar and the faculty. The morning session had two lectures. The first presentation was delivered by Mr. Kaustubh Nadurbarkar, founder Director of Vertices Consultants, qualified in interior architecture and principal designer with many design firms. The topic was Understanding Light- Perception of light in spatial context. A totally different perspective was thrown open to the audience. The second presentation was delivered by Mr. Senthil Kumar Madasamy, who has a masters degree in applied optics and is presently a Field Applications Engineer, CREE, Bangalore, assisting lighting manufacturers in South Asia to develop LED luminaires. His topic was Solid State Lighting-New possibilities and applications.

The second session in the afternoon was chaired by Mr. Praveen Kumar, Managing Director and CEO of BAG Electronics, Pune. His specialties are electronic control equipment manufacturing and project management. There were three lectures in the second session and the first one was mainly technical and handled by Mr. Gajanan Inamdar, Head R&D, BAG Electronics. He detailed the technology of efficient LED drivers. The second lecture was delivered by Architect Suny Akber, principal designer of FOAID Design studio. He spoke about day light harvesting in lighting design. It was a new approach to the science and art of lighting design. The third lecture was also a very special and different one by a Light and Visual Artist from Pune, Mr. Abhijit Shivaji Rao. He gave a totally different dimension to the lighting design as to how and why one should look at the design to merge with various factors which were never thought about earlier by the conventional designers. How these ideas were put into practice at the Malhar Machi Mountain Resort was also shown with pictures and explanations.

In total, the seminar was a grand success. The seminar was attended by more than 150 participants. The seminar was partly sponsored by K-Lite Industries as a concurrent event to their Light Show 2013.

R. Balasubramanian
Chairman
Chennai State Centre

RAJASTHAN STATE CENTRE

Seminar and Launching of National Lighting Code
March 9, 2013, Jaipur

A seminar on Revolution in Lighting Technology and Energy Saving Lighting was organised along with the launching of the National Lighting Code by ISLE Rajasthan State Centre in association with the Bureau of Indian Standards (BIS), Poornima University and Vaidyuti Innovations on Saturday, March 9th, 2013. The programme started with the lighting of the lamp followed by the launching of the National Lightning Code (NLC) by Chief Guest Dr. R.P. Rajoria, Director, Poornima

Dr. Rajoria and Mr. Saxena inaughurating the session

College of Engineering; Guest of Honor Mr. R.S. Saxena, Chairman, RSC and Mr. R.C. Mathew, Head, Electro-technical, BIS.

A galaxy of dignitaries were present in the programme including Mr. Narendra Singh (Director, Electro-technical Dept., BIS), Mrs. Sudeshna Mukhopadhyay (Director, Philips Lighting Univ.), Mr. S. Chakraborty (Bajaj Electricals), Mr. Makarand Sainis (Vice-President, Technology, Wipro), Mr. Arun Shukhla (Proprietor, Vaidyuti Innovations), Mr. G.S. Charan (Asst. Energy Economist, BEE), Dr. Manoj Gupta (Secretary ISLE, RSC) and Mr. Prashant Bajpai (Treasurer, ISLE) along with more than 75 participants from various public and private organisations like PWD, JDA, BEE, Amity University, Gyan Vihar University, and Poornima University.

Mr. R.S. Saxena, Chairman, ISLE, Rajasthan State Centre welcomed the gathering and outlined the objectives, functions and achievements of ISLE. In the address by Chief Guest, Dr. R.P. Rajoria, stress was laid on the increasing need of Industry Institution interaction and he complimented Dr. Manoj Gupta, Secretary ISLE, RSC for his efforts in organising events for the benefit of both the industry and academia.

The first technical presentation was given by Mr. S. Chakraborty on Accelerating the LED Revolution. Ms. Sudeshna Mukhopadhyay focused on importance of the human part of lighting like emotions and feelings in her presentation, Paradigm Shift in Lighting Application. The various issues related to the quality of lighting were covered by Mr. Makarand Sainis in his talk on Lighting Quality. An Overview of the NLC was given by Mr. Narendra Singh.

The programme concluded with the question answer session and the vote of thanks was proposed by Dr. Manoj Gupta, Secretary, ISLE, RSC and Dean, SET, Poornima University.

MP STATE CENTRE

Breakfast Meeting

January 27, 2013, Indore

The 39th ISLE Sunday breakfast meeting began with the welcome address by the Chairman, Mr. Akhilesh Jain. There were two invited dignitaries, the speaker Er. Kumar Gaurav Agrawal and the Guest of Honour, Dr. P.K. Chande.

Mr. Vijay Panse, the Convenor of the Board of Scrutineers, announced the procedure and due dates of the Elections for the State Centre Committee for the session 2013-2015.

Er. Kumar Gaurav Agrawal, Business Development Manager LED Division of Halonix started his lecture with the building industry, environmental and economic impacts of buildings, sustainability through green buildings and energy efficiency in the industry using LEDs. CFLs will phased out soon and will be superseded by LEDs. His presentation dealt with advantages, reasons of high cost of LEDs, the effects of colour and temperature on the object, the need for thermal management to improve life etc. He felt that LED luminaires would have to be made locally.

The Guest of Honour was Dr. P.K. Chande, Group Director, Truba group of Institutions, who ably concluded the show with his concept of Lighting your dreams. He added that along with illuminating the world, one must illuminate the inner self also. He went on to technically analyse in a very simple interesting manner, why we see 3D effects in a 2 Dimensional picture?- It is all because of LEDs. The concept of red/cyan filtered glass and virtual classrooms using LEDs caught the attention of the very participative audience.

The meeting concluded with the announcement and celebration of birthday boys and girls of January 2013 by Er. Bharat Rawlani, Sr. Manager RRCAT, as usual by

Mr. Kumar Gaurav Agrawal

cutting of the cake and distribution of mementos to each birthday persons by the Chairman Er. Akhilesh Jain.

The speaker was introduced by Ms. Noosheen Jafri, Maintenance Engineer, Mahindra 2 Wheelers Ltd. and the Guest of Honour by Dr. Atul Pandey, the Master of Ceremonies, Project & Estate Officer I.I.T. Indore. The vote of thanks was proposed by Hon. Sec. Er. Dinesh Wadhwa.

Monthly Lecture
February 24, 2013, Indore

The 40th in the series of monthly breakfast seminars began with the announcement of the results of the recently held State Centre elections by Mr. Vijay Panse, Convenor of the Scrutiny Committee. He announced the names of the newly elected committee.

Mr. Vinay Babar	Chairman
Mr. Atul Pandey	Hon. Sec.
Mr. Ashok Dubey	Treasurer
Mr. Shailendra Kulkarni	Member
Mr. Bharat Rawlani	Member
Mr. Sandeep Mathur	Member
Dr. Alok Mittal	Member

Subsequently, the outgoing Chairman Mr. Akhilesh Jain welcomed all and invited the Chairman Elect to share the dais. This was followed by the ceremonial welcome of the Guest of Honour, Dr. H.S. Mehta, Advisor Prestige College of Engg. & Director Ferro-concrete Structures P. Ltd. Indore and the speaker of the day Dr. Rakesh Saxena, Prof. & Head Electrical Engg Dept and MBA Department, S. Govind Ram Seksaria Institute of Tech. & Science (SGSITS) Indore.

The topic of Dr. Saxena's lecture was the Role of Earthing in Lighting and Electrical Systems in domestic, commercial and industrial installations. His presentation covered the basic concepts and applications in industrial and domestic installations. Earthing systems are essential for lighting systems especially where electronics are used.

The master of ceremonies was Mr. Mahesh Agrawal, CEO Technocom Marketing. The speaker and the Guest of Honour were introduced by Ms. Sweena Ratra, MBA student and Mr. Tapan Pandey, Engg. Student, both from the IPS group of Institutions. The vote of thanks was presented by Hon. Sec. Mr. Dinesh Wadhwa. The committee meeting of old and new members followed the event.

41st Monthly Lecture on Lighting
March 30, 2013

In March the monthly lecture at Hotel Fortune Landmark, Indore covered two topics; lighting for amusement parks and lighting for showrooms. This event was jointly organised by ISLE MPSC and Institute of Indian Interior Designers (IIID), Indore Chapter. Mr. Anil Valia, Lighting Designer and Educator from Mumbai was the speaker and Dr. Sudhir Singh Bhadauria, Director, Shri G.S. Institute of Technology and Science, Indore was the Guest of Honour for the event.

The programme started with recital of Ganesh Vandana by Mr. Rajat Kulkarni followed by the welcome address of Mr. Vinay Babar, Chairman, ISLE, MPSC. Mr. Vinay Babar highlighted the achievements of the MP State Centre and mentioned that monthly meetings and lectures on topics of general interest related to lighting had been organised for the last forty months and would continue in future as well. He informed the audience that ISLE, MPSC had planned to organise an exhibition of lighting products, a Light Show and a Seminar from May 31-June 2, 2013 at Indore which would be the first of its kind in Central India. Dr. Rakesh Saxena, HOD Electrical Engineering Department, SGSITS, Indore introduced Dr. Bhadauria and Shri Akhilesh Jain, Immediate Past Chairman, ISLE, MPSC, Indore introduced Mr. Anil Valia to the audience.

The installation of newly elected Managing Committee of ISLE, MPSC, Indore for the term 2013 - 2015 took place.

Speaker Mr. Anil Valia with the dignitaris on the dais

Dr. Sudhir Singh Bhadauria presented ISLE Lapel Pins to the newly elected Committee members and extended his best wishes to them. In his Inaugural address and said that new committee would scale new heights.

Mr. Anil Valia started his presentation and lecture on Lighting for Amusement Parks and Showrooms through a case study of Yazoo - an amusement park located in a sprawling area of 12.5 acres in Virar in suburban Mumbai. The park had several sections with differing lighting requirements. Some of the challenges to be dealt with included the number of visitors which varied from 10,000 to 25,000; the safety measures as the park was open till 10 pm; provision for the heavy monsoon rainfall of 1000 mm and the need to keep the power consumption at a level where it could be maintained on DG sets in view of the erratic power supply.

He explained that TLD lamps were used on pedestrian pathways on 3 metre high columns to provide vertical illumination and volumetric lighting. For the train track area 45 W large CFLs housed in large dome luminaires on 3 metre columns were used to ensure minimum power consumption and aesthetic appeal. The train stations were provided with down lights. The children's play area was illuminated by using IP 65 luminaires consisting of CDM - TD lamps mounted on poles at a height of 10 metres capable of providing a double asymmetric beam to take care of requirements like anti panic lighting, adequate visibility and volumetric lighting. In the lawn area TLD lamps mounted on 12 metre high poles were used. Similarly in the food courts a higher lighting level was provided through high wattage CFL/TLD lamps mounted in wall brackets on columns at 10 meter height was provided along with volumetric PMMA down lights. The water bodies like floating restaurants were lighted by LED lighting to create a romantic effect and one ceiling light was provided in each pavilion. Bright external lights on roofs of Restaurants, Temple Area and Amphitheatres were provided to ensure visibility from long distance.

For the various fountains, low voltage RGB MR 16 coloured lamps and RGB LED luminaries were used to ensure low power consumption, low maintenance cost, aesthetic appeal coupled with long life. The other water body areas were equipped with IP 68 wide beam RGB luminaries of gun metal with low copper content. Fiber optic lighting system consisting of simple wiring was also used. All the signages were backlit with LED's.

The second part of presentation and lecture was related to Showroom Lighting. It was explained by taking another case study, of the Asian Paints Signature Showroom in Mumbai. Mr. Valia explained that sensor lighting was provided for activation of foot prints on different coloured rings located on floor of showroom. An RGB LED Light Mural was used to ensure high fidelity colour reproduction from colour catalogues. RGB LED Chandeliers were used in FF Ceilings to create a very good lighting effect in the showroom. An RGB LED Light Box in the *Chhajja* was used to give external recognition to the showroom from outside.

Mr. Rajendra Raje, Committee Member, ISLE, MPSC, Indore presented a memento to Mr. Anil Valia and Ar. Paresh Kapade Member, IIID, Indore Chapter presented one to Dr. Sudhir Singh Bhadauria.

The programme ended with cocktails and dinner. The programme was anchored by State Centre member Ms. Bhumika Chainani. The vote of thanks was proposed by Mr. Atul Kumar Pandey, Hon. Secretary MPSC.

Dr. Alok Mittal
Committee Member,
MPSC

CIE ACTIVITY

CIE Centenary Conference

Introduction

I had the privilege of attending the CIE Centenary Conference in Paris on the 15th and 16th April. The conference was organised at the CNAM Museum which is both historical and also a cultural venue. The theme of the Conference was appropriately captioned "Towards a new century of Light". Over 350 delegates from all over the world participated in what I would term as a most educational and illuminating programme. The opening ceremony had a most interesting slide presentation on the early years of CIE which was started with the objective of bringing together scientists and others interested in optics and later lighting. The Society was basically a European association for most of its history and it is only over the last 2 decades that it has become an international organisation with wide representations from most countries of the world. Thousands of individuals have, and are contributing to scientific research, standards and education in the field of lighting. CIE is the most respected authority on lighting the world over, with now over 100 years of dedication and service behind them.

Conference

I will not even attempt to summarise the conference which had hundreds of original scientific and application papers spread over three parallel sessions over two days. I will merely give some observations that I picked up from the Conference which are purely my impressions of where lighting is heading in the next century. I share this with the readers of the ISLE Newsletter in the hope that it will open a window to observe what the specialists visualise as the future trends in lighting.

Former CIE Presidents, Mr. H.A. Lofberg and Mr. Robin Aldworth with Mrs. Mamak and Mrs. Aldworth

The Future

- LEDs are the future. We can expect quality to improve, life to increase and prices to tumble. What is more, LEDs will be capable for use in almost all lighting applications.
- Controls are the future. There were varying predictions that by 2020 about 70-80% of all commercial lighting will be driven by controllers.
- Daylighting will play an even greater role in buildings. Artificial lighting will need to essentially adapt itself to this development.
- Solar will become more popular. Solar technology will improve substantially and prices will come down constantly.
- Health concerns will play an important role in lighting and research is already proving that certain precautions are necessary in lighting especially for the Senior Citizens and school going children.
- Energy conservation will continue to be a priority with lighting (the aim is half a watt per square foot).
- Carbon foot prints will also therefore continue to be an important consideration.

Technical Papers :

- 80% of the Papers that were presented at the Conference were research papers from education institutes, R&D organisations, Government departments, etc.
- A very wide area of human endeavour was covered in the Papers - health, comfort, safety, productivity, well being etc.
- Day lighting, windows, shades, elimination of infra red and ultra violet, etc. were well covered.
- Test and Measurement with several methods of approach and results were presented, particularly with LEDs.
- A paper on flicker with LEDs and its harmful effects were highlighted giving importance to its elimination only by quality Drivers.

H.S. Mamak
Post Vice President CIE

CIE PUBLICATIONS

Colorimetry - Part 6: CIEDE2000 Colour-Difference Formula

Standard CIE S 014/E:2013

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 standardized 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 International Standard is to define one such formula, the CIEDE2000 formula, 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 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 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 normalized. The 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.

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Festival Lighting - CulturalContext

Rohini Mani

Abstract

Every festival all over the world is synonymous with lighting. Be it in Europe or Asia, festive lighting heralds the festive mood and joviality. In this paper we would like to outline the origin and evolution of festival lighting, especially having India as the focus. In India, the festival of Diwali is also known as "Festival of Lights". Other such festivals in which use of light (pyre) is prominent are *Kumbha Mela, Durga Puja, Holi, Thiru Karthigai* and so on.

Light has always held a special fascination - in art and architecture also. Brightness and shadow, colour and contrast shape the mood and atmosphere of the places of worship. In festive lighting color plays a very vital role and twinkle lights, icicle lights etc. have become a metonym for festival lights. With the green lighting movement a trend has emerged for energy efficient festival lighting as well. Presently, LED is considered as the answer among other available light sources since it has opened up the opportunity of "unlimited colour" options and is also considered as a safe lighting for built structures especially of historical value. In the immediate future, the trend is going to be one of creating exquisite lit images for festivals by dynamic moving lighting and light projections.

Keywords: India, festival lighting, LED, colours, green environment, light projection.

Introduction

Festivals are celebrated to commemorate joyous occasions varying from victorious events to mythological tales to community gathering and so on. The bonfire was the first form of custom to mark a festive event. Lighting in the form of candles, diyas, lanterns, and glass and pottery lamps evolved through time. Regionally around the world, this trend differed depending on the availability of materials and fuels.

Places where usage of wax was prevalent especially beeswax as it was considered sign of purity for the early Christians, candles became the ideal custom for their celebrations. Though the colour of flame cannot change, the candles have evolved in different colours and shapes including floating candles giving a magical feel to water. Clay lamps and lanterns also depended on the availability of colourful fabrics, papers and clay. With the development of electricity and the incandescent light bulb, the luminosity of artificial lighting has improved and become an alternative for candles and lamps for using indoors during festivals with out losing its cultural ethnicity.

Festival of Lights

In India

India even though diverse in tradition and culture every festival is augured and commenced with festive lighting with all festivals having some significance associated with the myriad mythological stories. *Diwali* popularly known as the "festival of lights", the most significant spiritual meaning behind it is "the awareness of the inner light" and "good over evil". Across India, people celebrate it through symbolic *diyas* or *Kandils* (colorful paper lanterns) as an integral part of *Diwali* decorations. *Thiru Karthigai* is a festival people celebrate as an extension of the *Diwali* festival in southern India (Fig 1.)

Photo Courtesy- Akila Venkat

Fig.1 The Diyas (clay lamps) glowing during Karthigai Deepam in houses

The number of lamps is doubled every day from the day of *Diwali* and they end up with numerous Lamps on the day of *Karthigai Deepam* (cluster of lamps).

Holi is a celebration of bountiful harvest commencing with a bonfire and celebrated with merriment and colours. Another festival that is signified by lights is *Maha Kumbh Mela* (literally translating to big pot fair) is a time when *Sadhus* (holy men), pilgrims and devotees converge to commemorate this event. Hindus believe that within this period the water of the Ganges turns into nectar in the place where it fell from heaven. The event is celebrated with *Diyas* and flowers floating on the river Ganges creating a vibrant and positive atmosphere (Fig.2).

Agni (fire) in Hindu traditions is of utmost importance. Law and tradition deem no Hindu marriage complete without the presence of the Sacred Fire. Even for Cremation, fire is the chosen method to depart the deceased because of its association with purity and its power to scare away harmful ghosts, demons and spirits. They believe it releases an individual's spiritual essence from its transitory physical body so it can be reborn as per Hinduism.

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Fig.2 Floating diya lamp in the River Ganges during Kumbha Mela in India

Photo Courtesy- Akila Venkat

Fig.3. Colorful Rangoli with lit diya at house en trance

Around the World

Around the world, there are festivals that are tantamount to Light; naming few are *Hanukkah*, Christmas, *Loi Krathong* and *Yi peng*. *Hanukkah* also known as "Festival of Lights" is an eight-day Jewish festival that is observed by the kindling of the lights from a unique candelabrum, which is a nine- branched *Menorah* or *Hanukiah*, one additional light on each night of the holiday, progressing to eight on the final night, very similar to Indian festival *Thiru Karthigai*. Christmas is celebrated by Christians around the world to mark the birth of the Christ. It is enjoyed by decorating and lighting the Christmas trees.

In Thailand, *Loi Krathong* is a festival celebrated

Annually meaning "Floating Crown" or "Floating Decoration". This is celebrated by making traditional buoyant decorations which are then floated on a river. *Yi peng* is a festival that coincides with *Loi Krathong* is mostly celebrated in northern Thailand. Here, a multitude of Lanna- style sky lanterns are launched into the air where they resemble large flocks of giant fluorescent jellyfish gracefully floating by through the sky. In regions, where both *Loi Krathong* and *Yi Peng* are celebrated at the same time, it results in lights floating on the water, lights hanging from trees/buildings or standing on walls, and lights floating by in the sky.

Festival Light Methods:

Traditional Approach *(c13000BC-c 1800s)*

Traditionally, *diya* (clay lamp) in India is lit by using cotton roll dipped in oil or *ghee* (clarified butter) and then arranged in a row or pattern on colourful *Rangoli* (decorative patterns) outside the house or in the courtyards on joyous occasions (Fig.3). *Kandils* (lanterns) are made of translucent coloured paper and shaped to take different forms. These lanterns are hung on walls and house entrances. *Deep Stumbha* (tower of lamps) are lit with lamps arranged vertically in pyramidal profile and creates an illusion of grandeur in Hindu temple complexes.

Whereas in Thailand, people usually make *khom loi* (floating lanterns) from a thin fabric, such as rice paper, to which a candle is attached. When the candle is lit, the resulting hot air which is trapped inside the lantern helps it to float up into the sky. In addition, people also decorate their houses, gardens and temples with *khom fai* similar to Indian *Kandils*.

Modern Methods *(post c 1878)*

After the advent of electricity in1878[1]), there has been availability of new range of light i.e. artificial light. Over the years, from the development of incandescent lamps, fluorescent and light emitting diodes (LEDs) It was possible to provide odourless and controlled lighting. Controlling flame has always been a task and safety precautions had to be considered. With the advancement of technology and new lamp sources, the decoration style of festive lighting has altered and has become more creative. Although the principles of lighting design were well established during the oil and gas light eras, it was not until the development of artificial lights that festival lighting could really reach out to a larger audience. During the1900s, development of lighting fixtures/luminaires flourished and a completely new array of colours in lights were introduced into main stream lighting. Today lighting luminaires are available in various shapes and sizes, with different colour temperatures and colour rendering properties.

Cultural Context

While the cultural concept remained the same of celebrating festivals and special occasions relating to the mythological stories, the methodology of festival lighting has evolved integrating the concepts with modern technology. For example, in *khomloi and Kandils* candles were replaced by fuel cells and GLS lamps respectively. As technology advanced from GLS to halogen to compact fluorescent, colour rendering with colour mixing and colour filters became prevalent availing light sources of different colour (temperature).

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8) **LAB Technician** (Location – Mumbai) Should be Dip./ITI in Electronics or Electrical engg. with 2 yrs exp. in Lighting industry, good knowledge of different test standards, should have hands on exp. on photometry testing, life testing for LED Luminaires & handling different reliability test equipments, knowledge of handling EMC equipments will be an added advantage.

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Modern lighting by replacing the traditional methods allowed us to extend towards the immediate environs, gradually encompassing the City and creating a community celebration. Over the time with growing population and developing cities, horizontal spatial development gave way to vertical development (high rise dwellings). This changed the perception of festival lighting and façade lighting became popular. But this did not reduce the significance of these festivals, rather this has made it popular owing to the larger visibility and ambience by bringing the festivities to the streets. Decorations were done with mini lighting, twinkle lighting, net lighting, icicle lighting and focus lighting with halogens and metal halides and became a trend announcing the onset of the festivals.

Coloured Lights

Significance of Colours in Festival lighting:

Since ancient times, colours had significance for their symbolic meanings. According to ancient Indian sages; the visible spectrum from sunrays had distinctive names with specific functions besides colour like: *Jayanta, Prajanya, Mahendra...*to *Bhrsha* and *Aakaasha*, which correspond to VIBGYOR, the seven divisions distinguished according to color by scientists[2]. In southern India, temple Gopurams (spires) were painted with symbolic colors to replicate the spectrum of sun's rays and these colors were intensified by the sun rays (Fig.4).

Photo Courtesy-Akila Venkat

Fig.4. Colourful Gopuram of Meenakshi Templeat MaduraiinIndia

Rangolis (traditional designs) were drawn at the entrances of the houses and decorated with *diyas*, to resonate a similar concept from the temples to the home altars. Today this prismatic effect is reproduced with color mixing LEDs during nighttime. Before the advent of LEDs, the places of worship were lit up with static lighting with limited colour rendering options. With LED and its colour mixing capabilities, one could enhance the architectural features at the places of worship while celebrating festivals with intensified colours creating an ethereal and festive atmosphere (Fig.5).

Photo Courtesy-Kapil Surlakar (Light@works), BAPS Trust

Fig.5. Dynamic lighting at the Akshardhaam temple, New Delhi

Symbolic sense and the interpretation of colours differ from region to region and religion. Festivals differ in the ideology and celebrations but the use of lighting methodology among the masses has been of common nature from prehistoric times to now.

Case Study

Chandan Nagar, Kolkata

Today the advent of LEDs has influenced Festival Lighting to a great extent in terms of efficiency of lighting systems as well as opening up the opportunity of dynamic colour controls. Festival lighting is not conventional anymore; it is a tool for mass communication linking with culture and important social issues. In this application, creativity and subjective judgment prevails over the engineering expertise and illuminance level. Cities like Kolkata in India are a remarkable sight during the "*Durga Puja*" festivities. Festival lighting spread from home altars to the streets leading to the temple creating a vibrant and joyous atmosphere. Chandannagar in Kolkata is renowned for creative festival lighting decorations. Multi-colored tulip and twinkle lights fitted on woven wires, create a semblance of motion through lights generating images of moving bicycles, cars, trains, buds blossoming into flowers, fire-spitting dragons and so on--in fact imagination run riot.

There is no end to Chandannagar creations, which get more innovative year after year infusing the latest technology in creating images through lighting from contemporary social issues like Amartya Sen receiving the Nobel Prize To mythological stories based on the Goddess Durga. It is difficult to say why Chandannagar became the centre of the creative decorative light industry. Some say that it may be due to the special flavour attached to the local festivals, which have given the impetus to the proliferation of this unique craft. Festival lighting is a community in itself with about 5,000 people in Chandannagar alone and about 40,000 in the entire Hooghly district and its neighborhood engaged in some way or the other in this industry[3]. The artisans here offer a brilliant range of splendour and spectacle.

Conclusion

Conventional lighting before the advent of LEDs involved numerous electrical installations together with complicated distribution and was labor oriented. Today's LED technology allows us to light up large spaces with minimal electrical installation and easy maintenance. It allows us to create dynamic colorful lighting effects with moving images changing from moment to moment, day to day as desired. This dynamic setting becomes a visual treat during special occasions and festivals energising the structure and the surrounding areas (Fig.6).

Fig.6. Night view of Thiruvanamalai Temple during festivals, Tamil Nadu

Today's technology has given us the tool to create light projections that produce sensational images on static structures enabling us to craft mythological stories in attractive format and eliminating light pollution unlike the earlier methods (Fig.7). Static buildings can be used as a canvas for the story telling through light projections, which is popularly known as Light bombings or Guerilla lighting.

Photo courtesy BAPS Foundation

Fig.7. Engaging mythological stories are displayed through lighting shows in Gandhinagar, Gujarat

While customs and traditions of every festival will always be a part of our heritage, the concept of celebrations will take new avatars through festival lighting.

Acknowledgement

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A Glimpse of Feng Shui in Indoor Lighting Design in China

Guoliang Cai

Abstract

Feng shui has influenced Chinese building design for thousands of years, and usually indoor lighting design will be influenced by building design; so from this point of view Feng shui maybe has its own way to guide us for lighting design. What is more, in Feng shui site description "Xiang" already points out the orientation of sun and shadow, which in another way shows that Feng shui has its principles for lighting design. Nowadays, there are a lot of design methods for indoor lighting and in the paper here we call them modern design methods. In this paper, through the study of the eastern design method (Feng Shui) several cases of Feng Shui design principles on lighting design in interior spaces are listed out. Then we explore the intercommunity of Eastern design on lighting and Western design on lighting, and whether those principles can be explained by modern design ways or in some points give inspiration to lighting designers for the formation of future indoor lighting design concepts.

Keywords: FengShui-Eastern design principle, culture intercommunity in lighting, interior lighting design, lighting design method.

Introduction

1.1 Some definitions of Feng Shui

1) Feng Shui is a knowledge of selection and processing of the living environment by humans. It can be used in many places, such as residences, palaces, temples, tombs, villages, cities and so on. When it is utilised in tombs, it is considered as (Ying Zai), which means a living place for dead people and when it deals with other places, it is considered as Yang Zai, which means living place for people who are alive.[1]
(from Pro. Yude Wang, Central China Normal University)

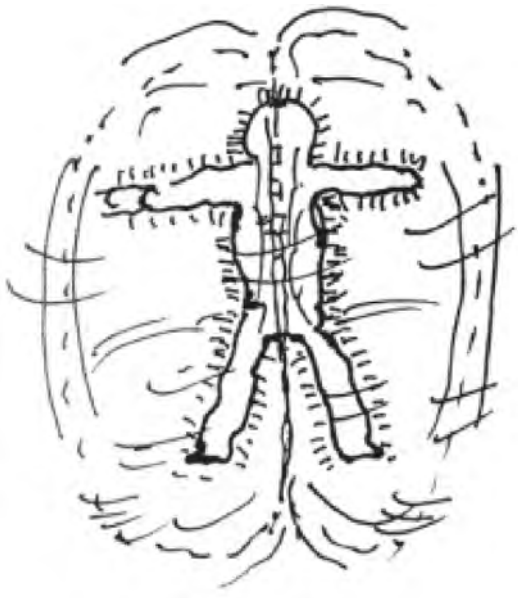
2) Feng Shui is a Landscape evaluation system to find auspicious locations of buildings. It is an art of ancient Chinese geographical location searching and layout finding. It is really hardly to call it superstitious science, according to western culture about science. It is based on the following three principles:
   a) Some places are always better than the other places for housing or tombs;
   b) Auspicious locations can only found according to Feng Shui
   c) Once you find and use these auspicious locations, the persons who live there or are buried there and their offspring will also get the influence of these auspicious locations.

(From Yin Hongji, University Oaks New Zealand)[1]

1.2 Some basic terms

"Feng Shui": in certain way, "Feng" means wind; "Shui" means water.[2]

"Qi": It is the main key word in Feng Shui. It is a kind of "energy". According to the traditional definition: people are alive because of Qi gathering together. Qi coming together means alive and Qi spreading out means death. Qi will spread when it meets winds and stops when it meets water. People come together to try to avoid the Qi spreading and to move to make it stop.



"Sa": It is the name for negative energy.[1]

"YingYang": Ying and Yang mean the back side and the front side of the sun. the back side means Ying and the front side means Yang. It also is used to describe two sides of things.[1]

"Si Xiang" means four myth animals, they represent four directions- NSEW.[2]

"Wu Xing"-also can be called Five elements, which form the world, and somehow can be translated into English as Metal-King, Wood-Mu, Water-Shui, Fire-Ho and Earth-Tu. It also will be used for position - Eastern region, western region, northern region, southern region and middle region in Feng Shui.[2]

"Ba Gua", joins into Feng Shui theory from "Yi Jing", which is another book which describes how to balance the relationship of human beings and nature. It also will be used to represent the eight directions: N. NW. W. SW. S. SE. E. NE in Feng Shui.[2]

There are many other terms, but those terms listed above are more commonly used in Feng Shui.

How Feng Shui Works for Lighting in Interior Design

The core principle of Feng Shui guides lighting design in indoor areas follows its main idea: collect positive Qi and avoid negative Qi; Balance people and their surroundings; living towards the sun and get good daylight will collect positive Qi. Avoid "Guang Sa"- "Light Sa", in some way it can be considered as glare, but also means that the lights make you feel uncomfortable.

Light inside the room has a big connection with windows and in Feng Shui windows are considered as the portal of outside Qi coming inside, so in general, sometimes, when designing the light with windows, it has to follow the rules of Qi portal design. The basic principle is "auspicious Qi comes from east side".[2]

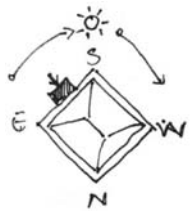
To discuss deeper the principles that Feng Shui utilises in indoor lighting design, it is necessary to start from different areas in the building.

2.1 In living room

Living rooms belong to 'Yang", which means the front side of sun, and hold most positive energy in the house. They have to be bright and hold the positive energy both in daytime and nighttime.[2]

There are several principles:

- Try to use the same light sources, if there are many lights which are being used in the room.
- Lighting can also be utilised as a tool to divide regions for large size living rooms.
- If using hanging lights, try to avoid to hanging the luminaire above the sofa.
- If the house seats in NW and towards SE, in Feng Shui, this house is called "King House" in Chinese which means "Metal House". The Metal represents brightness, so the living room should be bright enough to enhance its character.[1]



- It brings fame to the family, if making the living room quite bright when the house towards to south. Because the house will own the character of Fire when it is towards south.

2.2 In the bedroom

People spend most of their time in the bedroom. In Feng Shui, bedrooms belong to 'Ying", which means back side of the sun. The core idea for bedroom is "soft and comfortable light". In daytime, fresh sunlight and nice views from the windows; in night time, it should be dusky, and the curtain can block the "Light Sa" from outside.[1]

The number of luminaires (Feng Shui only counts the luminaires which play the main role for general lighting, such as Dome lights) also has to be taken care of.

If the room is located in SE, only one luminaire is enough, such as a dome light or a hanging light.[2]

If the room is used as wedding room, more things have to be considered.[2]

- In South, it will be best with 8 luminaires;
- In NW, it will be best with 1 luminaire;
- In North, it will best with 4 or 6 luminaires.

And it also will be the best that the luminaires are with a circular shape, which represents the sky. In Feng Shui, the sky is a circle and the ground is a square.

2.3 In the study room

Study rooms are quite important to us. It is a place for us to think and work, Harmony lighting environment is essential. The core idea is "even"[3]. In the daytime, try to avoid sunlight light directly to the desktop; in the nighttime, a table light is necessary and light coming from left back or front side to the table will be better than other directions. Try to use halogen lamps or incandescent lamps and avoid too many colors of light in the study room and floor lamps to light up the back side of your head.

2.4 Balcony

Balconies belong to "king", which means Metal in Five elements and represent luck and wealth. Wealth and luck need to flow, then they become alive. If it is a large size balcony, a long time lower illumination level lighting can help increase the energy. The best location of the balcony is the Eastern side or southern side. Try to avoid the Northern side.

2.5 Dining room

It will be best to locate it in the South. The light has to be soft with a warm colour temperature or warm colour.

2.6 Kitchen

Kitchens belong to "fire"[5]; in its position, it needs "fire" to enhance its character. The general lighting should be kept at a high illumination level in kitchens, and kitchen range areas should have more light. Avoid dynamic lights or flickering lights, which causes too much change in the kitchen. Keeping the stove out of shadow is also quite important.

2.7 Toilet

Toilets belong to 'Water"[5] and are quite private areas, which should be kept in a low key. Do not put too much light in toilets. Soft light can be used as a key lighting design idea. Keep the light switch off when it is not being used.

There are also several principles referring to commercial indoor lighting in Fengshui:

2.8 Commercial Areas

There are a few guidelines:

A Foyer as the face of an office or a shopping mall and so on should be bright with enough lights always during working hours. Especially for the office located in the NW direction the position with "Metal" character[2]. The best location for the room of bosses is the southern direction and the room should be well illuminated by daylight. Meeting rooms also will be best with nice daylight conditions.

There is a basic lighting plan arrangement rule as well:

South-west, North, South-east belong to Fire;
North-west, East, South-west belong to Wood;
North-east, South, North-West belong to Fire;
North-east, South, West belong to Metal[4]

According to your company character (like lighting belongs to fire, car industry belongs to metal etc), choose the way for lighting plan arrangement that will increase the positive energy in your company.

Discussion

The aim of this discussion is to find the intercommunity between Feng Shui and modern design methods. The way to make the discussion is to try to explain those Feng Shui Principles by modern design methods within the knowledge the author has. The explanation may be is the only one or may be not, and there also may be some other explanations, which are beyond the knowledge we have now. The following is the list, in which the author picks up several lighting principles mentioned in the last section of the paper and tries to explain these within his lighting design knowledge.

3.1 In terms of the principles in Living rooms

In Fengshui:

If using hanging light, try to avoid to hanging luminaire above the sofa.

If the house seats in NW and towards SE, in Feng Shui, this house called-"King House" in Chinese-which means "Metal House". The Metal represents brightness, so the living room should be bright to enhance this character of this House owned.

In modern design:

When we sit on the sofa, direct light upon us can cause quite an uncomfortable feeling.

Houses towards SE can get a lot of daylight in the daytime. In order to balance the bright feeling in the night time, more light will be needed.

3.2 In terms of the principles in Bed rooms

In Fengshui:

"The core idea for bedroom is "soft and comfortable light". In daytime, fresh sunlight and has nice views from the windows; in night time, it should be dusky, and the curtain can block the "Light Sa" from outside.

If the room locates in SE, only one luminaire is enough, such as a dome light or a hanging light."

In modern design:

Daylight can help us wake up our body and mood in the morning. In nighttime, darkness can help us balance our body rhythm and help us relax and sleep better.

If the room is towards SE, it will get better daylight since the early morning, when usually we need light for getting up.

3.3 In terms of the principles in Study Rooms

In Fengshui:

"Study rooms are quite important to us. It is a place for us to think and work, Harmony lighting environment is

essential. The core idea is "even". In the daytime, try to avoid sunlight directly to the desktop; in the nighttime, a table light is necessary and light coming from left back or front side to the table will be better than any other direction. Try to use halogen lamps or incandescent lamps and avoid too many colors of light in the study room and floor lamps to light up back side of your head."

In modern design:

Study room usually is for us to read, and definitely uniformity and light quality are quite important. Directly sunlight is not good for reading, it makes our eyes get tired quite quickly. The same results will come if we use dynamic colorful lights as well. Halogen lamps and incandescent lamps have a good light quality, they can provide better reading light environment.

3.4 In terms of the principles in Balconies

In Fengshui:

"The best location of balcony is Eastern side or southern side. Try to avoid the Northern side. "

In modern design:

Eastern side or southern side usually can helps bring more daylight into the room. Northern side usually quite windy in China.

3.5 In terms of the principles in Dining rooms

In Fengshui:

"It will be best to locate in the South. The light has to be soft with a warm colour temperature or warm color."

In modern design:

Southern exposure gets morning sunlight, it will help us have a better mood for breakfast. Warm colour temperature light or soft light forms a more cozy lighting environment, it increases the family feeling when we are eating together.

3.6 In terms of the principles in Kitchens

In Fengshui:

"Kitchens belong to "fire", in its position, it need "fire" to enhance its character. The general lighting should be kept at a high illumination level in kitchens, and kitchen range areas should have more light. Avoid dynamic lights or flicking lights, which changing too much in the kitchen. Keeping the stove out of shadow is also quite important."

In modern design:

In the kitchen range, usually we use stoves or fires to cook food. Good lighting can help us to check the food when we are cooking. In the meantime, we use some tools, like knives which can be dangerous, when we prepare food. Shadow or worse lighting conditions can increase the risk.

3.7 In terms of the principles in commercial area

In Fengshui:

"A Foyer as the face of an office or a shopping mall and so on should be bright with enough lights always during working hours. The best location for the room of bosses is the southern direction and the room should be well illuminated by daylight. Meeting rooms also will be best with nice daylight conditions."

In modern design:

Good lighting can give people a better feeling of the place. The foyer as the entrance plays quite important role for an office or shopping mall and a good lighting environment is essential. South facing rooms have better daylight conditions than other rooms. Bosses are the head of the office and good lighting condition will help them to work and think. Good daylight condition also will keep people more positive and clear minded during meetings.

Conclusion

By trying to sort out the Feng Shui design principles on lighting design in terms of indoor light and trying to find some explanations with the western design theory or modern acceptable knowledge, it is really interesting to see the results. Some of the design principles can be understood by modern design, but for some it is really hard to find proper explanations. This is maybe the part of Feng Shui still based on personal belief or maybe it is the part which encourages the designers to gain more knowledge into it or maybe it is the part which will enlighten the designers. In the principles listed in this paper, whatever the principles have been found the explanations or not yet or hardly to explain, all of them bring a new way for lighting designers to think about lighting design in indoor areas. And whether the designers believe Feng Shui or not, Feng Shui and Modern design methods on lighting all have one common purpose that is creating a harmonious surrounding with light.

Acknowledgements

Deep thanks to Mr. Sergio Padula and Mr. James Sayer for their kind help in this paper.

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LUX PACIFICA

Report on 7th Lux Pacifica 2013

ISLE is a member of Lux Pacifica which covers 60% of the world's population. The members are the lighting societies of Australia and New Zealand, USA, Russia, China, India, Japan, Thailand, South Africa, Chinese Taipei and Korea. At Bangkok the Vietnam Lighting Association was accepted as a member. The Lux Pacifica quadrennial meetings are held in member countries and India has had the pleasure of organizing the 4th meeting in New Delhi in 2002.

Mr. Gulshan Aghi and Mr. H.S. Mamak were invited by Lux Pacifica to attend their 7th Meeting and Conference in Bangkok in March 2013. I take pleasure in reporting some of the highlights of this event in Bangkok.

The conference had 160 registered delegates from 14 countries. At Lux Pacifica 2013 85 papers were accepted, 4 of which were from India

- Is LED Ready to Replace Conventional Lighting: An Indian Approach by S. Chakraborty.
- A Practical View on the Progress of LED in Street Lighting in India by Biswajit Sengupta.
- Festival Lighting – Cultural Context by Rohini Mani
- Case Study: Evaluation of Various Sunshades Balancing Daylight and Heat Load for a Hot Dry Climate by R. Sairam and J. Kadire

Unfortunately owing to last minute emergencies Mr. S. Chakraborty and Ar. Rohini Mani were unable to attend the conference.

1. A decision was taken at my request to host the Lux Pacifica mid-term meeting in India in 2015. This

meeting is very prestigious since it is combined with a seminar to which member countries participate in large numbers. Our past experience shows that Japan comes with the largest delegation to the Lux Pacifica Conference. Special programs will need to be made for Japanese experts in lighting.

2. Prof. Dr. Warren Julian was elected as the President for the quadrennial starting in 2013. We are very happy to have him in that position because of his interest and involvement with ISLE and India.
3. I want to mention that the Papers that were selected for presentation at Lux Pacifica by international experts were extremely illuminating and educational. We will need to improve on this standard with the help of Indian experts in Lighting and architecture for the 2015 Conference.
4. The ISLE President has a permanent invitation to all the conferences of Lux Pacifica.
5. Mr. Mamak made a suggestion that India would be willing to establish the Lux Pacifica secretariat for which the cost can be paid from contributions made by member countries. The Board Members will respond after consulting with their members.
6. A suggestion was made that local associations can request Lux Pacifica to allow its name to be used in order to enhance the brand image of Lux Pacifica. This was agreed and in future we will need only to request for a clearance from Dr. Julian to use the Lux Pacifica name for our international conferences.

G. Aghi

WEBWATCH

Red Light Increases Alertness During "Post-Lunch Dip"

Acute or chronic sleep deprivation resulting in increased feelings of fatigue is one of the leading causes of workplace incidents and related injuries. More incidents and performance failures, such as automobile accidents,

occur in the mid-afternoon hours known as the "post-lunch dip." The post-lunch dip typically occurs from 2-4 p.m., or about 16-18 hours after an individual's bedtime from the previous night.

A new study from the Lighting Research Center (LRC) at Rensselaer Polytechnic Institute shows that exposure to certain wavelengths and levels of light has the potential to increase alertness during the post-lunch dip. The research was a collaboration between Mariana Figueiro, LRC Light and Health Program director and associate professor at Rensselaer, and LRC doctoral student Levent Sahin. Results of the study titled "Alerting effects of short-wavelength (blue) and long-wavelength (red) lights in the afternoon," were recently published in Physiology & Behavior journal.

This study lays the groundwork for the possible use of tailored light exposures as a non-pharmacological intervention to increase alertness during the daytime.

In most studies to date, the alerting effects of light have been linked to its ability to suppress melatonin. However, results from another study led by Figueiro demonstrate that acute melatonin suppression is not needed for light to affect alertness during the nighttime. They showed that both short-wavelength (blue) and long-wavelength (red) lights increased measures of alertness but only short-wavelength light suppressed melatonin. Melatonin levels are typically lower during the daytime, and higher at night.

Figueiro and Sahin hypothesised that if light can impact alertness via pathways other than melatonin suppression, then certain wavelengths and levels of light might also increase alertness during the middle of the afternoon, close to the post-lunch dip hours.

"Our study suggests that photoreceptors other than the intrinsically photosensitive retinal ganglion cells respond to light for the arousal system," said Figueiro. "Future research should look into the spectral sensitivity of alertness and how if it changes over the course of 24 hours."

From the present results, it is not possible to determine the underlying mechanisms contributing to light-induced changes in alertness because the optical radiation incident on the retina has multiple effects on brain activity through parallel neural pathways. According to Figueiro, that is an area that she would like to explore in future research.

Link:

http://www.lrc.rpi.edu/resources/newsroom/pr_story.asp?id=253

Researchers Identify Links Between Visibility and Safety From Roadway Lighting

Newspapers are filled with stories describing reductions and removal of street lighting in order to reduce municipal costs. Tackling the tricky questions of when and where to install roadway illumination is a challenge for transportation agencies. Estimating nighttime crash reductions from roadway lighting is difficult in part because lighting tends to be installed along with other improvements like traffic signals or channelization, which makes it hard to isolate the benefits of lighting. Still, many believe that roadway lighting can improve visibility at night and that these improvements can provide drivers with increased time to respond to potential hazards. Previous efforts to relate visibility from roadway lighting to nighttime driving safety have been hampered by limited available data and by lack of consideration of vehicle headlights.

Working to overcome these limitations, director and professor Mark Rea and senior research scientist John Bullough at the Lighting Research Center (LRC) at Rensselaer Polytechnic Institute, and Eric Donnell, associate professor at Penn State and faculty researcher at the university's Thomas D. Larson Pennsylvania Transportation Institute, have recently published a paper in the journal Accident Analysis and Prevention describing a unique parallel approach to lighting safety analysis.

The team used lighting and crash data for state highway intersections in Minnesota to develop quantitative models relating nighttime driving safety to the presence of lighting at these intersections. Importantly, these models also included the effects of features like signals, medians and other intersection design and operational features in order to segregate the effects of lighting from these other aspects. Further, different statistical approaches yielded similar results, bolstering their reliability.

In parallel, LRC researchers modeled prototypical roadway intersections with and without lighting, based on roadway lighting practices in Minnesota, and including the effects of vehicle headlights. Using a model of visual performance developed by Rea while at the National Research Council of Canada, they were able to estimate drivers' ability to detect potential hazards quickly and accurately under each lighting scenario compared to when no roadway lighting was present.

In both research efforts, Rea, Bullough and Donnell investigated rural and urban intersections with and without traffic signals. For example, the statistical models showed that roadway lighting at rural intersections tended to have small effects on nighttime driving safety. The team's visibility analyses suggested that rural intersection lighting provided relatively little benefit in terms of visual

performance, because most rural intersections are illuminated by one or two poles located at the junction, but the high traffic speeds on most rural highways require drivers to see hazards when those hazards might still be hundreds of feet from the junction. Most importantly, the statistical safety improvements associated with lighting were strongly correlated with the visibility improvements for all intersection types evaluated.

As new practices such as solid-state lighting, adaptive roadway and vehicle lighting, and benefit-cost analysis continue to emerge, tools like those described by Rea, Donnell and Bullough will help agencies specify and shape lighting that minimizes energy use and environmental impact while maximizing the use of limited public resources.

http://www.lrc.rpi.edu/resources/newsroom/pr_story.asp?id=247

The full text of the paper, titled "To illuminate or not to illuminate: Roadway lighting as it affects traffic safety at intersections" is available at

http://dx.doi.org/10.1016/j.aap.2012.12.029

Ecoluminance: LRC Develops New Method to Light Roundabouts

Roundabouts, also known as traffic circles, are increasing in number across the U.S. These intersections generally increase traffic throughput while reducing the severity of automobile accidents. However, as relatively new traffic features, modern roundabouts are sometimes described as confusing for drivers. One difference between roundabouts and conventional cross-type intersections is the location of pedestrian crosswalks. Drivers may be less familiar with the location of crosswalks when driving through a roundabout.

The Lighting Research Center (LRC) at Rensselaer Polytechnic Institute has developed a concept for roadway illumination called "Ecoluminance" which incorporates roadside vegetation with low-level pedestrian and landscape lighting, retroreflective markers, and light-emitting diode (LED) road and walkway illumination. Senior Research Scientist John Bullough and LRC Director Mark Rea were the principal investigators for the study.

"Ecoluminance uses a combination of lighting and vegetation to provide visual delineation, illumination for important safety hazards and concerns, and cues about road geometry," said Bullough.

The ecoluminance concept was implemented at a roundabout in the Town of Bethlehem in Albany County, New York.

During two preliminary demonstrations during the summer of 2011, the LRC installed lights and vegetation and obtained feedback from NYSERDA and NYSDOT engineers as well as from town officials and the Town of Bethlehem Bicycle and Pedestrian Committee. Based on this feedback, the LRC installed vegetation and retroreflective markers in the central island of the roundabout, LED landscape lighting to illuminate vegetation and trees, bollards at crosswalks, and LED overhead lighting along sidewalks and the road during the summer of 2012. Roadway edges and pedestrians were more visible than under the conventional lighting, and vehicles approached the roundabout with similar or slightly lower speeds.

Traditional lighting for roundabouts consists of a relatively large number of pole-mounted overhead luminaires, which are relatively expensive to operate because they are energy intensive. The LRC estimates that the initial cost of the ecoluminance system is similar to that of conventional lighting, but the energy use is only about a fourth, resulting in substantially lower energy costs as well as substantially lower light pollution impacts. "The ecoluminance concept could allow transportation agencies to integrate vegetation and lighting while reducing costs and environmental impacts," said Rea.

The LRC's report is available online at:

https://www.dot.ny.gov/divisions/engineering/technical-services/trans-r-and-d-repository/C-08-03FinalReport-Project18233-C0803.pdf

MEMBERSHIP APPLICATIONS APPROVED BY GOVERNING BODY

New Members Admitted on 15th February 2013

F.0786(L)	Shrikant Hanumant Joshi Row House 15, Chameli Villa, Sanjana Park Behind Agawral Public School Indore 452 016	Fellow (Life)	MP
M.1784(L)	Suresh Kumar Manjani HD-P2, His Grace Residential Villaments Martin Pais Road, Hat Hill Mangalore 575 006	Member (Life)	Karnataka
M.1785(L)	Pankaj Bhandari Smart Creations SP 15, Ambattur Industrial Estate Chennai 600 058	Member (Life)	Chennai
M.1786(L)	Sanjay Jain Prepack Marketing VG-5, Shekhar Grand 15/2 Sita Bagh Behind Regal Cinema Indore 452 003	Member (Life)	MP
M.1787(L)	Nirmal Matharu Mahendra 2 Wheelers Ltd. Plot No. 2, Industrial Area No. 1 Pithampur, Distt. Dhar 454 775	Member (Life)	MP

M.1788	C. Rajkumar Metalcraft G-7, Ambattur Industrial Estate Chennai 600 058	Member	Chennai
M.1789	M.V. Suresh 44 D, Prabha Flats Sayee Nagar, 1st Main Road Virugambakkam Chennai 600 092	Member	Chennai
M.1790	F. Fathima 3/334, Pujazhenthi Street Mugappair East Chennai 600 031	Member	Chennai
M.1792	G. Kanagasunder No. 99, 2nd Main Road M.P. Nagar, Kodangaiyur-Post Chennai 600 048	Member	Chennai
M.1795	Karthikeyan Kannan No. 21 Loganathan Street A4 Block, Aswin Balaji Homes Ambattur, Chennai	Member	Chennai
M.1796	Panchapakasan Jayaraman Plot No. 26, Mayworth Nagar Phase II Kolapakkam, Chennai	Member	Chennai
M.1797	Thirumalaisamy Dharumarajan Plot No. 142 G1 SPS Vaikunth Flats, Sridevi Garden Srilakshmi Nagar Valasarrakkam, Chennai 600 087	Member	Chennai
M.1798	K. Senthil Kumar No. 15 Rani Anna Durai Street M.G.R. Nagar Chennai 600 078	Member	Chennai

Transfer of Grade

F.0787(L)	Vinay Babar Technocraft 23, Kalpana Lok Colony Indore	Fellow (Life) from M1566(L)	MP
F.0788(L)	Bharat Kumar Rawlani Flat No. 301, Raunak Vihar 3-1-A, Old Palasia Indore 452 001	Fellow (Life) Member from M. 1125 (L)	MP

New Members Admitted on 12th March 2013

F.0789(L)	Suresh Meghwanshi 21 Shiv Vihar Abhiyanta Nagar Ajmer 305 001	Fellow (Life)	Rajasthan
F.0790(L)	Prabhakar Singh Flat No. C-4, Tower No. 8 New Moti Bagh New Delhi 110 023	Fellow (Life)	Delhi
F.0791(L)	Arun Kumar Shukla 401, Nakshatra Paradise 54 Shanti Nagar, Near DCM Ajmer Road Jaipur 302 019	Fellow (Life)	Rajasthan
M.1801(L)	A.S. Syed Ahmed Naveed P-24, Dilras Colony Asif Baugh, Ghati Area Aurangabad 431 001	Membar (Life)	Mumbai
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M.1803(L)	Nitin B Kanadia A 602, Gaurav Garden Complex Opp. Old Petrol Pump Mira Bhayandar Rd. Mira Road (E) Thane	Member (Life)	Mumbai
M.1804(L)	Satish Shrikanth Cholachgud H/502, Rashmi Tanmay Near Ceni Max, Beverly Park Mira Road (East) Thane	Member (Life)	Mumbai
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A.1142	C. Satheesh Plot No. 108, New No. 10 4th Venkatraman Nagar Hasthinapuram, Chrompet Chennai 600 064	Associate	Chennai

New Members Admitted on 22th March 2013 with effect from 1st April 2013

F.0792(L)	Surendra Singh Narolia C-443, 60 Feet Road Near Health Hospital, Mahesh Nagar Jaipur 302 015	Fellow (Life)	Rajasthan
F.0793(L)	Amitabh Bhargava AB-531, Nirman Nagar Kings Road, Ajmer Road Jaipur 302 019	Fellow (Life)	Rajasthan
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M.1809	Sasmita Samanta KIIT University Patia Bhubaneswar 751 024	Member	Calcutta
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A.1160(L)	Swagatika Satpathy Flat No 302, Rashmi Enclave Near Budheswari PO Lane Laxmisagar Bhubaneswar	Associate (Life)	Calcutta
A.1161(L)	Rupen Bhattacharya 34/2 Hem Chakraborty Lane Howrah 711 101 (WB)	Associate (Life)	Calcutta
A.1162(L)	Roshni Bhoi Nita Cottage, Diet Road Ainthapali, Sambalpur Odisha	Associate (Life)	Calcutta
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A.1168(L)	Pinaki Roy 55/5/2 Sriram Dhang Road Salkia Howrah 711 106	Associate (Life)	Calcutta

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S.1354	Prasad Laghate	Student	M.P.
S.1355	Sumit Yadav	Student	M.P.
S.1356	Yagya Yadav	Student	M.P.
S.1357	Rishabh Kanishka	Student	Calcutta
S.1358	Jitendra Kumar	Student	Calcutta
S.1359	Md Laique Wahid	Student	Calcutta
S.1360	Aman Gupta	Student	Calcutta
S.1361	Debashis Barik	Student	Calcutta
S.1362	Avinash Kedia	Student	Calcutta
S.1363	Avinash	Student	Calcutta
S.1364	Indrajeet Kumar	Student	Calcutta
S.1365	Rituparna Panda	Student	Calcutta
S.1366	Pragya Shukla	Student	Calcutta
S.1367	Abhisek Dutta	Student	Calcutta
S.1368	Aishwarya Vardhan	Student	Calcutta
S.1369	Abhijay Hazarika	Student	Calcutta
S.1370	Anshu Rani	Student	Calcutta
S.1371	Alok Singh	Student	Calcutta
S.1372	Preeti Kumari	Student	Calcutta
S.1373	Lisy Ray	Student	Calcutta
S.1374	Manjusha Deka	Student	Calcutta
S.1375	Namita Kumari	Student	Calcutta
S.1376	Soham Tar	Student	Calcutta
S.1377	Anirban Banerjee	Student	Calcutta
S.1378	Prithvee Sinha	Student	Calcutta
S.1379	Puja Bhaniramka	Student	Calcutta
S.1380	Abhinaba Roychowdhury	Student	Calcutta
S.1381	Rashmi Kumari	Student	Calcutta
S.1382	Ranit Saha	Student	Calcutta
S.1383	Abhishek Tamrakar	Student	Calcutta
S.1384	Arya Kumar Gupta	Student	Calcutta
S.1385	Pooja Raj	Student	Calcutta
S.1386	Sanjana Ghose	Student	Calcutta
S.1387	Abhishek Kumar	Student	Calcutta
S.1388	Soumyadeep Kundu	Student	Calcutta
S.1389	Abhishek Das	Student	Calcutta
S.1390	Madhulika Banerji	Student	Calcutta
S.1391	P. Nisha	Student	Calcutta
S.1392	Mohit Kumar	Student	Calcutta
S.1393	Divyanshi Srivastava	Student	Calcutta
S.1394	Pallabi Dutta	Student	Calcutta
S.1395	Apurv Kumar	Student	Calcutta
S.1396	Sambit Mitra	Student	Calcutta
S.1397	Jitendra Rao Senapati	Student	Calcutta
S.1398	Sandeep Baral	Student	Calcutta
S.1399	Rohit Yadav	Student	Calcutta
S.1400	Ranadeep Sarkar	Student	Calcutta
S.1401	Rahul Kumar	Student	Calcutta
S.1402	Priyesh	Student	Calcutta
S.1403	Rohit Kumar	Student	Calcutta
S.1404	Piyush Chaudhary	Student	Calcutta
S.1405	Ritesh Rana	Student	Calcutta
S.1406	Karan Kumar	Student	Calcutta
S.1407	Chandramohan Kumar	Student	Calcutta
S.1408	Chandan Kumar	Student	Calcutta
S.1409	Durgesh Ranjan	Student	Calcutta
S.1410	Md. Intakhab Aslam	Student	Calcutta
S.1411	Manish Kumar	Student	Calcutta
S.1412	Manish Kumar	Student	Calcutta
S.1413	Akbar Md. Tauseef Ahamad	Student	Calcutta
S.1414	Darpan Saha	Student	Calcutta
S.1415	Manish Patel	Student	Calcutta
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S.1417	Rahul Kumar Singh	Student	Calcutta
S.1418	Prateek Devnani	Student	Calcutta
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S.1445	Sandipan Prasad Chakravarty	Student	Calcutta
S.1446	Alok Kumar	Student	Calcutta
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S.1448	Bipul Anand	Student	Calcutta
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S.1450	Ashutosh Gaurav	Student	Calcutta
S.1451	Ajit Singh	Student	Calcutta
S.1452	Avinash Kumar Kedia	Student	Calcutta
S.1453	Pritish Dash	Student	Calcutta
S.1454	Souradeep Mahapatra	Student	Calcutta
S.1455	Rittick Maity	Student	Calcutta
S.1456	Sourav Basak	Student	Calcutta
S.1457	Ananya Satapathy	Student	Calcutta
S.1458	Priya Vishakha	Student	Calcutta
S.1459	Supriya	Student	Calcutta
S.1460	Shishu Kumar	Student	Calcutta
S.1461	Shekhar Kumar	Student	Calcutta
S.1462	Sudhanshu Pandey	Student	Calcutta
S.1463	Shubham Sharma	Student	Calcutta
S.1464	Sonu Kumar	Student	Calcutta
S.1465	Shashikant Sharma	Student	Calcutta
S.1466	Ankita Mudi	Student	Calcutta
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