Forum on Lighting + Efficiency + Wellbeing (LEW)

Wednesday, May 21, 2014; Pacific Energy Center, PG&E
851 Howard Street, San Francisco

Presenter: Pietro Silva, IA Interior Architects
Title: Lighting Design for People

IA (Interior Architects) is specializes exclusively in commercial interiors, and the majority of our focus is on how people live, work, collaborate, focus, meet, use, in the office environment. At the start of a project we first work to understand the culture and vision of the company - from a holistic view to the programmatic and emotional aspects of the spaces. Light is definitely a strong component of these aspects. Our goal is to use as much natural light as possible as daylighting has been associated with improved mood, enhanced moral, lower fatigue and reduced eye strain. To maximize access to natural light, we keep an open office plan and a low "horizon" in the office layout. This translates in deeper light penetration in spaces. Pietro Silva will present on this approach to design.

Presenter: Dieter Lang, OSRAM Corporate Technology
Title: Recommended Standards for Applications of Lighting for Human Wellbeing

To consider the biological effects of light on humans requires new approaches in measurements and description of lighting parameters and features. New standards and recommendations on how to use these features in practical applications are needed to provide lighting designers and Specifiers with a sound base for lighting installations. Currently, these first steps are being made in Europe with the publishing of Recommended Standards for Lighting Applications. Dieter Lang will present on these new approaches, discuss opportunities and challenges related to biologically effective lighting and show some best practice examples. A proposed revision of the current understanding of energy efficiency in lighting will be discussed.

Presenter: Meg Smith, Philips Lighting Solutions and Services
Title: Philips Heal Well and School Vision projects and other commercial lighting applications

The DOE recently released a SSL Technology fact sheet entitled *Lighting for Health: LEDs in the New Age of Illumination*, which ends with the direction and the challenge: "While today's LEDs are generally no more beneficial or dangerous to human health than other similar light sources, they have the potential to be carefully tuned to meet the diversifying demands placed on lighting systems." Meg Smith will present on applications such as the Philips Heal Well and School Vision - projects based on research that also led to the development of features in these products. She will also share some of the insights and experiences obtained from commercial applications in Europe.

Presenter: Mark Rea, Lighting Research Center, Rensselaer Polytechnic Institute
Title: Value-Based Solid State Lighting

We presumably provide lighting to build environments to deliver benefits to the users of those spaces. Energy efficient lighting is, by definition then, delivering those benefits for the lowest energy. We do not always measure the benefits provided by lighting, so "value engineering" today is simply minimizing cost while meeting a recommended photopic illuminance level. While other than photopic (seeing) lighting benefit metrics have been developed from basic and applied research few have been incorporated into lighting recommendations and standards. In this session Mark Rea will discuss how Institutionalizing lighting benefit metrics into recommendations and standards would pave the way to *value-based lighting*, whereby people are provided with the desired and measureable lighting benefits at the lowest energy and cost.

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Presenter: Milena Simeonova, Pacific Energy Center, PG&E
Title: Modulated Lighting for Wellbeing and Energy Efficiency

We have used static lighting until now; however, the human body is a dynamic system that is in perfect synchronization with the natural rhythms of day-night cycling. In this presentation we will define what modulation is, how the changing lighting parameters entrain the circadian system, provide sensory stimulation, and keep us connected to the passage of time. The applications of modulated (bio-dynamic) lighting for wellbeing can create more natural conditions while simulating daylight qualities. This holds a great potential to inspire and engage the end users, increasing adoption and implementation of these new technologies. Energy measures from Utilities, such as Time of Use, ADR, and Smart Grid fluidity, are also consistent with this modulated lighting.

Presenter: Michael Siminovitch, Rosenfeld Chair in Energy Efficiency, UC Davis
Title: Next Generation Opportunities for Lighting Codes and Standards

California has embraced ambitious energy-efficiency goals in support of its broader climate objectives under AB 32. These include a serious commitment to zero net energy (ZNE) residential buildings, commencing in 2020, indicating opportunities for advanced technology and lighting design. In support of this, California has been a leader in the regulatory process associated with improving the energy efficiency of appliances and buildings. Typical codes and standards enhancement relies on a rigorous process that involves proving technological feasibility, cost effectiveness, and energy-saving potential. For lighting codes and standards, this process typically involves a close dialogue with critical stakeholders within the industry, the lighting profession and electrical utilities. As California pushes forward on some of the most aggressive building codes and standards to date, we will see an increased focus on issues indirectly related to energy efficiency, including quality standards, advanced networked lighting controls, training and education, . This presentation will review a number of these emerging opportunities, using some of the recent codes and standards efforts as specific examples for future development.