

Emerging Trends in Lighting Technology

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Abstract:

Electric light, once considered as nighttime substitute for day light, becomes 24x365 hour companion in all of human activities. It has helped significantly to expand range & time of human activities. With this expansion of uses, lighting energy use has become one of the major uses of energy in the country. On the other hand the drive toward greater lighting efficiency has been one of the principal motivators for recent changes & improvements in the lighting technology.

Lighting technology development can be divided in to two parts:

(1) Commercially available : We see the emergence of new generation of light sources such as T5, Ceramic Discharge Metal Halide lamp (CDM), Induction lamp, Fibre optics & above all LED.

(2) Rapidly Evolving: These may be commercially available now, but may be even better in the near future. Examples: Addressable controls, High color temperature and “scotopically enhanced” fluorescent lamps, White LED for general lighting & “Intelligent” Lighting.

While the presentation will cover above technological developments, it will also high lights a phenomenon known as the “bleeding edge”. Some new products seem too good to be true - and are. There are many examples of technologies that were promising, but did not stand the test of time.

At the same time Lighting design practice or Lighting Application Engineering has undergone “quantum change from Lux based design of empty room to people oriented design based on visual quality. This has opened a new stream of lighting application --- Architectural Lighting.

The reason of change can be attributed due to

- 1. Rapid change in Lighting Technology*
- 2. Latest findings on lighting Research on “Human factor & Lighting”.*
- 3. High end lighting design software supported by photorealistic visualisation.*

The nucleus of Architectural Lighting lighting design is based on two criteria:

- 1. Lighting is for people not for empty space ”.*
- 2. Lighting is not good unless occupants like it.*

The presentation will deal latest technique & status of lighting application & capability of lighting analysis.

Energy is treated as expenses in today’s world of stringent cash management. Saving energy, reducing costs, going easy on resources and environment – these are the requirements which have to be met by products and technology that lay claim to the description “economical”. The economical use of energy influences economy of the nation. Thus, energy conservation is the focus of world attention.

Lighting being the most visible form of energy perhaps attracts more attention than other areas of power utilization. In fact lighting is treated as low hanging fruit where result is immediate & significant.

The concept behind energy efficiency is simple. If we can achieve our lighting design goals using equipments and approaches that use less energy during operation, then the owner will save money on an ongoing basis. Or put another way, we will avoid the ongoing cost of operating an inefficient system.

As a result we see the emergence of not only number of energy saving lighting equipments which are used as new system, retrofit arrangement or a component change but also “Energy Conservation Building Code (ECBC)”.

It will also address latest range of energy saving lighting products & the objective, philosophy, methodology & above all evaluation technique of lighting energy conservation.