1 Day Course on Interior Lighting Design (Part 2: Interior Lighting Design)

by Dr Siow Chun Lim

Dr Siow Chun Lim is currently a General Committee in Electrical Engineering Technical Division (EETD).

The second speaker was Mr. Glenn Tiong who focused his talk on interior lighting design. "Eye sensitivity curve is based on measurement at photopic light level measured with a 2 degree view angle as per CIE 1931," said Mr. Glenn Tiong. "75% of LED goes off as heat with the remaining 25% appears as light." Different person may have different perception of contrast. Lighting can also affect the Circadian rhythm of certain individual.

Mr Glenn Tiong's talk covered four areas: Luminaires further explained; performance of lighting; surface brightness; and glare.

Luminaires further explained. Continuing the topic of the first speaker, Glenn highlighted that the basic requirements of luminaires are to connect light source to the electric power supply, to protect the lamp from mechanical damage, to control light distribution, to withstand expected condition of use and to be safe when being used in the recommended manner.

Glenn also explained why there is still the possibility of condensation of moisture within the light fixtures despite having high ingress protection. Therefore, a better design is to have breathing holes especially for high powered light to prevent condensation due to internal gas pressure build-ups.

Performance of lighting. The performance of lighting is the quantity and quality of the lighting required to achieve satisfactory visual conditions which is dependent on the nature of the tasks. It is evaluated in terms of size, contrast, duration, age of observer, colour discrimination and complexity. Other than performance, safety and health as well as appearance and comfort form the core factors in selection of lighting.

Surface brightness. Surface brightness may also affect the perceived illuminance of the user. Horizontal illuminance is usually considered in lighting design. Too high a contrast may cause discomfort to human being. Glenn also reminded the participants of the inverse square law at which light intensity tends to decrease in proportion to the increment of distance square.

Glare. Glare, or excessive brightness in a particular space can be leveraged for security application. Glare can be classified into direct glare, indirect glare, discomfort glare and disability glare. To reduce glare, the right luminaire should be selected. A good luminaire should be able to cut off light above 65 degree. Glenn then introduced the Unified Glare Rating System which recommends the acceptable rating of glare for office and drawing rooms, just to name a few. The lower the rating, the lower the amount of glare.

Glenn ended his presentation by performing a simple manual lighting calculation. The objective was to determine the number of luminaires required. In order to do so, several parameters were required such as average illuminance, area, lumens, number of lamps, maintenance factor and utilisation factor.

The seminar ended with presentation of token of appreciation by EETD to both speakers. Figures below summarise the event of the day.

Token of appreciation to Mr. Glenn Tiong