Issues of Artificial Illumination

Overview

Light is the part of the electromagnetic radiation spectrum that can be seen by the human eye. The wavelength lies between 400 and 700 nm.

Light is divided into:

- **Day light, artificial light and joint light**
- **Dazzles**

Artificial lighting

Artificial lighting is not a natural component of the environment. Its production is aimed to replace natural lighting when it’s not enough, such as in buildings with insufficient number of windows or during night. The sources of artificial light are commonly lamps, which are devices that convert electrical energy into electromagnetic radiation.

Despite significant technological progress, no artificial lighting can copy the dynamics of natural light and its spectral composition. It is therefor less favorable for humans.

Although artificial light cannot be used to replace natural light in a long period of time, it can be used for temporary replacement with or without combination with day light when needed. The use of artificial light consumes a lot of energy, which is another reason for capturing as much daylight as possible in building.

Measurement or artificial light

Artificial light can be measured in absolute units (lux) because it doesn’t vary throughout the day like day light. The daylight must be completely excluded at the time of measurement. Evenness of artificial lighting (R) expresses the ratio between minimum and average of E values:

R = E min / E avg

An artificial lighting map is created by isolines (called isoluxes) of illumination. The lines connect places with identical E values.

Links

Related artcles

- Issues of Day Lighting and Combined Illumination

Bibliography

- BENCKO, Vladimír. *Hygiene & Epidemiology : Selected Chapters.* 2nd edition. Karolinum, 2011. Chapter 1.7.5: Lighting. ISBN 978-80-246-0793-1.

External Links

- Daylight factor - Wikipedia (http://en.wikipedia.org/wiki/Daylight_factor)
- Artificial light - Wikipedia (http://en.wikipedia.org/wiki/Artificial_light)