

Implementation of EPBD

Lighting essential part of indoor environmental quality

The revised Energy Performance of Buildings Directive (EPBD) was published earlier this year and member states now have two years to transpose the legislation at the national level. Healthy buildings are vital to the wellbeing of people and actively contribute to the productivity, creativity and safety of their occupants. By introducing the concept of indoor environmental quality (IEQ), the revised EPBD has the potential to significantly enhance the quality of indoor spaces.

LightingEurope (LE) welcomes this approach and urges the governments of EU member states to be ambitious in implementing the EPBD and to acknowledge the contribution of lighting to creating healthy buildings. LE has formally made specific recommendations to all statutory authorities, but their comments are also directed at specifying consulting engineers



“The importance of lighting in both new-build and renovation projects, and especially so in commercial and public buildings, is critical. The time to act is now and we should not settle for the bare minimum”, says Gavin Edwards, Chair, Lighting Association Ireland.

and contractors responsible for creating the best possible indoor environment in buildings.

LightingEurope (LE) welcomes

A significant change within the revised EPBD is to address indoor environmental quality. The revised EPBD defines IEQ as: “the result of an assessment inside a building based on parameters such as relating to the temperature, humidity, ventilation rate and the presence of contaminants influencing the health and wellbeing of its occupants”.

This is an important change that needs to be recognised and understood. Indoor air quality refers to the quality of the air inside a building, specifically the air that occupants breathe. It takes into account the presence of various contaminants, such as volatile organic compounds (VOCs), ozone, radon and particles from dust or building materials. IAQ also considers the levels of carbon monoxide and carbon dioxide.

Indoor environmental quality still considers indoor air quality as a part of its scope, but it also encompasses the broader environment, including acoustics, lighting and temperature. Thus, while IEQ addresses the air that building occupants breathe, it also considers the overall environment they experience, including what they see, hear, and feel while inside the building.

This is why the EPBD definition of IEQ uses the wording “such as,” indicating that the given list is not exhaustive and that other factors are also included in IEQ.

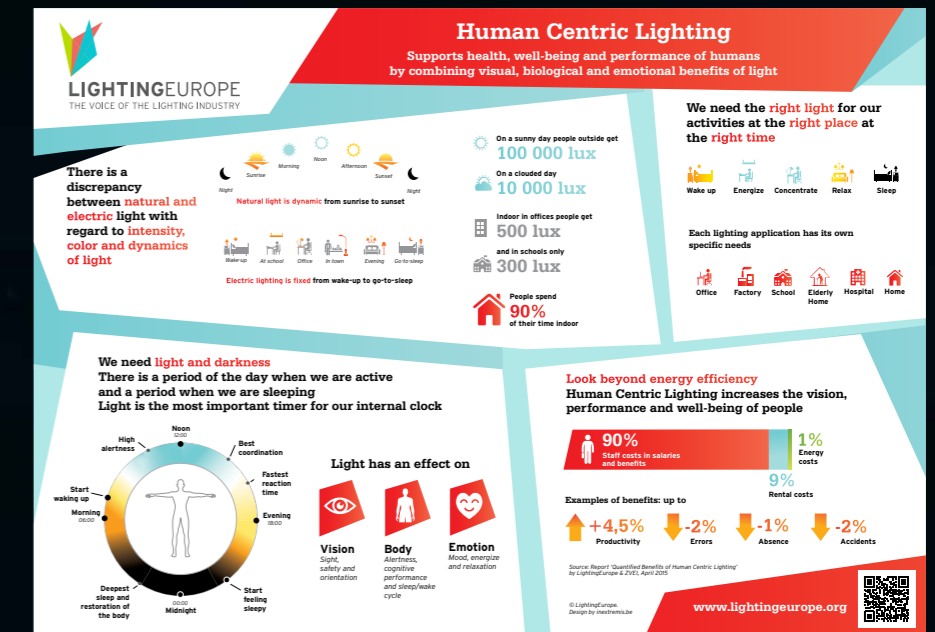
The role of lighting and lighting systems

As already mentioned, lighting is a key aspect of indoor environmental quality (IEQ). This means there must be sufficient light of the right quality and colour at the right time. To achieve this, the lighting system needs to be designed according to good lighting standards, such as CEN TS 17165 and EN 12464-1. Adhering to these standards also enables the assessment, inspection and monitoring of the lighting aspects of IEQ as required by the new EPBD.

In the EPBD, built-in lighting is considered a technical building system, and building automation and control Systems (BACS) may be required to control built-in lighting in non-residential buildings. The BACS for lighting is known as the lighting control system. Such a system reduces lighting energy consumption while still providing the right amount of light at the right time. This is achieved through features like daylight sensing, which lowers light levels when sufficient daylight is available, and occupancy detection, which dims or turns off lights when no one is present, as mandated by the new EPBD for non-residential buildings.

Lighting systems can also adjust to meet the activity needs of occupants and align lighting with the human body clock, thereby enhancing indoor environmental quality and making it truly human-centric.

Lighting directly impacts visual comfort. Adequate illumination levels and proper



distribution of light reduce glare and shadows, promoting comfortable vision. This ensures that occupants can perform tasks without straining their eyes, which is crucial for productivity and overall wellbeing. Good lighting helps occupants navigate spaces safely, identify potential hazards, and maintain security by minimising dark areas where unauthorised activities could occur. Dark or poorly-lit areas increase the risk of accidents and may create opportunities for security breaches.

As well as the visual benefits of good lighting, lighting also plays a vital non-visual role effect by regulating circadian rhythms and affecting mood. Natural light or lighting that mimics natural light can synchronise peoples' internal body clocks,

promoting better sleep patterns and enhancing mood and alertness during the day. On the other hand, poor lighting quality, such as excessive flickering or glare, can lead to headaches, eye strain and fatigue. This negatively impacts occupants' health and productivity.

Lighting also contributes significantly to the aesthetic appeal of indoor spaces. Well-designed lighting can enhance architectural features, highlight focal points and create ambiance, and contribute to a more pleasant and inviting environment.

In conclusion, LightingEurope now recommends that (1) minimum mandatory lighting requirements are set for indoor environmental quality and (2) that they are included in the EPBD. ■