



The implementation of the Energy Performance of Buildings Directive – Lighting as part of Indoor Environmental Quality

Introduction

The revised Energy Performance of Buildings Directive was published in the EU Official Journal on the 8th of May. Member States now have two years to transpose the legislation at the national level. Healthy buildings are vital to the health and well-being of EU citizens and actively contribute to the productivity, creativity, and safety of their occupants. By introducing the concept of Indoor Environmental Quality, the revised Energy Performance of Buildings Directive (EPBD) has the potential to significantly enhance the quality of indoor spaces. LightingEurope welcomes this approach and urges the governments of EU member states to be ambitious in implementing the EPBD and to acknowledge the contributions of lighting to creating healthy buildings. With this paper, we would like to share our recommendations.

Indoor Environmental Quality (IEQ) and Indoor Air Quality (IAQ)

A significant change is the shift from focusing solely on Indoor Air Quality (IAQ) to addressing Indoor Environmental Quality (IEQ). The revised EPBD defines IEQ as:

‘the result of an assessment inside a building based upon parameters such as relating to the temperature, humidity, ventilation rate and presence of contaminants, influencing the health and wellbeing of its occupants’.

This is an important change that needs to be recognized 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 (IAQ) 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 mentioned above, 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.

Why is IEQ important?

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 well-being. Good lighting helps occupants navigate spaces safely, identify potential hazards, and maintain security by minimizing dark areas where unauthorized 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 role non-visual effect including by regulating circadian rhythms and affecting mood. Natural light or lighting that mimics natural light can synchronize our 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, negatively impacting 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, contributing to a more pleasant and inviting environment.

Our recommendation for the implementation of the EPBD

We recommend to further specify the definition that was introduced in the revision of the EPBD with a broader list of parameters, including lighting.

*'indoor environmental quality' means the result of an assessment of the conditions inside a building that influence the health and wellbeing of its occupants, based upon parameters such as those relating to the temperature, humidity, ventilation rate **and** ,presence of contaminants **and lighting**.*

We recommend that minimum mandatory requirements for lighting in Indoor Environmental Quality (IEQ) are set. Recommendations for the required lighting of workplaces are covered by the European standard EN 12464-1.

Contact

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LightingEurope is the voice of the lighting industry, based in Brussels and representing 32 companies and national associations. Together these members account for over 1,000 European companies, a majority of which are small or medium-sized. They represent a total European workforce of over 100,000 people and an annual turnover exceeding 20 billion euro. LightingEurope is committed to promoting efficient lighting that benefits human comfort, safety and wellbeing, and the environment. LightingEurope advocates a positive business and regulatory environment to foster fair competition and growth for the European lighting industry. More information is available at www.lightingeurope.org.