



LIGHTINGEUROPE
THE VOICE OF THE LIGHTING INDUSTRY

Healthy Buildings combine energy efficiency, well-being and performance of people

EPBD*

Strengthening the role of **lighting systems in the EPBD** will result in improved energy savings and well-being in buildings

*Energy Performance of Buildings Directive



70% of existing buildings in Europe will still be in use by 2050 (source: Buildings 2030)



Today, only around **1%** of existing buildings are new or renovated



The benefit of saving 1 ton CO₂ equivalent is **75€** in case of lighting systems

(source: McK report: The carbon productivity challenge: Curbing climate change and sustaining economic growth)

LightingEurope proposal to EPBD legislative debate

- 1** **Lighting Systems** to be defined as Technical Building System replacing "Built-in Lighting"
- 2** Member states strategy on **renovation** of existing building stock should include human-centric approach
- 3** Introduction of a **Smartness Indicator** to assess the smartness of a building and to foster energy savings, well-being and performance of people

The maximum EU-28 **total annual electricity savings** for optimized lighting system designs with controls (depending on the reference light source scenario) are:



(for reference: EcoDesign (EC)245/2009 on tertiary sector lighting products saving potential is **38 TWh/year** in 2020)

(source: ENER Lot 37)

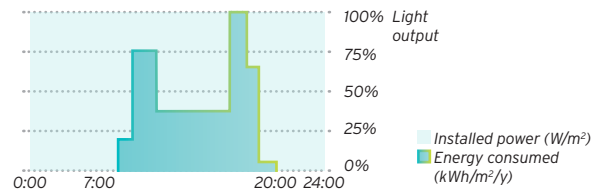
Lighting Systems

Provide **dynamic and tunable light** (dimming and boosting light intensity and tuning spectrum) enabling Human Centric Lighting.

Lighting systems are measured in actual **energy consumed** and not in maximum **installed power**

(source: EN 15193-1)

Lighting systems **react instantly to users' needs**, thereby reducing energy consumption.

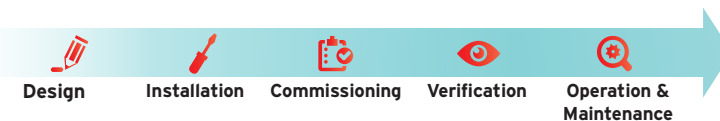


Timing, occupancy and daylight sensors

The '**lighting system design process**' will be an important tool to

- 1** Define the lighting design according to user needs and investor interest
- 2** Achieve transparency, documentation and planning certainty
- 3** Ensure energy performance and lighting quality according to design

Lighting systems design process:



(Source: CEN/TS 17165)

Quality of light

The design of lighting systems is based on **light quality requirements** as described in European standards

(source: ENER Lot 37 study)

EN 12464-1 Lighting of work places



Colour rendering



Horizontal illuminance



Vertical illuminance



Illuminance uniformity



Glare



Colour temperature








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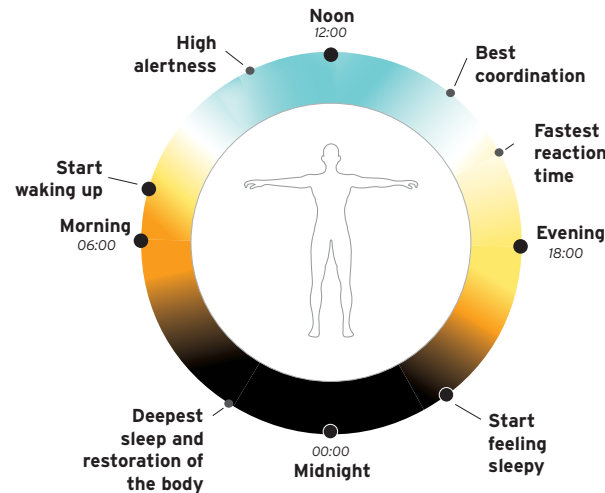
Human Centric Lighting

Supports health, well-being and performance of humans by combining **visual, biological and emotional benefits of light**

Light has an effect on

-  **Vision**
Sight, safety and orientation
-  **Body**
Alertness, cognitive performance and sleep/wake cycle
-  **Emotion**
Mood, energize and relaxation

Light is the most important timer for our internal clock



We need the **right light** for our activities at the **right place** at the **right time**



Metrics exist for **visual aspects** and new metrics are in development for **non-visual aspects**



Healthy Buildings

EPBD will create an opportunity to boost investments in better performing buildings

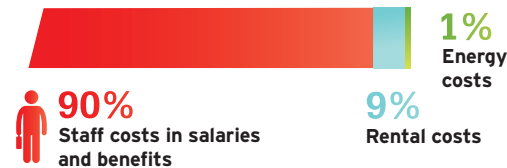
Each year, at least **3%** of the existing buildings need to be renovated to achieve the European goals

70% of the world's population will live in cities by 2030

In Europe, buildings use **40%** of total energy and produce nearly **36%** of CO₂ emissions

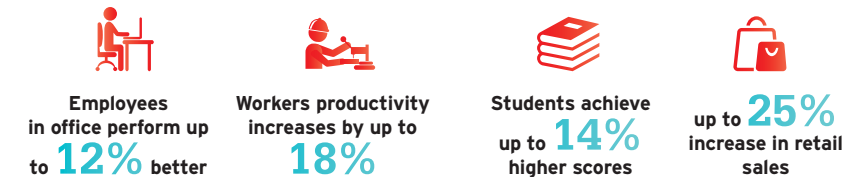
Non-residential buildings comprise up to **20%** of total energy consumption

Typical business operating costs are



The focus must be on energy efficiency and on benefits for people. Human Centric Lighting will play an important role to realize **healthy buildings** and thus to shorten **pay-back time**

Benefits for people in healthy buildings due to lighting



(source: www.ecodesignconsultants.co.uk/healthy-buildings/
www.cbre.nl/en/healthy-offices-research)

