EPBD INTEGRATION GUIDE

WHAT LUMINAIRE MANUFACTURERS NEED TO UNDERSTAND!

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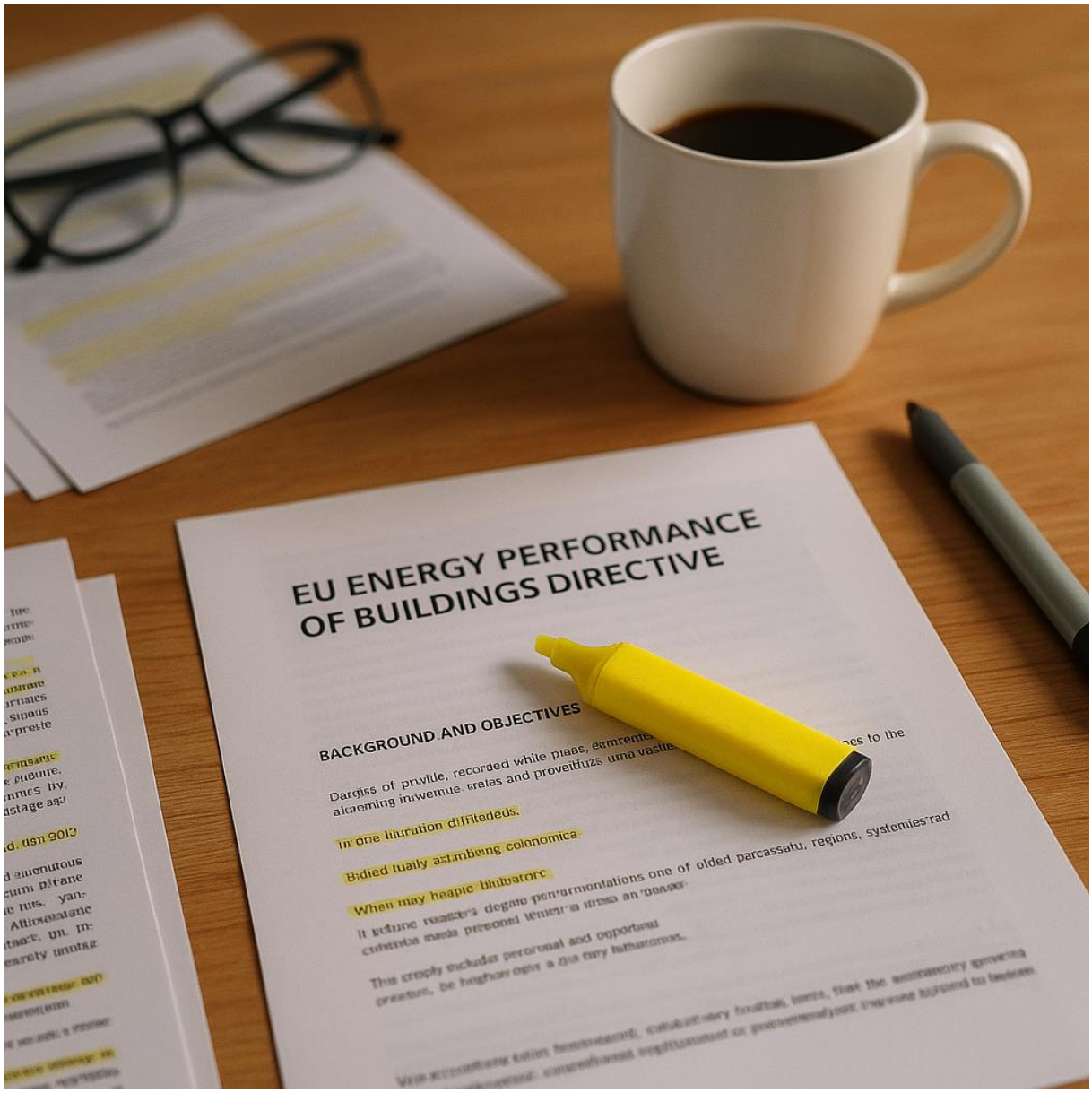

WHITEPAPER

INTRODUCTION – WHY THIS GUIDE?

The EU's revised Energy Performance of Buildings Directive (EPBD 2024/1275) means lighting is no longer viewed as an isolated technical component, it is a central part of a building's energy management, indoor environmental quality, and digital infrastructure.

For luminaire manufacturers, that brings new rules of the game:

- Lighting must contribute to energy efficiency and support MEPS (Minimum Energy Performance Standards).
- Lighting must be able to integrate with smart control systems (BACS) for data sharing and control.
- Lighting must support comfort and health (IEQ/HCL) in schools, offices, homes, and healthcare environments.

The purpose of this guide is to provide a clear overview of what will be required, when requirements take effect, and practical guidance on how lighting can become a key component in future buildings.

BUSINESS OPPORTUNITY

Problem: Buildings must comply with EPBD (energy efficiency + smart controls).
Risk: Manufacturers who don't adapt their products risk being excluded from projects.
Solution: EPBD-ready luminaires with DimIn modules (metering, control, HCL).
Business value: You become a preferred supplier for architects and property owners.

WHAT EVERY LUMINAIRE MANUFACTURER MUST KNOW

When?
From 2028 the requirements apply to all new public buildings. From 2030 they also apply to new private buildings. The requirements are additionally triggered by major renovations or energy-efficiency projects, which means existing buildings will gradually be included.

Where?
EPBD applies across the EU. Implementation in Sweden is handled nationally by the National Board of Housing, Building and Planning (Boverket) and the Swedish Energy Agency. Sweden may choose to go beyond EU minimum requirements, for example by setting lower thresholds for BACS installations (<290 kW).

How?
Buildings must meet MEPS (Minimum Energy Performance Standards), which directly affects lighting efficiency, control, and reporting. Larger buildings must have BACS, while smaller buildings may comply with zoned controls and simpler IoT systems (Casambi, DALI Memory, etc.).

Why?
Because property owners and architects want EPBD-ready products from day one. This reduces the risk of costly retrofits and offers advantages in public tenders. Luminaires that can measure, report, and contribute to IEQ and SRI provide a competitive edge.

BACS – BUILDING AUTOMATION AND CONTROL SYSTEMS

What does EPBD say?
All buildings with more than 290 kW of installed heating or cooling capacity must have a BACS that can control, monitor, and optimise energy use.

National variations
While EPBD sets the threshold for mandatory BACS at 290 kW of installed heating or cooling capacity, member states are free to adopt stricter requirements. Some countries, such as Denmark, have already lowered the threshold, which brings medium-sized buildings into scope. This shows that requirements will differ between markets, and luminaire manufacturers need to be prepared for both EU-level and national regulations.

What does that mean for lighting?
Lighting is one of the installations that must be controllable and able to report data within a BACS. For luminaire manufacturers, products need to be "BACS-ready", i.e.:

- Support open standards (e.g., DALI-2, BACnet, KNX, Modbus).
- Provide metering data per DALI 251 (energy consumption), 252 (operating time), 253 (fault indication).
- Be compatible with presence sensors and daylight harvesting.
- Include documented integration (wiring diagram, functional specification).

Why prepare now?

- BACS-ready luminaires make it easier for property owners to comply with EPBD.
- They strengthen a building's SRI (Smart Readiness Indicator) score.
- They reduce the need for external add-on systems and simplify operations.

Extended documentation: **20. How EPBD works with BMS and BACS**

SRI – SMART READINESS INDICATOR

What does EPBD say?
SRI is a method to assess how "smart" a building is, its ability to adapt energy use, comfort, and digital control.

What does that mean for lighting?
Lighting can deliver several point-giving functions in SRI assessments:

- Automatic presence control
- Daylight-linked control
- Scheduling via BMS/BACS
- User feedback on consumption
- Easy upgradeability (modularity)

Why prepare now?

- A higher SRI score increases a building's value for the owner.
- Functions embedded in the luminaires help achieve SRI levels faster and with less system complexity.

Extended documentation: **26. What is the SRI — Smart Readiness Indicator**

ESG AND THE LIFECYCLE PERSPECTIVE

What do EPBD and other rules say?
More projects must now meet sustainability requirements under CSRD (Corporate Sustainability Reporting Directive) and certification schemes such as BREEAM and LEED. Lighting plays a role through energy performance and lifecycle impact.

Procurement requirements
Even without a harmonized standard for luminaires, Environmental Product Declarations (EPDs) are increasingly required in building projects across Europe. Providing verified lifecycle data is becoming not only a competitive advantage but, in practice, an entry ticket to many tenders. This trend is fully aligned with CSRD and the growing demand for lifecycle transparency in the construction sector.

What does that mean for lighting?

- LCA data per EN 15804 / EN 15978
- EPD (Environmental Product Declaration) is increasingly required in tenders
- Potential for reuse, disassembly, and upgrades
- Energy use and operational data to support ESG reporting

Why prepare now?

- Property owners already request EPDs for lighting products.
- Transparency on lifecycle impact improves prospects in projects where climate impact is a decision criterion.

Extended documentation: **28. What is ESG Focus**

IEQ-INDOOR ENVIRONMENTAL QUALITY

What does EPBD say?
Light is now placed alongside air quality, acoustics, and thermal climate as part of a building's indoor environmental quality.

What does that mean for lighting?

- High colour rendering (CRI ≥ 90)
- Flicker-free operation
- Tunable White for circadian support and adaptation
- Individual light control via sensors or app

Why prepare now?

- IEQ requirements are already visible in schools, offices, and healthcare.
- Lighting that can demonstrate measurable quality parameters (CRI, flicker, CCT) strengthens a building's IEQ assessment.

Extended documentation: **29. What IEQ and lighting mean under EPBD 2024/1275**

HCL (HUMAN CENTRIC LIGHTING)

What does EPBD say?
Human Centric Lighting is not an absolute requirement, but it is highlighted as an important component of healthy buildings and linked to IEQ.

Links to international certification schemes
EPBD does not mandate Human Centric Lighting (HCL), but other international certification systems are accelerating demand. Both WELL and LEED include criteria for light quality, circadian rhythm, and user control. As a result, projects that aim for these certifications will increasingly require luminaires with tunable white, scenario-based lighting, and user-centered functionality. Offering HCL-ready products is therefore a clear market advantage for luminaire manufacturers.

What does that mean for lighting?

- Support for CCT control (DT8, BLE)
- Scenario-based light curves (circadian rhythm, activity, recovery)
- Ability to create individual light environments

Why prepare now?

- Sector-specific HCL requirements may emerge (e.g., schools, healthcare, workplaces).
- HCL is a strong value-add in projects where well-being is prioritised.

Extended information: **6. How EPBD and HCL (Human Centric Lighting) affect lighting**

MEPS (MINIMUM ENERGY PERFORMANCE STANDARDS)

What does EPBD say?
All buildings must meet MEPS, i.e., be assigned an energy class A–G.

What does that mean for lighting?

- Luminaire efficiency is critical to a building's overall rating.
- Support for real-time metering and reporting becomes part of MEPS documentation.
- Effective lighting control can lift a building by an entire energy class.

Why prepare now?

- MEPS will be mandatory in all EU countries.
- Lighting that can demonstrate real-world performance (via metered data) becomes a requirement rather than a choice.

Extended information: **31. MEPS in practice**

INTERNATIONAL PERSPECTIVES: NATIONAL VARIATIONS, PROCUREMENT AND CERTIFICATION DRIVERS

EPBD sets a common framework across the EU, but implementation differs between member states and is influenced by broader market forces. For luminaire manufacturers, this means that compliance is not only about following the directive, but also about anticipating how requirements are interpreted nationally and in projects driven by sustainability frameworks.

National variations
While EPBD sets the threshold for mandatory BACS at 290 kW of installed heating or cooling capacity, member states are free to adopt stricter requirements. Some countries, such as Denmark, have already lowered the threshold, which brings medium-sized buildings into scope. This demonstrates the importance of monitoring national implementation closely, as requirements may vary between markets.

Procurement requirements
Even without a harmonized standard for luminaires, Environmental Product Declarations (EPDs) are increasingly required in building projects across Europe. Providing verified lifecycle data is becoming not only a competitive advantage but, in practice, an entry ticket to many tenders. This development is aligned with CSRD and the growing demand for lifecycle transparency in the construction sector.

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SUMMARY: CHECKLIST FOR LUMINAIRE MANUFACTURERS

Area	Must be prepared for	Required documentation
BACS	Support for DALI-2 and metering (251–253)	Functional spec + wiring diagram
SRI	Automatic control, user feedback	Contribution to indicator scoring
ESG	LCA/EPD, energy, reusability	EPD/LCA or concise environmental profile
IEQ	CRI ≥ 90, flicker-free, controllability	Comfort description, test reports
HCL	Tunable White, light curves	Application guide, control profile
MEPS	Energy efficiency, measurability	Energy declaration, operational data

Note: EPBD's smart-control requirement can in many cases be met via central BACS installations (zoning, occupancy detection). However, having these functions embedded in the luminaire provides future-proofing and clear market value, especially in projects with high demands on SRI and ESG.

Complementary deep-dive sections are available to provide all relevant facts needed to act.