

Revision of the EPBD

Possible Impacts on Heating and Cooling Systems

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Scope and Objectives of the EPBD

Energy performance of:

- ▶ New and existing buildings
- ▶ Technical building systems, whenever installed, replaced or upgraded systems

Technical Building System (art. 2)

New proposed definition:

Technical equipment for space heating, space cooling, ventilation, domestic hot water, built-in lighting, building automation and control, on-site electricity generation, on-site infrastructure for electro-mobility, or a combination of such systems, including those using energy from renewable sources, of a building or building unit

Technical Building System (art. 2)

The new proposed definition highlights:

- Building application: “space” / “domestic”
- “Built-in” lighting
- “Intelligent” buildings: automation and control
- Photovoltaic production, cogeneration systems
- Recharging points for electric vehicles
- Use of renewable energy sources

Feasibility study before construction (art.6 & 7)

EPBD 2010

- ▶ For new buildings, Member States shall ensure that, before construction, the technical, environmental and economic feasibility of high-efficiency alternative systems is considered and taken into account
 - ▶ Decentralised energy supply systems based on energy from renewable sources
 - ▶ Cogeneration
 - ▶ District heating and/or cooling
 - ▶ Heat pumps

Technical building systems (art. 8)

EC proposal:

- ▶ Member States shall ensure that the overall performance of installed, replaced or upgraded technical building systems is assessed, documented and passed on to the building owner, remaining available for compliance verification and input data for future EPCs

Inspection of heating and air-conditioning systems (art. 14 & 15)

- ▶ EPBD 2010:
 - ▶ heating >20 kW, air-conditioning >12 kW
- ▶ EC proposal:
 - ▶ Non-residential buildings: primary energy use > 250 MWh
 - ▶ Residential buildings with a centralized technical building system with a rated output > 100 kW
 - ▶ No more indication on inspection frequency depending on type or heat output of the heating system, or on monitoring control system in place

Inspection of heating and air-conditioning systems (art. 14 & 15)

Proposed alternative to inspection for non-residential buildings:

- MS may set requirements to ensure that buildings are equipped with building automation and control (BAC) systems

Inspection of heating and air-conditioning systems (art. 14 & 15)

- ▶ BAC systems shall be capable of:
 - ▶ (a) continuously monitoring, analysing and adjusting energy usage;
 - ▶ (b) benchmarking the building's energy efficiency, detecting losses in efficiency of technical building systems, and informing the responsible person about opportunities for energy efficiency improvement;
 - ▶ (c) allowing communication with connected technical building systems and other appliances inside the building, and being interoperable with technical building systems.

Inspection of heating and air-conditioning systems (art. 14 & 15)

Alternative to inspection for residential buildings:

- MS may set requirements to ensure that buildings are equipped:
 - (a) with continuous electronic monitoring that measures systems' efficiency and inform building owners or managers when it has fallen significantly and when system servicing is necessary, **and**
 - (b) with effective control functionalities to ensure optimum generation, distribution and use of energy

Calculation of EPB (Annex I)

EPBD 2010:

- ▶ The energy performance of the building shall reflect the **heating and cooling energy needs**
- ▶ Indicator of primary energy use

Proposal:

- ▶ The energy performance of the building shall reflect **its typical energy use** for heating, cooling, domestic hot water, ventilation and lighting
- ▶ Indicator of primary energy use in **kWh/m².y**

Calculation of EPB (Annex I)

For EPBD, use of primary energy factors based on national or regional annual weighted averages

According to Ecodesign Directive and implementing regulations, all heating, cooling and domestic hot water systems have energy performance declared in primary energy based on a EU average primary energy factor of 2.5

New! Smartness Indicator(art. 8)

The Commission is empowered to adopt delegated acts ... with a definition of 'smartness indicator' and with the conditions under which the 'smartness indicator' would be provided as additional information to prospective new tenants or buyers.

New! Smartness Indicator (art. 8)

The smartness indicator shall cover **flexibility_features**, enhanced functionalities and capabilities resulting from **more interconnected and built-in intelligent devices** being **integrated into** the conventional technical building systems. The features **shall enhance the ability** of occupants and **the building itself to react to comfort or operational requirements**, take part in demand response and **contribute to the optimum, smooth and safe operation of the various energy systems and district infrastructures** to which the building is connected.

New! Smartness Indicator (art. 8)

No definition yet

- For the building itself?
- For the technical building systems?

No assessment method(s)

- how and by who will it be defined?
- in relationship with Ecodesign ENER Lot 33 “smart appliances”?

New! Smartness Indicator (art. 8)

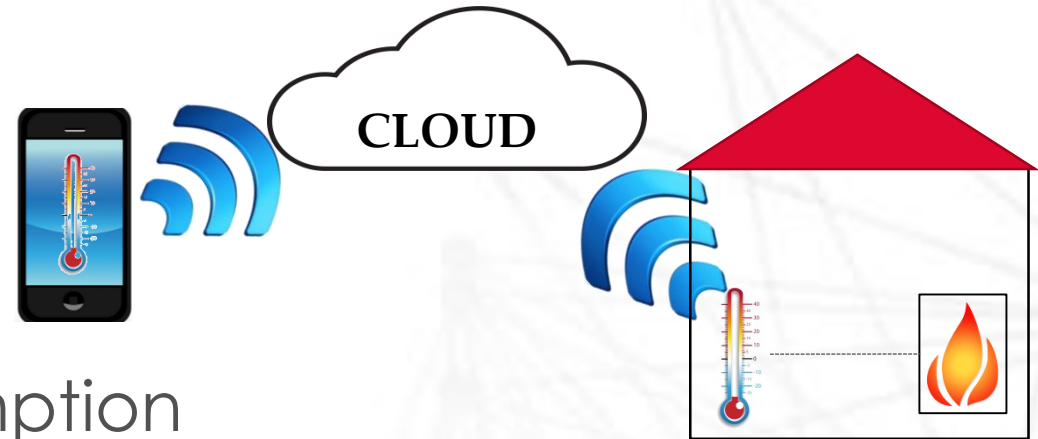
Are heating and cooling systems ready?

- ▶ Some heat pumps are already “smart grids ready”
 - ▶ Possibility to limit the use of the heat pump according to scenarios from energy suppliers (shift on peak demands, night/day prices,...) with no discomfort for the end-user
 - ▶ Shift from electricity network to self-production
- ▶ Ecodesign regulation benefits water heaters with smart control
 - ▶ The unit learns about the real usage of domestic hot water to reduce its energy consumption

New! Smartness Indicator (art. 8)

Are heating and cooling systems ready?

- ▶ More and more manufacturers provide connected products
 - ▶ For maintenance
 - ▶ Apps for the end-user
 - ▶ temperature and time settings
 - ▶ follow-up of the energy consumption



Development of home automation

- ▶ Connecting all technical building systems

Thank you for your attention





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