

EHI counter proposal for LT emitters to be regulated under the EPBD

This paper includes a proposal on how low temperature heat emitters, currently, under evaluation for inclusion of the Ecodesign and Energy Labelling Working Plan, can be considered under the Energy Performance of Buildings Directive (EPBD), it is a follow up of our comments sent in response to the ecodesign and energy labelling consultation forum, after the meeting of 13 July 2021.

We considers that low temperature heat emitters should continuously be regulated under the Energy Performance of Buildings Directive (EPBD)/national building codes as well as related standards – not as a separate product group under Ecodesign. The positive impact of relatively low temperatures is fully acknowledged within the EPB standards. This paper explains how this can be done.

There is no physical basis for defining a water-based heat emitter for different temperature classes, such as low-, middle-, or high-temperature classes, because all water-based heat emitters emit heat whenever the water temperature is higher than the room temperature (ambient temperature).

Heating water temperature is not an emitter-specific feature, but a design and operation feature of a heating system in correlation to the building design and its heat and/or cooling load. That is, the design temperatures of the heating system are based on decisions made in the design of the building and the heating system (e.g. EPBD requirements) and there is no basis for artificial efficiency classifications and definition of heat emitters.

The heating water temperature is controlled in operation according to the heating demand of the building (including the transmission losses throughout the room or heating space and the distribution losses from the heat generator to the heat emitter), either according to a heating curve (conventional system) or dynamically (digitalized heating network). Heating water temperatures are higher during the heating season and rarely correspond to design temperatures. This is in correlation with the energy demand of the distribution system (i.e., pumps) and/or the heat losses of the storage.

From the point of view of heat production, it is of course advantageous for the heating system to be dimensioned for low temperatures. On the other hand, low temperatures are relative values. For example, the difference between the heat source temperature of the heat pump and the water temperature of the heating system is of great importance for the COP value of the heat pump: High heat source temperatures such as ventilation exhaust air temperature (always around 20°C) are significantly better for COP than outdoor air during the winter time. This fact can also be utilized in the design of the heating system and in the selection of design temperatures.

Due to the situation that the efficiency/performance of the emitter system is depending on a lot of influence parameters, we would propose to handle the issue inside or in the context (guidance document for the transposition of the EPBD, and/or EPBD standard EN 15316-2 “Energy performance of buildings - Method for calculation of system energy requirements and system efficiencies - Part 2: Space emission systems (heating and cooling)”) of the EPBD.

Below are some examples of the influencing parameters for the emitter system and/or other parts of the system.

- Heat and or Cooling Load
- Transmission losses
- Distribution losses
- Energy demand for the distribution
- Energy storage heat losses
- Control accuracy and dynamic behaviour
- Heat output at low design temperature
- Heat outputs at low water flow rates
- Percentage of radiant heat output
- Auxiliary energy demand

The EPBD standard EN 15316-2 already provides the calculation method as well as a comparison of the energy performance of emitters.

The following proposal is focused on hydronic systems only.

The design shall be made in accordance to the needed requirements for the customized building. Therefore, the design temperature for the heating system shall be as low as possible. This is also in line with the Energy Efficiency First recommendations. In addition, it should leave flexibility for local legislation to adapt to their specific climate conditions.

The following systems are **not** covered: District heating and cooling, Air-conditioning systems, Waste heat, infrared heating systems, electrical heating systems, products according to EN 419 "Gas-fired overhead luminous radiant heaters for non-domestic use", EN 416 "Gas-fired overhead radiant tube heaters and radiant tube heater systems for non-domestic use" and EN 17175 "Gas-fired overhead radiant strip heaters and multi-burner continuous radiant tube heater systems for non-domestic use"

For those systems not covered by this proposal the EPBD must define similar requirements. These requirements must be discussed with the relevant industry.

About EHI, the Association of the European Heating Industry

EHI represents 90% of the European market for heat and hot water generation, heating controls and heat emitters, 75% of the hydronic heat pump market, 80% of the biomass central heating market (pellets, wood) and 70% of the solar thermal market. EHI Members produce advanced technologies for heating in buildings, including: heating systems, burners, boilers, heat pumps, components and system integrators, radiators, surface heating & cooling and renewable energy systems. In doing so, they employ about 120,000 people in Europe and invest over a billion Euros per year in energy efficiency. www.ehi.eu

About EHPA, the European Heat Pump Association

The European Heat Pump Association (EHPA) promotes awareness and deployment of heat pump technology in Europe. All activities aim at creating a market environment that facilitates a faster deployment of heat pump technology to unleash its benefits on a European level: efficient heating and cooling using renewable energy. EHPA also coordinates the Heat Pump



Keymark – a European certification scheme for all heat pumps, combination heat pumps and hot water heater.