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Strengthening Indoor Environment Quality (IEQ) in the revised Energy Performance of Buildings Directive

Position of industry and professional associations

Buildings account for approximately 40% of the EU's overall energy consumption and for 36% of the EU's overall emissions of greenhouse gas. 70% of the buildings that we will occupy in 2050 are already built. Our organisations therefore support the objectives laid down in the Energy Performance of Buildings Directive (EPBD), which aims to reduce the energy consumption of buildings.

However, as buildings are getting tighter and better insulated in order to reduce uncontrolled energy losses and increase their envelope performance, the air exchange by infiltration goes down to zero. Without a dedicated ventilation system, this degrades the Indoor Environment Quality (IEQ) with adverse effects on health, productivity and comfort.

Despite significant scientific evidence on the health benefits of improved IEQ in residential and non-residential buildings, the EPBD has so far been implemented without enough consideration to Indoor Environment Quality (IEQ), which encompasses indoor air quality, thermal comfort, lighting and acoustic environment. Solutions are readily available and encompass source control, dedicated mechanical ventilation technology, adequate filtration of incoming air as well as room temperature, humidity, CO₂ level, and lighting controls.

The industry considers it as essential to promote systems and solutions that result in both high quality indoor environment and low energy consumption in new and existing buildings and consequently calls for action in order to strengthen IEQ aspects in future recasts of the EPBD by focusing on the following three areas:

1. Better enforcement & refurbishment - Creating regulatory conditions to ensure better IEQ

Compliance is essential to reach the targets of the EPBD and achieve the full energy efficiency and carbon savings potential of buildings. Compliance with and enforcement of the provisions of the EPBD is currently not adequate and should be significantly improved in the revised EPBD, in particular to set-up and successfully implement refurbishment strategies.

In addition, the EPBD has not sufficiently addressed the challenge of reaching nZEB performance of the existing building stock. Most of the effort is spent on a low energy consumption level in new buildings and not on the refurbishment of the existing building stock. If the EU Member States proceed with the current speed of refurbishment rate (approx. 1% per annum), it will last over 100 years to upgrade the building stock.

Last but not least, although existing products and systems already fulfil the nZEB requirements (fans, efficient heat recovery in ventilation and air-conditioning systems, heat pumps, pumps, hydronic and air balancing, room temperature and humidity control, smart controls and building automation, LED lighting, etc.), the poor implementation of the Directive does not enable the creation of regulatory conditions to ensure better IEQ

2. Regular inspections and continuous commissioning of technical building systems to maintain the envisaged IEQ parameters

In order to operate in the most efficient manner, heating and air conditioning systems should be regularly inspected and/or should be equipped with technical means to indicate sub-optimal operation/performance. Connected and smart solutions should be fully employed to enable inspections/maintenance in the most cost optimal way and to improve the status of enforcement of existing requirements (see also point 3). In the same manner other technical buildings systems necessary to maintain the envisaged indoor environment quality parameters such as ventilation, temperature, humidity, CO₂ level and lighting should be maintained to further contribute to proper Indoor Environment Quality and energy efficiency. The air tightness of new nZEBs will make the right design and proper functioning of ventilation and AC fundamental to ensure that indoor air quality remains at a good level. Ventilation and AC systems will also ensure that the health of inhabitants is guaranteed. Making sure that ventilation and AC systems work properly will also contribute to improved energy efficiency.

In parallel, there is a need of continuous commissioning of technical building systems. If technical systems are left unchecked, they have the tendency to slowly shift away from the envisaged indoor environment quality parameters in addition to consuming more energy also resulting in non-energy optimised behaviour from occupants. Continuous commissioning can easily ensure that desired indoor environment quality is met during the lifetime of buildings and at the same time identify Energy Conservation Opportunities¹.

3. Use of demand control options

The use of demand-control ventilation and AC options should be promoted in the revised EPBD. Demand controlled systems - avoiding demand peaks and their associated expense - when enabled by the users, should provide the same or a higher IEQ comfort and the same or better indoor air quality at a lower level of energy consumption combined

¹ Please see the iSERVcmb project's [report](#) and the HARMONAC project's [report](#)



with a user friendly operation. Demand controlled buildings are able to react also on requirements of the energy supply chain and are an essential element of an intelligent energy network (dual demand side management) connecting the electricity and thermal sectors.

However, demand response, through smart appliances and products, will deploy itself only if time/demand flexible energy costs are available and visible at building level in order to yield a proper remuneration to users.

Call to Action

We would therefore call on the European Commission to consider the following points when working on the EPBD or any related energy legislation:

1. Ensuring better enforcement & refurbishment in the frame of the revised EPBD to create regulatory conditions to ensure better IEQ.
2. Ensuring regular inspections and continuous commissioning of technical building systems to maintain the envisaged IEQ parameters
3. Including references related to IEQ in adequate legislation such as the revised EPBD.
4. Raising opinion makers and public awareness on the benefits of an increased IEQ.

About EHPA

The Brussels based European Heat Pump Association (EHPA) represents the majority of the European heat pump industry. It has currently 110 members from all parts of the industry's value chain: heat pump and component manufacturers, research institutes, universities, testing labs and energy agencies. Its key goal is to promote awareness and proper deployment of heat pump technology in the European market place for residential, commercial and industrial application. EHPA coordinates the European Quality label for heat pumps and the EUCERT education and training scheme for heat pump installers. It compiles the annual sales statistics and market outlook. For more information, please visit: www.ehpa.org.

About EPEE

The European Partnership for Energy and the Environment (EPEE) represents the refrigeration, air-conditioning and heat pump industry in Europe. Founded in the year 2000, EPEE's membership is composed of 40 member companies, national and international associations. EPEE member companies realize a turnover of over 30 billion Euros, employ more than 200,000 people in Europe and also create indirect employment through a vast network of small and medium-sized enterprises such as contractors who install, service and maintain equipment.



EPEE member companies have manufacturing sites and research and development facilities across the EU, which innovate for the global market. As an expert association, EPEE is supporting safe, environmentally and economically viable technologies with the objective of promoting a better understanding of the sector in the EU and contributing to the development of effective European policies. Please see our website (www.epeeglobal.org) for further information.

About eu.bac

eu.bac is the European Building Automation and Controls Association. It represents the major European manufacturers of products and systems for home and building automation. Its vision is a world where energy efficient, sustainable, healthy and comfortable buildings are achieved through the optimal application of home and building controls, automation systems and services. eu.bac has founded the European Association of Energy Services Companies (eu.esco) for promoting Energy Performance Contracting as the economically sustainable solution for improving the energy performance of existing buildings using the guaranteed energy savings to pay for the installation. For a full and updated overview of our membership, please see www.eubac.org.

About Eurovent

Eurovent is Europe's Industry Association for Indoor Climate (HVAC), Process Cooling, and Food Cold Chain Technologies. Its members from throughout Europe, the Middle East and Africa represent more than 1.000 companies, the majority small and medium-sized manufacturers. Based on objective and verifiable data, these account for a combined annual turnover of more than 30bn EUR, employing around 150.000 people within the association's geographic area. This makes Eurovent one of the largest cross-regional industry committees of its kind. The organisation's activities are based on highly valued democratic decision-making principles, ensuring a level-playing field for the entire industry independent from organisation sizes or membership fees.

Eurovent's roots date back to 1958. Over the years, the Brussels-based organisation has become a well-respected and known stakeholder that builds bridges between manufacturers it represents, associations, legislators and standardisation bodies on a national, regional and international level. While Eurovent strongly supports energy-efficient and sustainable technologies, it advocates a holistic approach that also integrates health, life and work quality as well as safety aspects. Eurovent holds in-depth relations with partner associations around the globe. It is a founding member of the ICARHMA network, supporter of REHVA, and contributor to various EU and UN initiatives. Website: <https://eurovent.eu/>

About EVIA

The European Ventilation Industry Association (EVIA) was established in July 2010 in order to represent the ventilation and fan industry both in Brussels with the EU institutions and relevant stakeholders and in the national capitals with our partners. Our membership is composed of 36 member companies and 5 national associations across



Europe realising an annual turnover of over 7 Billion Euros and employing more than 45,000 people in Europe. Check our website: www.evia.eu

About REHVA

REHVA, the Federation of European HVAC Associations, founded 1963, joins European associations in the area of building engineering services representing more than 100.000 HVAC engineers and building professionals. REHVA is the leading independent professional HVAC organization in Europe, dedicated to the improvement of health, comfort and energy efficiency in all buildings and communities. It encourages the development and application of both energy efficiency and renewable energy technologies.

About TightVent

TightVent Europe (www.tightvent.eu) aims at facilitating exchanges and progress on building and ductwork airtightness issues, including the organization of conferences and workshops. It fosters experience sharing as well as knowledge production and dissemination on practical issues such as specifications, design, execution, control, etc., taking advantage of the lessons learnt from pioneering work while keeping in mind the need for adequate ventilation.

TightVent Europe has been initiated by INIVE EEIG (International Network for Information on Ventilation and Energy Performance) with at present the financial and/or technical support of the following partners: Buildings Performance Institute Europe, BlowerDoor GmbH, Gonal, Eurima, Lindab, Retrotec, Soudal and Wienerberger.

About venticool

venticool (venticool.eu) is the international ventilative cooling platform launched in October 2012 to accelerate the uptake of ventilative cooling by raising awareness, sharing experience and steering research and development efforts in the field of ventilative cooling. The platform supports better guidance for the appropriate implementation of ventilative cooling strategies as well as adequate credit for such strategies in building regulations. The platform philosophy is pull resources together and to avoid duplicating efforts to maximize the impact of existing and new initiatives. venticool will join forces with organizations with significant experience and/or well identified in the field of ventilation and thermal comfort like AIVC (www.aivc.org) and REHVA (www.rehva.eu).

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