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EUROVENT SUMMIT ANTALYA

25-28 OCT 2022

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Meeting of the Eurovent Product Group 'Air Handling Units' (PG-AHU)

Wednesday, 26 October 2022, 09:30-16:45, Athena

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1. Introduction, EUROVENTSUMMIT Open Session

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Good to know

What can you expect today?

Good to know

Wednesday, 26 October 2022

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WHEN?	WHAT?	WHERE?
11:00-11:30h 15:30-16:00h	**Coffee Break**	Foyer (Floor 1)
12:45-13:45h	**Lunch Break** (Powered by ISIB)	Meeting room Ladin + Foyer (Floor 1)
09:30-12:45h	**ISKID/TTMD Seminar:** New technologies and trends in HVACR – Part 2 (in Turkish and English) (Powered by Eurovent Certified Performance)	Side Ballroom (Floor 1)
19:00h	**Gathering for Eurovent Innovation/HUB** (Powered by UL Solutions & J2 Innovations) **PLEASE BE ON TIME**	Hotel lobby

Good to know

Wednesday, 26 October 2022

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ISKID/TTMD Seminar: New technologies and trends in HVACR – Part 2 (Powered by Eurovent Certified Performance)

- Time: 09:30-12:45h
- Location: Side ballroom (floor +1)
- In Turkish and English, with simultaneous translation.
- Aimed at architects, consultants, designers, installers, manufacturers and policy makers of the HVACR industry.
- This Turkish symposium will discuss hot topics and latest trends of the industry.

Good to know

Wednesday, 26 October 2022

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Eurovent Innovation/HUB
(Powered by UL Solutions & J2 Innovations)

- Starts at 19:45h
- Gathering at 19:00h in the hotel lobby, bus transport to the venue.
- Get inspired by visionary, TED-style manner keynote presentations from leading personalities from the HVACR industry and beyond.
- Enjoy a cocktail dinner at the after-show party in a unique traditional location Anadolu Park.

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Thank you to our sponsors and partners

Who made the 2022 Eurovent Summit possible?

Co-organiser

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- ISKID is the Turkish Air Conditioning and Refrigeration Manufacturers' Association. ISKID was established in 1992 with the contributions of prominent companies in the air conditioning and refrigeration sector, to conduct work towards making the HVACR Industry development healthier and faster. Over 100 member companies are gathering under ISKID's roof to conduct activities for the development of the sector and to stay in high-quality standards. As this edition of the Eurovent Summit takes place in Turkey, the association has become co-organiser of the event, as well as organiser of a Turkish-English seminar programme.

BridgeBuilding Partner

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- UL Solutions is a global leader in applied safety science.
- UL Solutions transforms safety, security and sustainability challenges into opportunities for customers in more than 100 countries.

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BALTIMORE AIRCOIL COMPANY

- Baltimore Aircoil Company develops, manufactures and distributes evaporative cooling products, offering innovative and sustainable cooling solutions for saving water and energy in air conditioning, refrigeration and industrial process applications.

BridgeBuilding Supporter

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- CEIS is a Spanish testing, innovation and service centre offering well-recognised testing programmes for air conditioning and heat pump appliances. This year, CEIS has become a proud supporter of the Eurovent Summit for the third time in a row.

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J2 INNOVATIONS
A Siemens Company

- J2 Innovations, a subsidiary of Siemens, is a provider of control and management software for HVAC and refrigeration equipment.
- J2 Innovations created FIN Framework; the next generation software platform for building automation and IoT applications in buildings.

BridgeBuilding Contributor

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- ABB is a leading manufacturer of drives, motors and controls for HVACR applications with a global footprint, supporting the industry across the world with products and services.

BridgeBuilding Contributor

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ISIB TURKISH HVAC-R

- Turkish HVACR Exporters Association (ISIB) is the only coordinator and exporter association in Turkish HVACR sector. Established in 2012, ISIB works towards bringing together all the exporter companies active in the Turkish HVACR sector under one roof and increasing the export potential of the sector.

Other Sponsor

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BOREAS

- Boreas Technology engages in manufacturing and sales of DC Master Adia Mechanic Cooler and CRAC/CRAH models which are specially designed for data centres as well DC Pro units, air conditioning units distinguished for their authentic design, and central air- conditioning equipment. With its know-how of more than 20 years, it offers state-of-the-art solutions for critical buildings such as hospitals, malls and hotels as well as industrial buildings and data centres in various countries in the world. As the choice of leading global brands, the company is dedicated to offering technology solutions for a sustainable world with high efficiency, customised products thanks to its R&D investments and engineering know-how.

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FRITERM® since 1979

- FRITERM is one of Europe's leading manufacturers of heat exchangers, providing solutions for industrial applications throughout the EMEA region.

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systemair

- Systemair is a leading ventilation company with operations in 50 countries globally, manufacturing and market high-quality ventilation products.

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WIKA
Part of your business

- WIKA is a global market leader in pressure, temperature and level measurement technology. Working together with our customers, we develop comprehensive solutions based on our high-quality measurement technology components, with the solutions ultimately being integrated in their business processes. We deliver 50 million quality products to over 100 countries every year. Worldwide, approximately 600 million WIKA measuring instruments are in use. WIKA employs around 10.000 people and owns over 40 subsidiaries worldwide. For the third time in a row, WIKA is proud to support the Eurovent Summit.

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ISK-SODEX ISTANBUL

- ISK-SODEX Istanbul is an International HVAC, Refrigeration, Insulation, Pump, Valve, Fitting, Water Treatment, Fire Prevention, Pool and Solar Energy Systems Exhibition.

Exhibition Partner

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C&R CLIMATIZACIÓN Y REFRIGERACIÓN
International HVAC&R Exhibition

- Climatización y Refrigeración (C&R), an international exhibition in Spain in HVAC and Refrigeration, is one of the most important events which showcases the technological innovation and commitment to sustainability and energy efficiency of this industry.

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Meet them in the foyer

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About this Product Group

Eurovent Product Group ‘Air Handling Units’ (PG-AHU)

About this Product Group

Product scope

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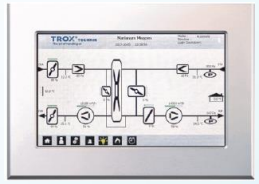
- Air Handling Units (non-residential ventilation units)
- Covering the product and its components (e.g. air filters, controls, energy recovery components, fans)



About this Product Group

Members

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- The largest grouping of AHU manufacturers worldwide
- Over 220 participants from 50+ leading European AHU manufactures
- Supported by 14 Eurovent Member Associations and 4 Associate Members.

About this Product Group

Chairmen

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Chairman

Martin Lenz
Trox
Germany

Vice-Chairman

Andy Bijmans
Systemair
Netherlands

About this Product Group

Key tasks

- **Advocacy**
  - European Union legislation (specifically Ecodesign, Energy Labeling, EPBD)
- **Technical**
  - EN and ISO standardisation
  - Development of Eurovent standards (codes of good practice)
- **Marketing**
  - General promotion of the European AHU industry and their state-of-the-art approaches

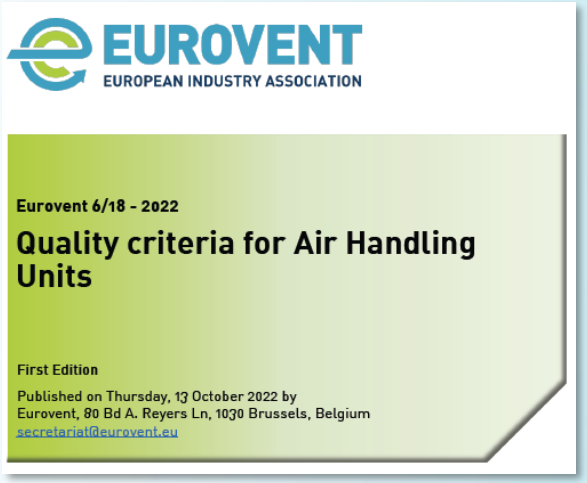
About this Product Group

Example past technical publications

- Eurovent 6/5-1977 - Safety regulations for electricity
- Eurovent 6/7-1986 - Guide for maintenance of air handling plant
- Eurovent 6/2-1996 - Application of relevant directives to air handling units
- Eurovent 6/3-1996 - Thermal test method for fan coil units
- Eurovent 6/14-2000 - Hygienic aspects in air handling units
- Eurovent 6/8-2006 - Recommendations for calculations of energy consumption for air handling units
- Eurovent 6/12-2013 - Eurovent air handling units energy efficiency class 4th edition
- Eurovent 6/2-2015 - Interpretation Directive 200642EC on machinery concerning AHUs

About this Product Group

Latest technical publications



About this Product Group

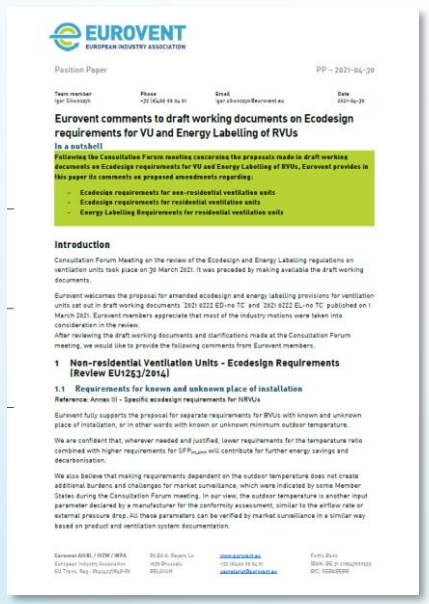
Eurovent AHU Guidebook

CONTENTS

About this Product Group

Examples of Advocacy – EU Legislation

- Comprehensive position papers to the European Commission on the review of Regulations (EU) 1253/2014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EUROPEAN INDUSTRY ASSOCIATION

Position Paper PP – 2021-04-30

Eurovent comments to draft working documents on Ecodesign requirements for VU and Energy Labelling of RVUs

In a nutshell

Following the Consultation Forum meeting concerning the proposals made in draft working documents on Ecodesign requirements for VU and Energy Labelling of RVUs, Eurovent provides in this paper its comments on proposed amendments regarding:

- Ecodesign requirements for non-residential ventilation units
- Ecodesign requirements for residential ventilation units
- Energy Labelling Requirements for residential ventilation units

Introduction

Consultation Forum Meeting on the review of the Ecodesign and Energy Labelling regulations on ventilation units took place on 30 March 2021. It was preceded by making available the draft working documents.

Eurovent welcomes the proposal for amended ecodesign and energy labelling provisions for ventilation units set out in draft working documents '2021 6222 ED-ne TC' and '2021 6222 EL-ne TC' published on 1 March 2021. Eurovent members appreciate that most of the industry motions were taken into consideration in the review.

After reviewing the draft working documents and clarifications made at the Consultation Forum meeting, we would like to provide the following comments from Eurovent members.

1 Non-residential Ventilation Units - Ecodesign Requirements (Review EU1253/2014)

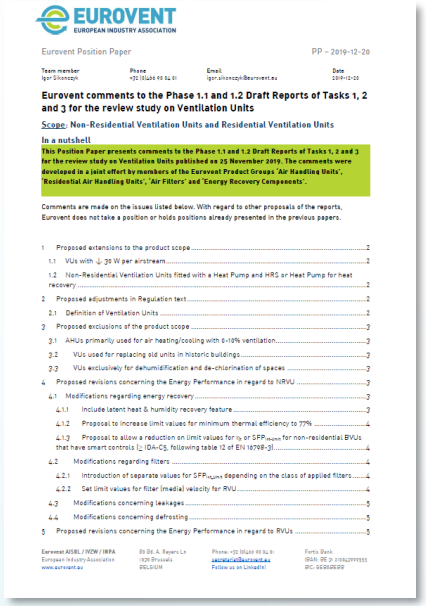
1.1 Requirements for known and unknown place of installation

Reference: Annex III - Specific ecodesign requirements for NRVUs

Eurovent fully supports the proposal for separate requirements for BVUs with known and unknown place of installation, or in other words with known or unknown minimum outdoor temperature.

We are confident that, wherever needed and justified, lower requirements for the temperature ratio combined with higher requirements for $SFP_{int,ref}$ will contribute for further energy savings and decarbonisation.

We also believe that making requirements dependent on the outdoor temperature does not create additional burdens and challenges for market surveillance, which were indicated by some Member States during the Consultation Forum meeting. In our view, the outdoor temperature is another input parameter declared by a manufacturer for the conformity assessment, similar to the airflow rate or external pressure drop. All these parameters can be verified by market surveillance in a similar way based on product and ventilation system documentation.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Eurovent Position Paper PP – 2019-12-20

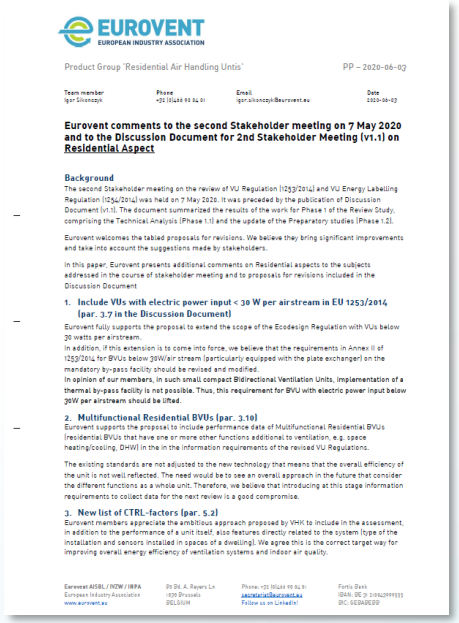
Eurovent comments to the Phase 1.1 and 1.2 Draft Reports of Tasks 1, 2 and 3 for the review study on Ventilation Units

Scope: Non-Residential Ventilation Units and Residential Ventilation Units

In a nutshell

This Position Paper presents comments to the Phase 1.1 and 1.2 Draft Reports of Tasks 1, 2 and 3 for the review study on Ventilation Units published on 25 November 2019. The comments were developed in a joint effort by members of the Eurovent Product Groups 'Air Handling Units', 'Residential Air Handling Units', 'Air Filters' and 'Energy Recovery Components'.

Comments are made on the issues listed below. With regard to other proposals of the reports, Eurovent does not take a position or holds positions already presented in the previous papers.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Product Group 'Residential Air Handling Units' PP – 2020-06-03

Eurovent comments to the second Stakeholder meeting on 7 May 2020 and to the Discussion Document for 2nd Stakeholder Meeting (v1.1) on Residential Aspect

Background

The second Stakeholder meeting on the review of VU Regulation (1253/2014) and VU Energy Labelling Regulation (1254/2014) was held on 7 May 2020. It was preceded by the publication of Discussion Document (v1.1). The document summarized the results of the work for Phase 1 of the Review Study, comprising the Technical Analysis (Phase 1.1) and the update of the Preparatory studies (Phase 1.2).

Eurovent welcomes the tabled proposals for revisions. We believe they bring significant improvements and take into account the suggestions made by stakeholders.

In this paper, Eurovent presents additional comments on Residential aspects to the subjects addressed in the course of stakeholder meeting and to proposals for revisions included in the Discussion Document

1. Include VUs with electric power input < 30 W per airstream in EU 1253/2014 (par. 3.7 in the Discussion Document)

Eurovent fully supports the proposal to extend the scope of the Ecodesign Regulation with VUs below 30 watts per airstream.

In addition, if this extension is to come into force, we believe that the requirements in Annex II of 1253/2014 for BVUs below 30W/air stream (particularly equipped with the plate exchanger) on the mandatory by-pass facility should be revised and modified.

In opinion of our members, in such small compact Bi(directional Ventilation Units, implementation of a thermal by-pass facility is not possible. Thus, this requirement for BVU with electric power input below 30W per airstream should be lifted.

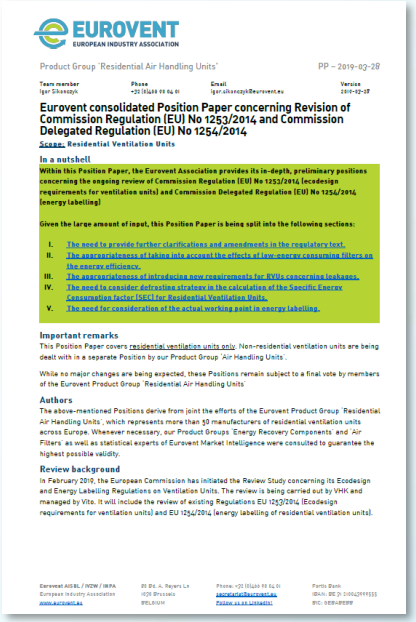
2. Multifunctional Residential BVUs (par. 3.10)

Eurovent supports the proposal to include performance data of Multifunctional Residential BVUs (residential BVUs that have one or more other functions additional to ventilation, e.g. space heating/cooling, DHW) in the in the information requirements of the revised VU Regulations.

The existing standards are not adjusted to the new technology that means that the overall efficiency of the unit is not well reflected. The need would be to see an overall approach in the future that consider the different functions as a whole unit. Therefore, we believe that introducing at this stage information requirements to collect data for the next review is a good compromise.

3. New list of CTRL-factors (par. 5.2)

Eurovent members appreciate the ambitious approach proposed by VHK to include in the assessment, in addition to the performance of a unit itself, also features directly related to the system (type of the installation and sensors installed in spaces of a dwelling). We agree this is the correct target way for improving overall energy efficiency of ventilation systems and indoor air quality.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Product Group 'Residential Air Handling Units' PP – 2019-03-28

Eurovent consolidated Position Paper concerning Revision of Commission Regulation (EU) No 1253/2014 and Commission Delegated Regulation (EU) No 1254/2014

Scope: Residential Ventilation Units

In a nutshell

Within this Position Paper, the Eurovent Association provides its in-depth, preliminary positions concerning the ongoing review of Commission Regulation (EU) No 1253/2014 (ecodesign requirements for ventilation units) and Commission Delegated Regulation (EU) No 1254/2014 (energy labelling)

Given the large amount of input, this Position Paper is being split into the following sections:

I. The need to provide further clarifications and amendments in the regulatory text.
II. The appropriateness of taking into account the effects of low-energy consuming filters on the energy efficiency.
III. The appropriateness of introducing new requirements for RVUs concerning leakages.
IV. The need to consider defrosting strategy in the calculation of the Specific Energy Consumption factor (SEC) for Residential Ventilation Units.
V. The need for consideration of the actual working point in energy labelling.

Important remarks

This Position Paper covers residential ventilation units only. Non-residential ventilation units are being dealt with in a separate Position by our Product Group 'Air Handling Units'.

While no major changes are being expected, these Positions remain subject to a final vote by members of the Eurovent Product Group 'Residential Air Handling Units'

Authors

The above-mentioned Positions derive from joint the efforts of the Eurovent Product Group 'Residential Air Handling Units', which represents more than 50 manufacturers of residential ventilation units across Europe. Whenever necessary, our Product Groups 'Energy Recovery Components' and 'Air Filters' as well as statistical experts of Eurovent Market Intelligence were consulted to guarantee the highest possible validity.

Review background

In February 2010, the European Commission has initiated the Review Study concerning its Ecodesign and Energy Labelling Regulations on Ventilation Units. The review is being carried out by VHK and managed by Vito. It will include the review of existing Regulations EU 1253/2014 (Ecodesign requirements for ventilation units) and EU 1254/2014 (energy labelling of residential ventilation units).

About this Product Group

Examples of advocacy – European standarisation

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EUROPEAN INDUSTRY ASSOCIATION

Secretariat MAIL – 2020-12-11

CEN/TC 156/WG 20

Team member	Phone	Email	Date
Igor Sikonczyk	+32 (0)466 90 04 01	igor.sikonczyk@eurovent.eu	2020-12-11

Eurovent proposal for amendments in EN 16798-3

Eurovent members propose amendments in the revised EN 16798-3, which aim at:

- Clarification and additional explanation of issues related to internal air leakage in bidirectional ventilation units with heat recovery (notably with a rotary heat exchanger), which have a considerable impact on electric energy consumption and deterioration of IAQ.
- adjustment to the expected changes in the revised Regulation (EU) 1253/2014 and EN 308.

According to the Eurovent members' expertise, in improperly designed/commissioned air handling units, internal leakage (expressed with OACF and EATR) may be very high (over 20% of the nominal air flow), which leads to a significant increase in the electric power consumption (up to 40%).
This aspect cannot be ignored, but in the current standard it is not explicitly emphasized. Thus, it is proposed to introduce a correction of SFP values against OACF and EATR. This improvement would bring about a better and more realistic evaluation of the actual electric power input.

To determine the actual SFP values of the bidirectional air handling unit with a heat recovery component (HRC) and without recirculation, its corrected nominal air flow rate must be taken into account.
Corrected nominal air flow rate of the bidirectional air handling unit with HRC
means the declared design air flow rate of an air handling unit with a heat recovery component distributed to and/or extracted from the building, including any leakages or any pressure balancing flow, at standard air conditions 20°C and 101.325 Pa, whereby the unit is installed complete (e.g. including filters) and according to the manufacturer instructions.

The corrected air flows in each of the AHU connections (ODA, SUP, ETA, EHA) must be calculated with the consideration of actual EATR and OACF values. The actual EATR and OACF must not exceed the maximum acceptable design values for EATR and OACF.

The corrected air flows are calculated as follows:

$q_{SUPcorr} = q_{SUP} \cdot (1+ EATR)$

$q_{ETAcorr} = q_{ETA} + q_{SUP} \cdot EATR$

$q_{ODAcorr} = q_{SUPcorr} \cdot OACF$

$q_{EHAcorr} = q_{ETAcorr} + q_{SUPcorr} \cdot (OACF-1)$

Where,
q_{SUP} is the required design air flow rate of outdoor air supplied to the building, calculated acc. to article 10.1.2 in EN 16798-3
q_{ETA} is the required design flow rate of the air extracted from the building

The corrected SFP value must be calculated by means of the AHU selection software to allow for corrected air flows, and accordingly corrected internal and external pressure loses.

If actual EATR < 1% , the SFP value do not need to be corrected.

Code of good practice to keep EATR and OACF low

Meeting Roadmap

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1. Introduction, EUROVENTSUMMIT Open Session

2. - 4. Formalities

5. EPDs, Circular Economy, Sustainability
6. New work package - IAQ
7. New work package - Energy efficiency incl. impact of controls
8. New work package - Commissioning servicing, monitoring of operation
9. Material information and resources efficiency requirements
10. Systematic review of PG-AHU recommendations
11. Standard for interoperability between ERC and AHU selection software
12. Draft recommendation on ecodesign requirements for air filters
13. Update on standards and regulations
14. Upcoming agenda items
15. Announcements
16. Next meeting(s)

2.- 4. Formalities

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- Competition Law Rules, Bribery and corruption, Data protection
- Attendances and introduction of participants
- Approval of the Draft Agenda
- Approval of the minutes of the last meeting

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2. Attendances and introduction of participants

- Remember to sign the attendance list

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3. Approval of the Draft Agenda

Draft Agenda

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1. Introduction, **EUROVENT**SUMMIT Open Session
2. - 4. Formalities
5. EPDs, Circular Economy, Sustainability

Coffee 11:00-11:30

6. New work package - IAQ
7. New work package - Energy efficiency incl. impact of controls

Lunch 12:45-13:45

8. New work package - Commissioning servicing, monitoring of operation
9. Material information and resources efficiency requirements
10. Systematic review of PG-AHU recommendations

Coffee 15:30-16:00

11. Standard for interoperability between ERC and AHU selection software
12. Draft recommendation on ecodesign requirements for air filters
13. Update on standards and regulations
14. Upcoming agenda items
15. Announcements
16. Next meeting(s)

4. Approval of the minutes of last meetings

PG-AHU meeting in Paris 14 June 2022

Action	Agenda item N°	Deadline	Responsible	Status
Arrange a separate meeting on prospective Position Paper regarding material/resource efficiency requirements in the reviewed VU Regulation	8.2	ASAP	Secretariat	Completed
Provide comments on the draft recommended standard for interoperability of AHU/ERC software interfaces.	10	Friday, 15 July 2022	Members	Completed
Provide comments on the draft Recommendation on min. quality criteria for AHUs	11	Friday, 15 July 2022	Members	Completed
Propose a working plan for PG-AHU based on the workshop outcomes	13.1	ASAP	Chairman Vice-Chairman	Ongoing

4. Approval of the minutes of last meetings

PG-AHU meeting
WebEx
14 September 2022

Action	Agenda item N°	Deadline	Responsible	Status
Draft preliminary position paper for further discussion during the Eurovent Summit meeting	5	Friday, 14 October 2022	Eurovent Secretariat	Completed

Meeting Roadmap

EUROVENT SUMMIT ANTALYA 25-28 OCT 2022
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1. Introduction, **EUROVENT**SUMMIT Open Session
2. - 4. Formalities
5. **EPDs, Circular Economy, Sustainability**

Coffee 11:00-11:30

6. New work package - IAQ
7. New work package - Energy efficiency incl. impact of controls

Lunch 12:45-13:45

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13. Update on standards and regulations
14. Upcoming agenda items
15. Announcements
16. Next meeting(s)

5. EPD, Circular Economy, Sustainability

Potential field of action for Eurovent

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Proposal for a Horizontal Task Force.

Talk with

- **Mr Lennart Østergaard**
  (Eurovent Commission Chairman)
- **Mr Christian Nicolaisen**
  (Danish Technological Institute)

5. EPD, Circular Economy, Sustainability

Overview of developments. Ecodesign perspective.

Circular Economy plan (2019) and the Sustainable Product initiative

- improve product durability, upgradability and reparability,
- increase products' energy and resource efficiency,
- reduce carbon and environmental footprints – **product environmental declarations**
- address presence of hazardous chemicals in products
- increasing recycled content in products

5. EPD, Circular Economy, Sustainability

Overview of developments. Ecodesign perspective.

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Circular Economy plan (2019)

- Many Circular Economy aspects were already addressed in existing ecodesign legislation.
- The Commission takes action to make the current ecodesign framework more effective.

Effect -> elements of circular economy implemented in ecodesign regulations (ongoing)

- New material information and resource efficiency requirements in the working documents of product-specific ecodesign regulations under review (including the VU and Fans Regulation).

5. EPD, Circular Economy, Sustainability

Overview of developments. Ecodesign perspective.

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Ecodesign for Sustainable Products Regulation (2022)

Proposal for a **general framework** to set **future ecodesign requirements** for specific **product groups** to improve their circularity, energy performance and other environmental sustainability aspects.

- product durability, reusability, upgradability and reparability
- energy and resource efficiency
- **carbon and environmental footprints**
- information requirements, including a **Digital Product Passport**

5. EPD, Circular Economy, Sustainability

Overview of developments. Ecodesign perspective.

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Revision of the Methodology of Ecodesign for Energy-related Products (working plan 2022-2024)

Introduce a more systematic way of covering circular economy aspects when performing preparatory or review studies on specific product groups. One of the considered issues:

- Development of the **Product Environmental Footprint** (PEF) method and related **Product Environmental Footprint Category Rules** to the MEErP

5. EPD, Circular Economy, Sustainability

Overview of developments. Ecodesign perspective.

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Future impact of ESPR and revised MEErP on VU Regulation

- No impact on the ongoing review of VU Regulation
- Provisions of the new ESPR and MEErP will only affect the suqbequent systematic review of VU Regulation (in 6 – 8 years?)

BUT

- a new horizontal regulation(s) to implement circular economy requirements for a wide range of products subject to ecodesign may be developed sooner

5. EPD, Circular Economy, Sustainability

Overview of developments. EPBD perspective.

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Environmental Product Declaration (EPD)

- EPD which is an ISO type III Environmental Declaration according to ISO 14025 standard verified by an independent third-party.
- EPDs are not mandatory (but recommended) for products covered by the Construction Product Regulation (CPR).
- In the light of the current EU legislation, EPDs do not apply to ErP products subject to Ecodesign (including VUs).

5. EPD, Circular Economy, Sustainability

Overview of developments. EPBD perspective.

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HVAC manufacturers may be indirectly forced to draw up EPDs for their products due to

- Ongoing developments in many Member States related to the integration of LCA calculations in the national Building Codes.
  - French RE2020 building regulation (in force since July 2022)
  - Danish building regulation (as of next year?)
- Several voluntary schemes for assessing the sustainability and environmental performance of buildings
  - DGNB, BREEM, LEED.....

5. EPD, Circular Economy, Sustainability

Overview of developments. EPBD perspective.

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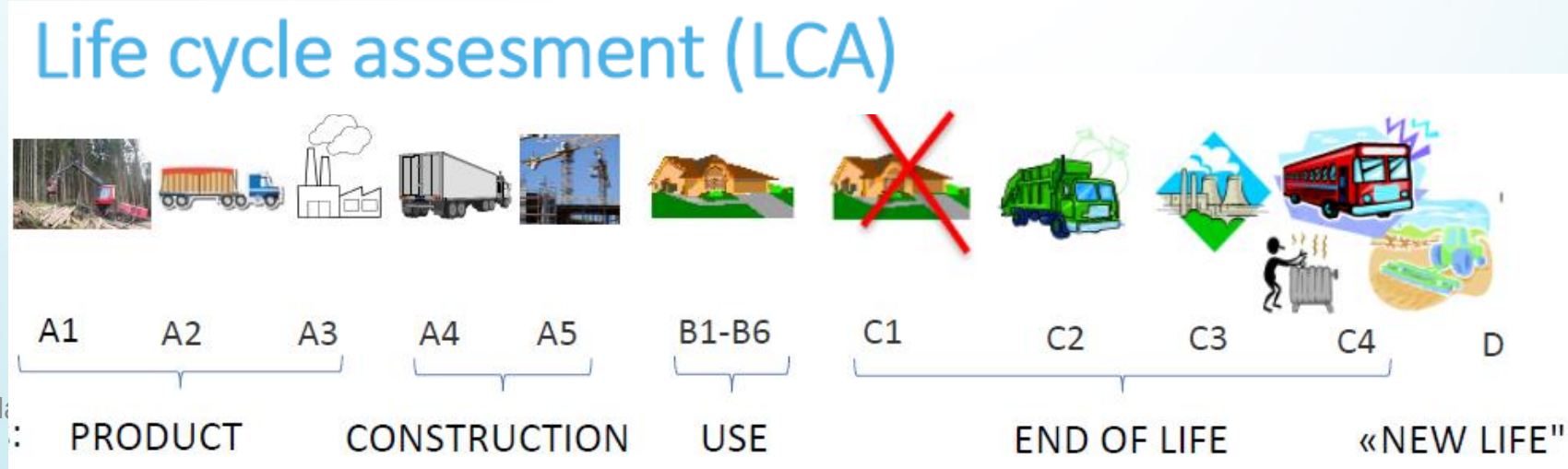
Issues with EPDs – no harmonised approach to energy use

- EPDs are developed based on ISO 14025 and EN 15804.
- EN 15804 gives generic Product Category Rules (PCR) for construction products (no use phase & energy consumption)



5. EPD, Circular Economy, Sustainability

Overview of developments. EPBD perspective.

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Issues with EPDs – no harmonised approach to energy use

- Energy use in the EPD for a VU can be included and based on a scenario or complementary product category rules defined **individually** by a EPD programme operator
- **Complementary Product Category Rules** provide guidance on preparation of EPDs for a specifc product group (e.g. ventilation components)

5. EPD, Circular Economy, Sustainability

Overview of developments. EPBD perspective.

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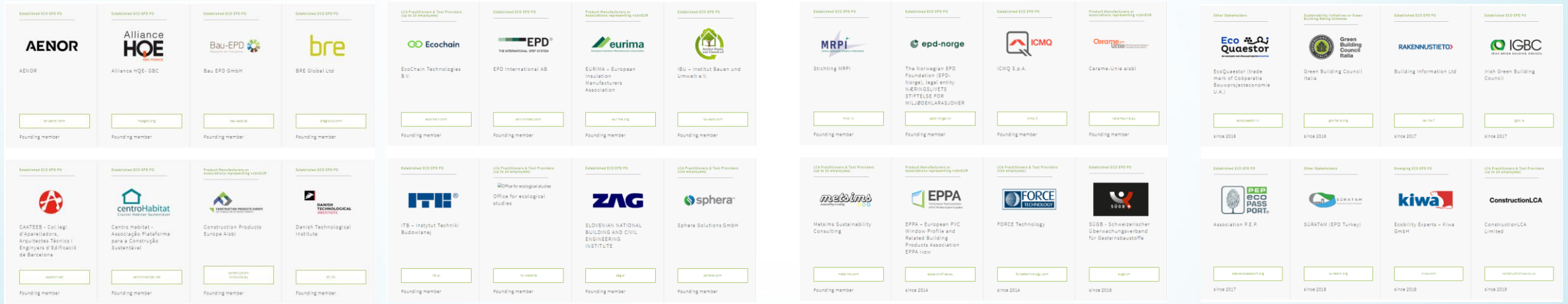
Issues with EPDs – proliferation of EPD programme operators



not all of them mutually recognize EPDs issued within their systems nor <u>Product Category Rules</u>

5. EPD, Circular Economy, Sustainability

Overview of developments. EPBD perspective.

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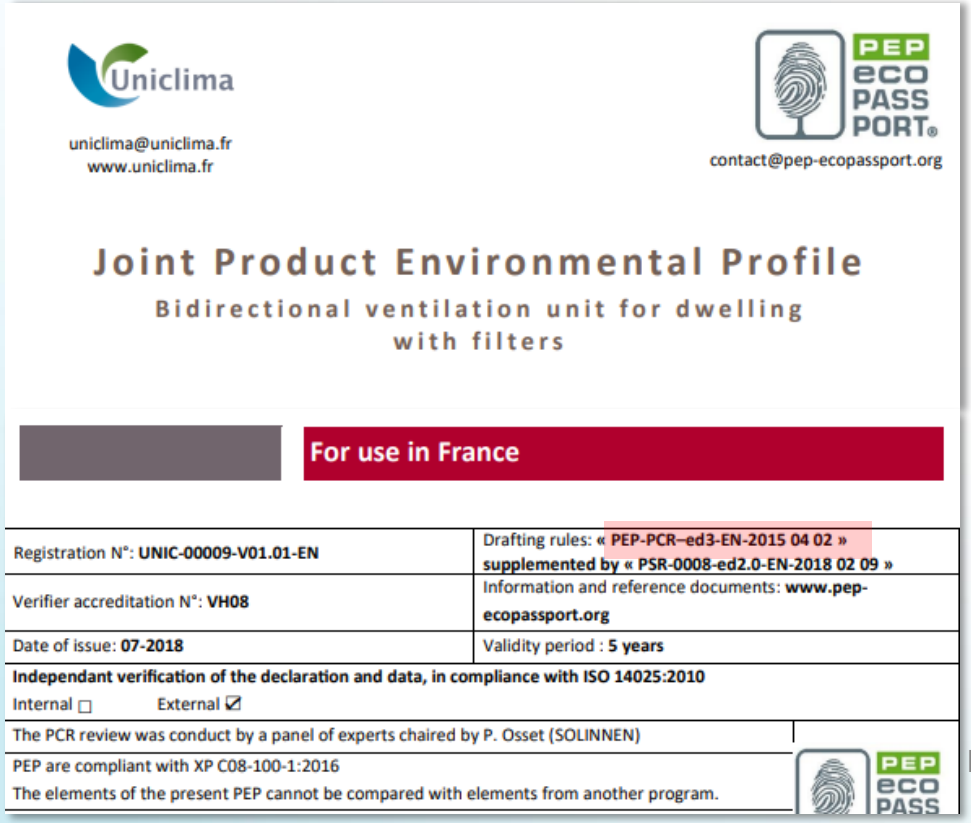
Issues with EPDs – proliferation of EPD programme operators



Uniclima

uniclima@uniclima.fr
www.uniclima.fr

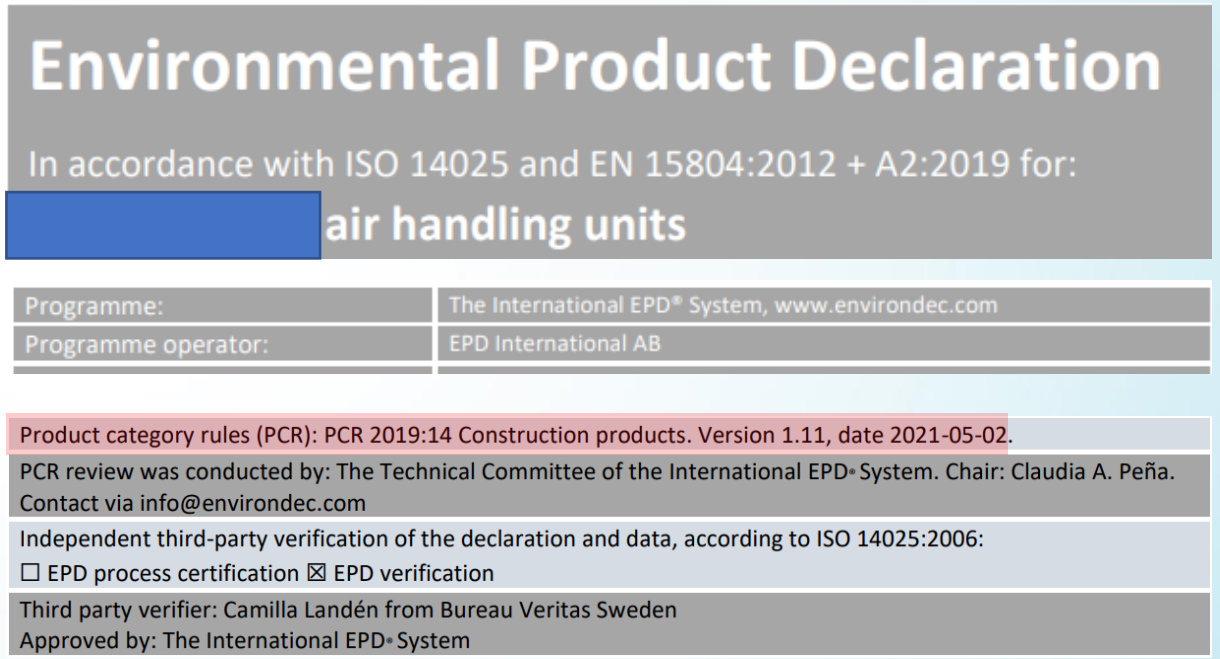
PEP eco PASS PORT®
contact@pep-ecopassport.org

Joint Product Environmental Profile

Bidirectional ventilation unit for dwelling with filters

[redacted] **For use in France**

Registration N°: **UNIC-00009-V01.01-EN**	Drafting rules: « **PEP-PCR–ed3-EN-2015 04 02** » **supplemented by « PSR-0008-ed2.0-EN-2018 02 09 »**
Verifier accreditation N°: **VH08**	Information and reference documents: **www.pep-ecopassport.org**
Date of issue: **07-2018**	Validity period : **5 years**
Independant verification of the declaration and data, in compliance with ISO 14025:2010 Internal ☐ External ☑	
The PCR review was conduct by a panel of experts chaired by P. Osset (SOLINNEN)	
PEP are compliant with XP C08-100-1:2016 The elements of the present PEP cannot be compared with elements from another program.	PEP eco PASS



Environmental Product Declaration

In accordance with ISO 14025 and EN 15804:2012 + A2:2019 for:

[redacted] **air handling units**

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB

Product category rules (PCR): PCR 2019:14 Construction products. Version 1.11, date 2021-05-02.

PCR review was conducted by: The Technical Committee of the International EPD® System. Chair: Claudia A. Peña. Contact via info@environdec.com

Independent third-party verification of the declaration and data, according to ISO 14025:2006:
☐ EPD process certification ☒ EPD verification

Third party verifier: Camilla Landén from Bureau Veritas Sweden
Approved by: The International EPD® System

Not mutually recognised

5. EPD, Circular Economy, Sustainability

Overview of developments. EPBD perspective.

CEN proposal for a harmonisation of c-PCRs

CEN/TC 156 plenary meeting
12 May 2022

Agenda item 5.2 – Proposal for a PWI

Environmental product declarations – Product Category rules complementary to EN 15804 for ventilation components

5. EPD, Circular Economy, Sustainability

Overview of developments. EPBD perspective.

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Issues with EPDs – high cost

- ISO 14025 requires that an EPD must be independently verified
- In practice data are verified by a third party licensed by an EPD programme operator, and the EPD is registered in the system of the EPD programme operator
- Cost of the EPD development ranges 17.000 to 50.000+ EUR
- Annual fee for registration in EPD libraries: 1.000 - 3.000 EUR

5. EPD, Circular Economy, Sustainability

Overview of developments. EPBD perspective.

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Anticipated changes to the building legislation

- Construction Product Regulation (**CPR**) review
  - Gradually introduce **mandatory environmental declarations** in the construction product family
- Proposal for a revised **EPBD**
  - Life-cycle Global Warming Potential (GWP) is calculated for
    - all new buildings as of 2030,
    - for new buildings with floor area > 2000 m^2 as of 2027

5. EPD, Circular Economy, Sustainability

Tentative questions to address

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1. Will HVAC-R products subject to ecodesign be expected to have an EPDs for the purpose of the EPBD life-cycle global warming potential assessment?
   - Due to national requirements of individual Member States?
   - Because of market demands and competition?
   - Alternatively, will default LCA input data become a standard in EPBD calculations?

5. EPD, Circular Economy, Sustainability

Tentative questions to address

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2. Will the prospective Product Environmental Footprint (PEF) declarations and Product Environmental Footprint Category Rules (PEFCRs) steming from the ESPR and revised MEErP be compliant with the current EPDs and PCRs?

   (To avoid a double burden for manufacturers to produce two separate environmental declarations or two separate inputs for LCA assessment under the EPBD and Ecodesign)

5. EPD, Circular Economy, Sustainability

Tentative questions to address

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3. What can be done to harmonise EPDs issued by various EPD programme operators, make them mutually recognised across all EU Member States and reduce their costs?
   - Extend the scope of a proposal for CEN Preliminary Work Item (PWI) to 'Product Category rules complementary to EN 15804 for ventilation components and ecodesign HVAC-R units/products'?
   - Develop a common industry average EPD for NRVU/RVUs?

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Coffee break

Join us in the foyer

See you again in 30 minutes!

Meeting Roadmap

EUROVENT SUMMIT ANTALYA 25-28 OCT 2022
#BuildingBridges

1. Introduction, **EUROVENT**SUMMIT Open Session
2. - 4. Formalities
5. EPDs, Circular Economy, Sustainability

Coffee 11:00-11:30

6. New work package - IAQ

7. New work package - Energy efficiency incl. impact of controls

Lunch 12:45-13:45

8. New work package - Commissioning servicing, monitoring of operation
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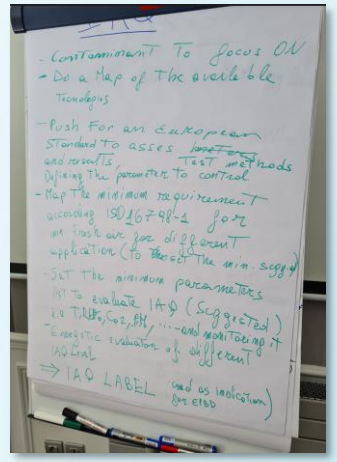
16. Next meeting(s)

6. IAQ: KPIs, health, airborne transmissions

Detailing the work package scope



Proposals from the Paris workshop

- Identify of contaminants to focus on
- Map the available technologies for IAQ
- Set a minimum list of parameters to evaluate IAQ (e.g. CO_2, PM) and methods to monitor them
- Map the requirements for minimum outdoor air rate according to EN 16798-1
- Develop an energetic evaluation of different IAQ levels
- Advocate for a European standard defining IAQ parameters to control and providing appropriate IAQ test/assessment methods

6. IAQ: KPIs, health, airborne transmissions

Detailing the work package scope

Issues to consider in preparation to the task

- EN 16798-1 is not the only one and unambiguous standard for IAQ. Should other standards be considered?
  - ASHRAE Standards 62.1-2022 and 62.2022
  - Various IAQ requirements in national building codes
- Should other than the basic contaminants and IAQ indicators (CO_2, ODA airflow per person) be considered?
- Should external IAQ experts be consulted and involved in the task?

6. IAQ: KPIs, health, airborne transmissions

Problem with definitive guidelines for IAQ

Prof. Wargocki's (DTU) article in RI magazine (Feb. 2022)

discussing not always consistent findings of almost 70 various studies on IAQ

What we know and should know about ventilation

Abstract: Ventilation is without any doubt recognized as an essential means of providing good indoor air quality. Although described widely in the scientific literature, there are still a few incompletely resolved questions concerning ventilation. They include, among others: How much ventilation is needed in a given building?; Which criteria should be used to determine ventilation?; What is the absolute minimum ventilation rate in a given building?; Can we use epidemiological data for setting ventilation requirements?; and Can ventilation be used as an indoor air quality metric? This short article presents short review on ventilation in buildings which create reference for the subsequent discussion of the listed questions. Historical view of the development of ventilation and ventilation requirements is presented as well, and the requirements regarding maintenance of systems delivering ventilation air. Some suggestions on how to determine ventilation requirements are provided

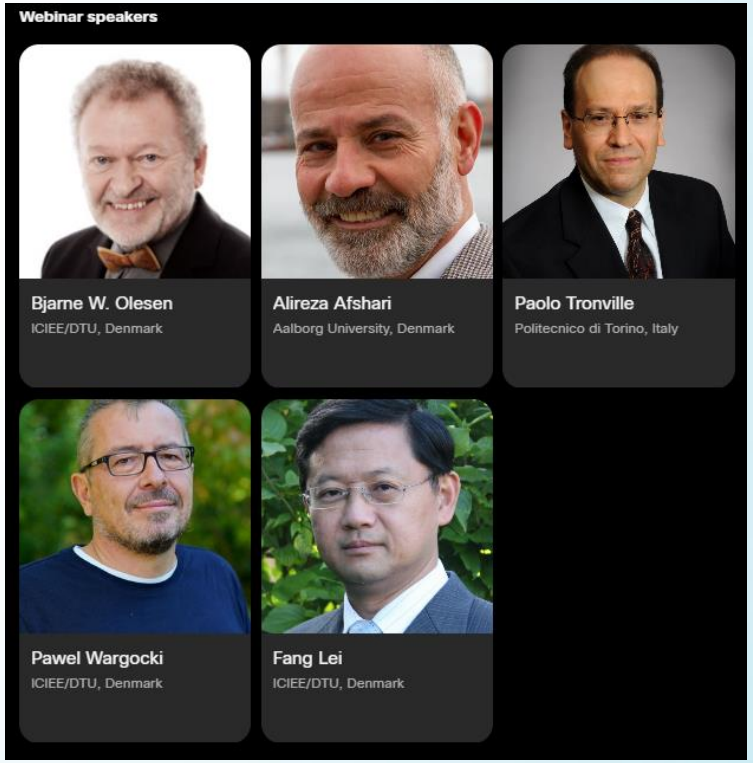
6. IAQ: KPIs, health, airborne transmissions

Problem with definitive guidelines for IAQ

Good to know. Some ongoing projects.....

IEA EBC Annex 78: Substituting Ventilation by Gas Phase Air Cleaning. An industry webinar

Monday, Nov 7 2022 3:00 PM - 4:45 PM
(UTC+02:00) Brussels, Copenhagen, Madrid, Paris



6. IAQ: KPIs, health, airborne transmissions

Detailing the work package scope

Other developments of note

- Proposal for a revised EPBD

> (...) Member States shall describe their national calculation methodology based on Annex A of the key European standards on energy performance of buildings, namely (...) **EN 16798-1** (...) or superseding documents. This provision shall not constitute a legal codification of those standards.

- Revision of EN 16798-1 -> new prEN 16798-1-3 'Energy Design and assessment of indoor air quality'

6. IAQ: KPIs, health, airborne transmissions

Detailing the work package scope

Ongoing initiatives in some countries on requirements to enhance IAQ:

- Ventilation plan in Belgium
- Ella's Law (bill) in the UK

6. IAQ: KPIs, health, airborne transmissions

Detailing the work package scope

Tentative proposal of the Chairman

Develop a straightforward call for harmonised minimum IAQ requirements across Member States

Eurovent Association calls for EU-wide requirements to ensure minimum indoor air quality

These requirements should be fixed either in European Legislation or in national legislation of the member states.

The following CO_2-Limits or minimum ventilation rates must be retained in all public buildings to ensure a minimum indoor air quality:

Level	CO_2-Concentration	or	Min. outdoor airflow per person
A	900 ppm	or	40 m³/h
B	1200 ppm	or	25 m³/h
unacceptable	>1200 ppm	or	<25 m³/h

Level B is the minimum for rooms with human occupancy

To ensure a minimum energy efficiency and air quality the following requirements are mandatory for the ventilation system:

1. Use of heat recovery system that meets the requirements from regulation (EU) No. 1253/2014.
2. Demand controlled ventilation depending on the actual air quality within the building based on CO_2 level measurement
3. Supply air filtration of at least ePM1 50% (either by one filter stage or by various)

Meeting Roadmap

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Coffee 11:00-11:30

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7. **New work package - Energy efficiency incl. impact of controls**

Lunch 12:45-13:45

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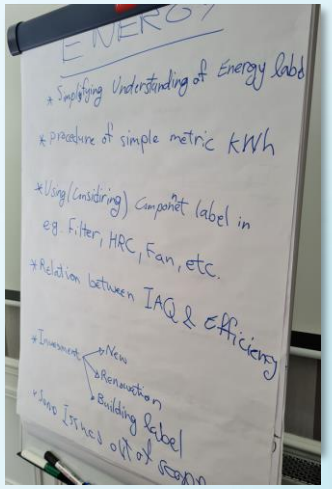
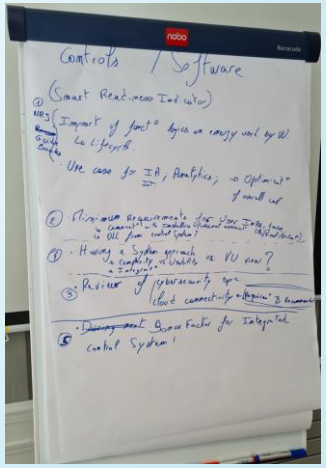
7. Energy efficiency incl. the impact of controls

Detailing the work package scope

Proposals from the Paris workshop

- Find a simple way to inform about the energy efficiency / consumption
- Add an energy indicator, e.g. kWh/a or kWh/(m³/h)/a to the energy label
- Make use of component's energy labels
- Show the relation between energy efficiency and IAQ
- Develop a Bonus Factor for integrated control system
- Explain the impact of control logic on energy consumption, including Artificial Intelligence, Internet of Things, data analytics





7. Energy efficiency incl. the impact of controls

Subtask proposal 1. Case study on AHU energy label impact

- **Aim of the proposal**
  - Develop a self-explanatory brochure to demonstrate savings resulting from a higher AHU energy class
- **To be used**
  - Directly by members to promote the products
  - To educate on the Eurovent AHU energy classification (Webinars...)
  - As a tool supporting Eurovent's initiatives to promote the European AHU industry (Eurovent Middle East, Eurovent India, Eurovent International).

7. Energy efficiency incl. the impact of controls

Subtask proposal 1. Case study on AHU energy label impact

- Demonstrate with a case study the impact of the AHU energy class on annual energy consumption
  - For different applications, e.g., office building, hospital, shopping mall, restaurant or school
  - For different climates (Europe climates, Middle East, India)
  - Consider both the winter and summer energy label class
  - Show annual energy consumption for different energy classes
  - Perhaps, develop a rough indicator kWh.a/m^3/s per energy class and application

7. Energy efficiency incl. the impact of controls

Subtask proposal 1. Case study on AHU energy label impact

Tentative ideas for the brochure concept

- Primarily targeted at decision-makers (investors and architects)
- Convey the message in a context which is understandable and friendly not only to AHU experts
  - Link AHUs to the real or realistic examples of buildings and operating scenarios

Building Description

Office building name, location (climate)

Basic information on the building (area, volume, number of occupants/tenants, number of floors etc.)

Key specifications of the ventilation and air conditioning system

Total air flow rate, design flow rate per person, installed electric power, installed heating and cooling capacity, optionally - number of systems serving the building, e.g., 8 AHUs of the same design/capacity

System description

A demand-controlled ventilation system including AHU(s) supplies to the building outdoor air flow to provide a designed average 2 ACH (or) 40 m3/h per person (or / which corresponds to) to meet requirements of IAQ category II acc. EN 16798-1.

The actual air flow is adjusted to the current number of occupants, and a typical building occupancy scenario/schedules/pattern is as follows: 9:00 – 11:00h -> 35% of tenants, 11:00 – 13:00h -> 65%

Building operates on Mo-Fr from 9:00 to 19:00.

During building closing hours, the ventilation system operates at 25% of its nominal capacity.

in wintertime (need to define what is meant by that) the supply air temperature is maintained at 20 degrees and in summertime at 24C. The relative humidity of supply air is not controlled // is controlled to maintain 40% in winter in summer.

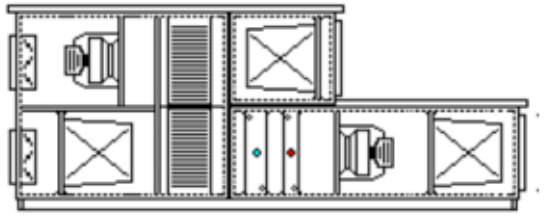
The building heat losses and heat gains are compensated by e.g., fancoil units to maintain the design indoor air parameters. (Part not covered in this study).

AHU – configuration and operation modes

Design flow rate (supply / exhaust): 10.000 m^3/h
Design External pressure (SUP/ETA): 300 Pa

Components supply

- Filter ePMx XX%
- RHE
- Water heating coil (70/50)
- Water cooling coil (6/12C)
- Plug fan



Components exhaust:

- Filter
- ....

Annual Energy Consumption and cost comparison (if summer ECC applies)

Item	UoM	ECC Winter / Summer					
		A+	A+	A	A	B	B
Electric energy (fans)	kWh/a						
Heating energy (heating coil)[1)]	kWh/a						
Cooling energy (cooling coil)[2)]	kWh/a						
Energy costs (electric + heating + cooling)	€/a						
Annual cost per 1 m3/h	€/m^3/h						

*For explanation of methodology see annex

Annual Energy Consumption and cost comparison (if summer EEC does not apply)

Item	UoM	ECC Winter / Summer		
		A+	A	B
Electric energy (fans)	kWh/a			
Heating energy (heating coil)[1)]	kWh/a			
Cooling energy (cooling coil)[2)]	kWh/a			
Energy costs (electric + heating + cooling)	€/a			
Annual cost per 1 m3/h	€/$m^3/h/a$			

*For explanation of methodology see annex (incl. energy prices at assumed generation)

1) annual energy consumption by the heater minus heat recovery

2) annal energy consumption by cooler minus heat recovery (sensible / sensible + latent?)

7. Energy efficiency incl. the impact of controls

Subtask proposal 2. Importance of energy recovery

Highlighting the importance of heat recovery in the context of the energy crisis

- With high efficiency heat recovery consumption of energy for ventilation can be minimalised. This provides for
  - Safety of continious operation for ventilation system
  - Mitigates potential shortages in energy supplies

7. Energy efficiency incl. the impact of controls

Subtask proposal 3. Update AHU energy efficiency scheme

- Update winter energy label to conform with requirements set for the summer label
  - Based on place according to the ASHRAE table (not only ODA min. temperature)
  - o Consider bypass damper over HRS
- Develop rules for units with heat pumps

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Lunch break

Join us in the meeting room Ladin (floor +1) & foyer

See you again in 1 hour!

Meeting Roadmap

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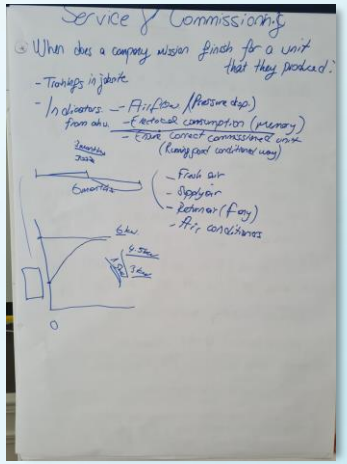
8. Commissioning servicing, monitoring

Detailing the work package scope



Proposals from the Paris workshop

- The mission of a manufacturer to provide efficient operation of its product does not end with the shipment from factory or the warranty period.
- Taking care of proper commissioning, on-site operator training, and continuous monitoring of the correct / efficient system operation at later stages is essential.
- Develop guidelines on commissioning, maintenance and performance monitoring.

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9. Material information and resource efficiency

Position paper on requirements in the revised VU Regulation

Further development of the position paper based on inputs gathered at the preparatory meeting on 14 September.

See draft elements of the position paper

-> **PG-AHU – 2203.91**

Meeting Roadmap

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10. Systematic review of Recommendations

Eurovent 6/16. Update proposal 1

List steel ZM250 as suitable up to C4

ZM250 according to the German Institute of Building Technology (DIBt) can be used in a C4 corrosive environment for the shelf life M

Table 1: Comparison of expected lifetimes (in years) by corrosion category for Magnelis® and other materials listed in DIN 55634-1 standard

		DIN 55634-1				DIBt national technical approval (Z-30.11-51)	
Corrosion category	Expected durability*	Z	ZA	AZ	ZM	Magnelis®	Expected durability (in years)
C2	High	Z350	ZA255	AZ75	ZM130	ZM120	24 to >50
C3	High	Z350	ZA400	AZ150	ZM250	ZM250	17 to 50
C4	Middle	Z600	ZA400	AZ150	ZM300	ZM250	13 to 25
	High	-	-	AZ185	ZM430	ZM310 ZM430	16 to 31 22 to 43
C5	Middle	-	-	AZ185	-	ZM250 ZM310 ZM430	6 to 13 8 to 16 11 to 22

* Middle = between 5 and 15 years. High = more than 15 years

Corrosivity category (interior or exterior)	General material type For examples of detailed specification for each position see Annex 1
Up to C2	Galvanised steel sheet Z275 (Continuously hot-dip zinc coated low carbon steel, Sendzimir process) according to EN 10346
Up to C3	Coated steel sheet in RC3 category according to EN 10169 (coating ≤ 25 µm) Aluminium zinc-coated steel sheet AZ150 according to EN 10346
Up to C4	Aluminium zinc-coated steel sheet AZ185 according EN 10346 Aluminium alloys according to EN 573 Stainless steel sheet 304 according to AISI Coated steel sheet in RC4 category according to EN 10169 (coating > 25 µm) Powder coated steel sheet, paint system for C4 according to EN ISO 12944
Up to C5	Zinc-Magnesium-coated steel sheet ZM310 according to EN 10346 Powder coated steel sheet, paint system for C5 according to EN ISO 12944
Up to CX	Composite materials Stainless steel sheet 316L according to AISI

Table 3: Rating of materials for air handling unit casing construction

10. Systematic review of Recommendations

Eurovent 6/15. Update proposal 1

Complete the equation for temperature net efficiency

$$\eta_{t,net} = \frac{\left(\frac{\theta_{22} - EATR \cdot \theta_{11}}{1 - EATR} - \theta_{21}\right)}{(\theta_{11} - \theta_{21})} = \frac{\eta_{t,gro} - EATR}{1 - EATR}$$

Eurovent 6/15 - 2021

E. Further calculations out of results

Fan performance shall be calculated out of the results and also quality factors for the AHU, such s the internal Specific Fan Power (SFP_{int}).

F. Correction of temperature and moisture efficiency

The internal leakages will possibly transfer exhaust air to supply air (EATR). This will increase the measured temperature and humidity efficiencies. To neutralise the exhaust air amount in supply air (EATR) in efficiency calculation term net efficiency is needed. This calculation is needed only in calculation of efficiency on site measurements or in AHUs in laboratory testing conditions where EATR is higher than 3%.

The net efficiencies are calculated as follows:

Temperature net efficiency $\eta_{t,net}$

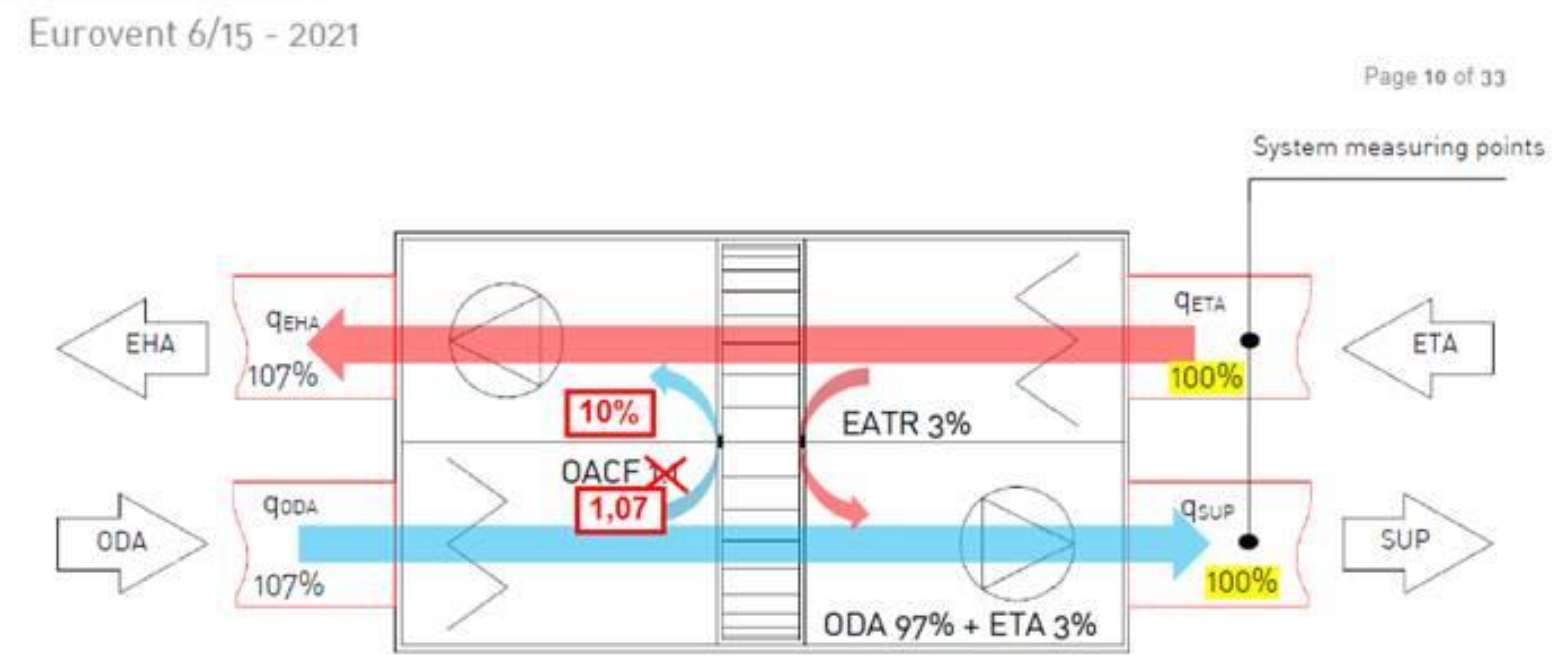
Net transfer of sensible heat from exhaust to supply air, regarding the EATR on and air mass flow rates.

$$\eta_{t,net} = \frac{\left(\frac{\theta_{22} - EATR \cdot \theta_{11}}{1 - EATR} - \theta_{21}\right)}{(\theta_{11} - \theta_{21})}$$

10. Systematic review of Recommendations

Eurovent 6/15. Update proposal 2

Correct OACF in figure 2 to 1.07



10. Systematic review of Recommendations

Eurovent 6/15. Update proposal 3

Correct OACF range in section 6.1.2 to 0.9 - 1.1 to be in line with class 4 of EN 16798-3

6.1.2 Eurovent recommendation on OACF

The mixing of the outdoor air to the exhaust air (represented by OACF) mainly affects the energy consumption. So the recommendation is guided by efforts to mitigate the inefficiency of the ventilation system.

At design conditions OACF must be within the range of **0.95 to 1.1** (OACF class 4 of EN 16798-3:2017)

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Coffee break

Join us in the foyer

See you again in 30 minutes!

Meeting Roadmap

EUROVENT SUMMIT ANTALYA 25-28 OCT 2022
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1. Introduction, **EUROVENT**SUMMIT Open Session
2. - 4. Formalities
5. EPDs, Circular Economy, Sustainability

Coffee 11:00-11:30

6. New work package - IAQ
7. New work package - Energy efficiency incl. impact of controls

Lunch 12:45-13:45

8. New work package - Commissioning servicing, monitoring of operation
9. Material information and resources efficiency requirements
10. Systematic review of PG-AHU recommendations

Coffee 15:30-16:00

11. **Standard for interoperability between ERC and AHU selection software**
12. Draft recommendation on ecodesign requirements for air filters
13. Update on standards and regulations
14. Upcoming agenda items
15. Announcements
16. Next meeting(s)

11. Joint PG-ERC/AHU Task Force

Standard for interoperability between ERC and AHU software

Update on the adoption of **Eurovent 17/13 - 2022**

Following yesterday's PG-ERC meeting

-> **PG-AHU – 2203.111**

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12. **Draft recommendation on ecodesign requirements for air filters**
13. Update on standards and regulations
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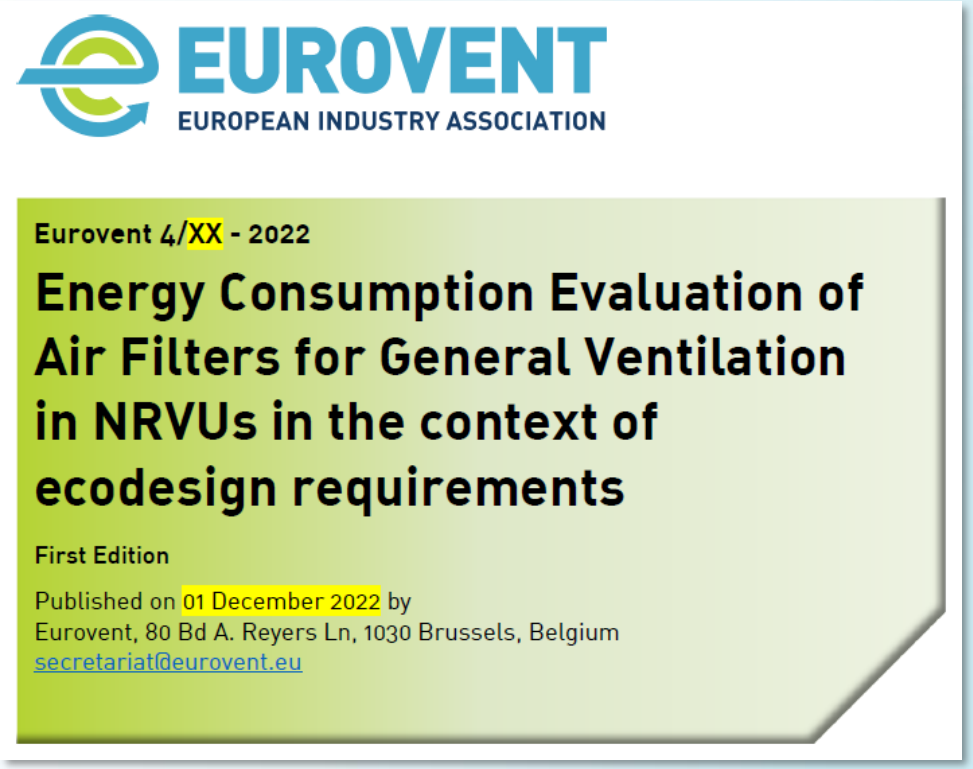
12. Ecodesign requirements for filters in NRVUs

New draft recommendation developed by PG-FIL members

- PG-FIL members drafted a new recommendation to include all possible applications (draft to be adopted in November 2022)
- Draft was shared with the Policy Officer to give an indication for the scope of tasks to include in the additional technical study.

-> **PG-AHU – 2203.121**



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13. Updates on standards and regulations

Standardisation project - BIM for HVAC sector

CEN TC442 (Building Information Modelling) is launching a BIM standard project dedicated to the HVAC sector, which will consist of defining a dictionary model and an exchange format for HVAC product (prEN ISO 16757-4 and prEN ISO 16757-5).

Is there a need for Eurovent to get involved?

- **horizontal task force to liaise with CEN TC442?**

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-> to be discussed in the meeting

Draft Agenda

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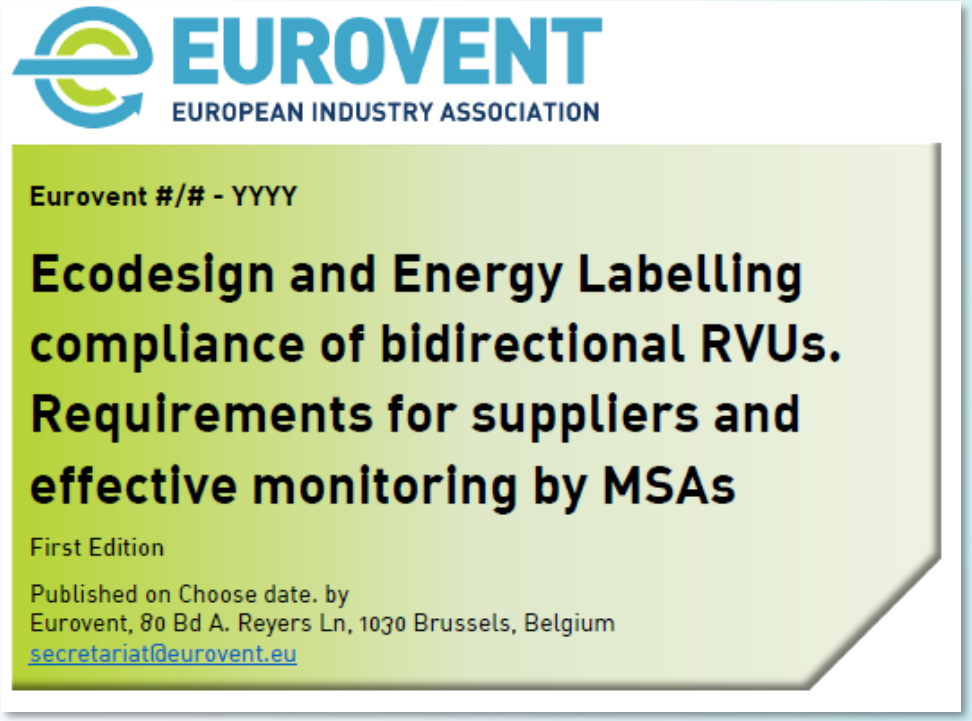
15. Announcements

New PG-RAHU Recommendation

- Enhance the enforcement of Ecodesign and Energy Labelling requirements for bidirectional residential ventilation
- Aimed at market surveillance to presents practical tips to facilitate effective compliance monitoring



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Spring 2023 meeting

Events to note

- 05 to 08 March 2023 HVACR Expo Saudi Arabia
- 13 to 17 March 2023 ISH 2023, Frankfurt am Main

Meeting date proposal

- Calendar week 12 (20 to 24 March 2023)
- Calendar week 13 (27 to 31 March 2023)
- Calendar week 16 (17 to 21 April 2023)

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End of meeting

See you soon and enjoy the rest of the **EUROVENT**SUMMIT!

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