Fachverband Gebäude-Klima e.V.

EPBD and Consequences for National Implementation and Relation to other EU-Legislation

- **Energy Performance of Buildings Directive 2024/1275**
- **Links to other EU Regulation**
  - **REGULATION (EU) 2024/3110 27 November 2024 laying down harmonised rules for the marketing of construction products and repealing Regulation (EU) No 305/2011 (CPR) and**
  - **REGULATION (EU) 2024/1781 of 13 June 2024 establishing a framework for the setting of ecodesign requirements for sustainable products and repealing Directive 2009/125/EC (ESPR and former ErP)**
- **EU Draft Guidance on Technical Building Systems, Indoor Environmental Quality and Inspections**

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AIVC **Indoor Environmental Quality in Sustainable Buildings**
AIVC International Workshop
Stuttgart, Germany 1-2 April 2025

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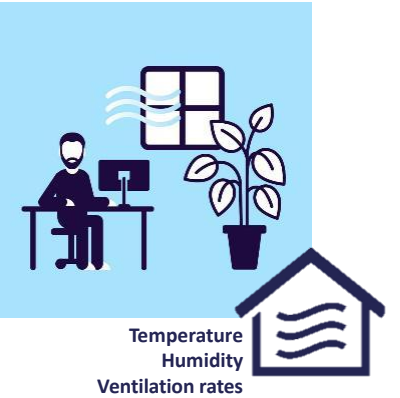
Part II

Provisions on Indoor Environmental quality (Articles 1, 2, 5, 7, 8, 13, 20, 23 + Annexes)

- Multiple references – Comprehensive approach
- Clear visibility in Article 1
- Definition of **Indoor Environmental Quality**
- Optimal IEQ to be addressed in **new & renovated buildings**, accounted for minimum energy performance requirements
- Implementation of **adequate IEQ standards in buildings**
- Measuring & control devices for IAQ
- Integration of IEQ monitoring in BACS
- Visibility of IEQ in SRI, EPCs, Building Renovation Passports
- Policies and Measures addressing the improvement of IEQ in Building Renovation Plans



Temperature
Humidity
Ventilation rates
Presence of contaminants…

- *Marco Morini - European Commission,*
  DG ENER Christoffer Borgwardt-Stampe - Ramboll

European Commission

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EPBD 2024 on Indoor Environment Quality and Health

Key takeaways from EPBD:

- **(11) Measures to improve further the energy performance of buildings should take into …, local conditions as well as the indoor climate and cost-effectiveness.**
- **(12) The energy performance of buildings should be calculated on the basis of … indoor environmental quality …**
- **Article 1 Subject matter**
- **1. This Directive promotes the improvement of the energy performance of buildings … taking into account … the requirements for indoor environmental quality, and cost-effectiveness.**


Official Journal of the European Union
EN
L series
2024/1275
8.5.2024
DIRECTIVE (EU) 2024/1275 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 24 April 2024
on the energy performance of buildings
(recast)
(Text with EEA relevance)

EPBD 2024 on Indoor Environment Quality and Health – Humidity Control

Definitions:

- **(66) 'indoor environmental quality' means the result of an assessment of the conditions inside a building that influence the health and wellbeing of its occupants, based upon parameters such as those relating to the**
  - **temperature,**
  - **humidity,**
  - **ventilation rate and**
  - **presence of contaminants.**


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(Text with EEA relevance)

The Draft Guidiance to EPBD specifies furhter

Member States will have to address the minimum scope for IEQ targeting the domains of

- **thermal comfort (temperature and humidity) and**
- **indoor air quality**

If during inspections inadequate IEQ standards are observed, their improvement should be recommended.

If during the preparation of an EPC inadequate standards are observed, recommendations should be issued and any major renovation will now have to address IEQ issues and should improve IEQ to achieve relevant design levels.


EUROPEAN COMMISSION
DIRECTORATE-GENERAL FOR ENERGY
Directorate B – Just Transition, Consumers, Energy Security, Efficiency and Innovation
B.3 – Buildings and Products

Draft guidance

Article 13, 23, 24

Technical Building Systems, Indoor Environmental Quality and Inspections

January 2025

Indoor Environmental Quality (IEQ) – Findings

- **Examples of relevant IEQ parameters will be introduced in the guideline**
- **'Optimal indoor environmental quality' - recommended to use Category II specified in EN 16798-1 (medium occupant expectation) for design of new buildings and for major renovations.**
- **'Adequate indoor environmental quality standards', the limits may be relaxed towards Category III, based on a moderate expectation of occupants for existing buildings in operation.**
- **Article 13(10d) introduces requirement for indoor environmental quality (IEQ) monitoring for existing large non-residential buildings by 29 May 2026. It is recommended that indoor environmental quality (IEQ) monitoring in non-residential buildings includes**
  - **indoor temperature,**
  - **relative humidity,**
  - **carbon dioxide, and where relevant**
  - **particulate matter (PM2.5).**
- **Member States may decide to introduce IAQ monitoring and regulating capabilities also for new residential buildings or major renovations of these. If so, it could for example be useful to monitor temperature and CO2 levels in residential ventilation systems, and relative humidity in 'wet rooms', such as toilets and bathrooms. (temperature to be included under IAQ in this context)**
- **Definition of extreme outdoor conditions.**

Reference to IEQ – Standards - EN 16798-1 and revision

- In order to set up relevant IEQ requirements, Member States can refer to the parameters introduced in the EN 16798-1:2019 standard
- Another example of IEQ indicators for buildings undergoing renovation is TAIL.
  - Recommendation that Member States use the Category II (medium occupant expectation), whose values ensure avoiding adverse health effects and comfort and well-being of occupants.
  - For (i.e. for existing buildings in operation), pursuant to Article 13(4), Member States can refer to Category III,

- Default Values on Humidity if humidification is used:

Type	Cat	Design for dehumidification	Design for humidification
Based on humans	I	50%	30%
	II	60%	25%
	III	70%	20%

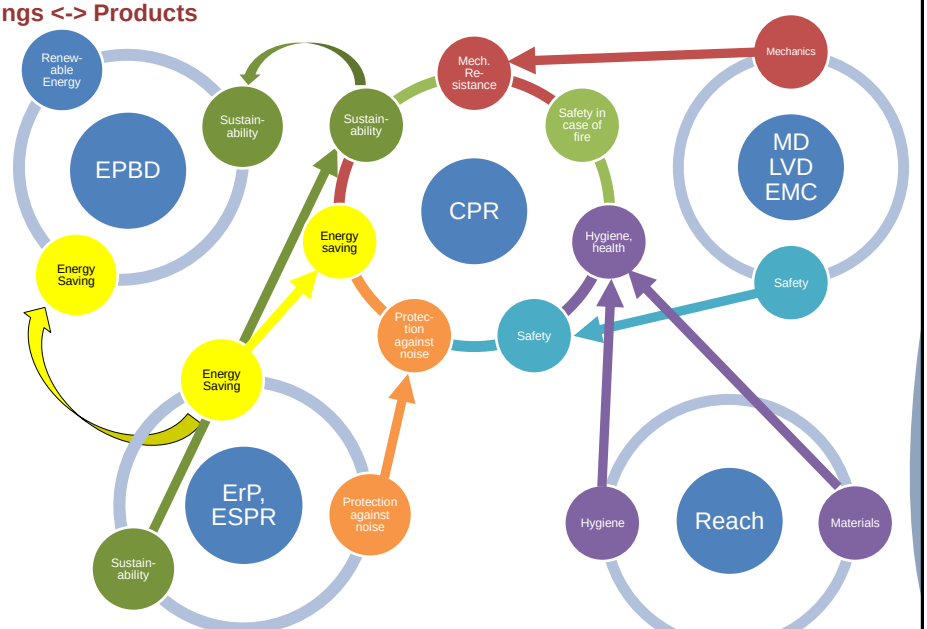
- German national Annex:

Type	Cat	Design for dehumidification	Design for humidification
Based on humans	I	50%	40%
	II	60%	30%
	III	70%	20%

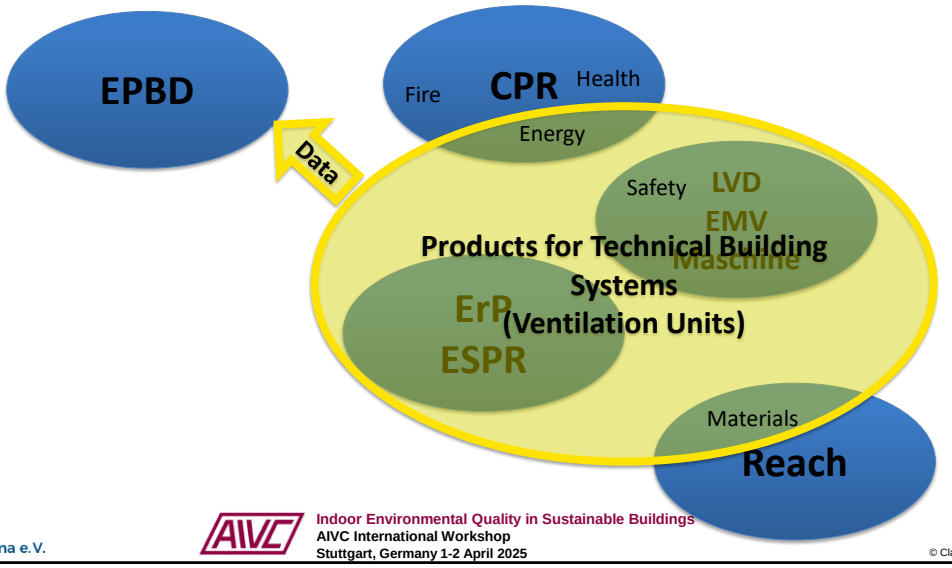
- Might be a basis for the revision

EU-Regulation Buildings <-> Products

- EPBD: Energy Performance of Buildings Directive
- CPR: Construction Products Regulation
- ErP ESPR: Ecodesign Directive
- MD: Machine Directive
- LVD: Low Voltage Directive
- EMC: Electromagnetic Compatibility
- Reach: Chemical Aspects
- …



Requirements for Products for TBS



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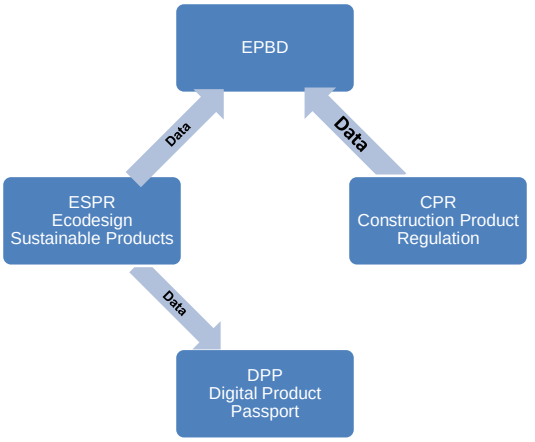
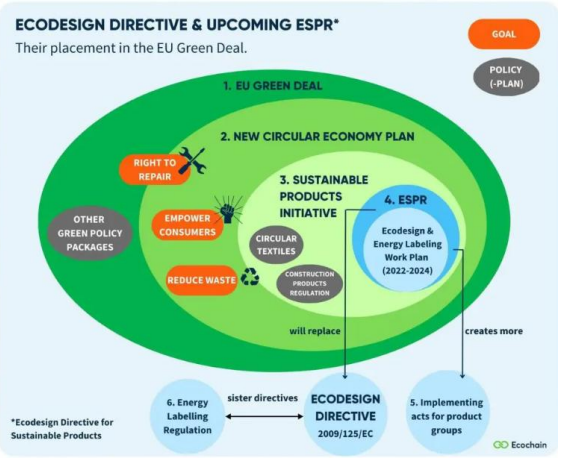
Product Declaration and Data Source – Ventilation System in Buildings

- **ESPR - Ecodesign for Sustainable Products**
  - **Motor**
  - **Fan**
  - **Ventilation Unit**
  - **Terminals, Fan-Coil …**
  - **Ductwork and distribution ?**
- **CPR - Construction Product Regulation**
  - **Ductwork and distribution ?**
  - **Fire and thermal insulation …**



Regulation Framework for Environment Product Declaration

- **Environment Product Declarations (EPD) for products (ventilation, fans, etc.) will be an important element of the**
  - **EU Sustainable Product Initiative (SPI)**
  - **in the future revision of Eco-design for Sustainable Products (ESPR) on product level**
  - **the upcoming Life Cycle Analysis (LCA) as part of the Energy Performance of Buildings Directive (EPBD) on building level.**
  - **Construction Product Regulation (CPR)**
  - **PEF product environmental footprints – methods**
  - **EU Green Public Procurement criteria for buildings**
  - **National sustainable Buildings certification and regulation**



EU 2024/1781 ESPR states (14)

- Directive (EU) 2024/1275 (EPBD) requires Member States to set minimum energy performance requirements for building elements that form part of the building envelope and system requirements in respect of overall energy performance, …
- It is consistent with the objectives of this Regulation that those minimum energy performance requirements may in certain circumstances limit the installation of energy-related products which comply with this Regulation and its delegated acts, provided that such requirements do not constitute an unjustifiable market barrier.

EU 2024/1275 EPDB states (16)

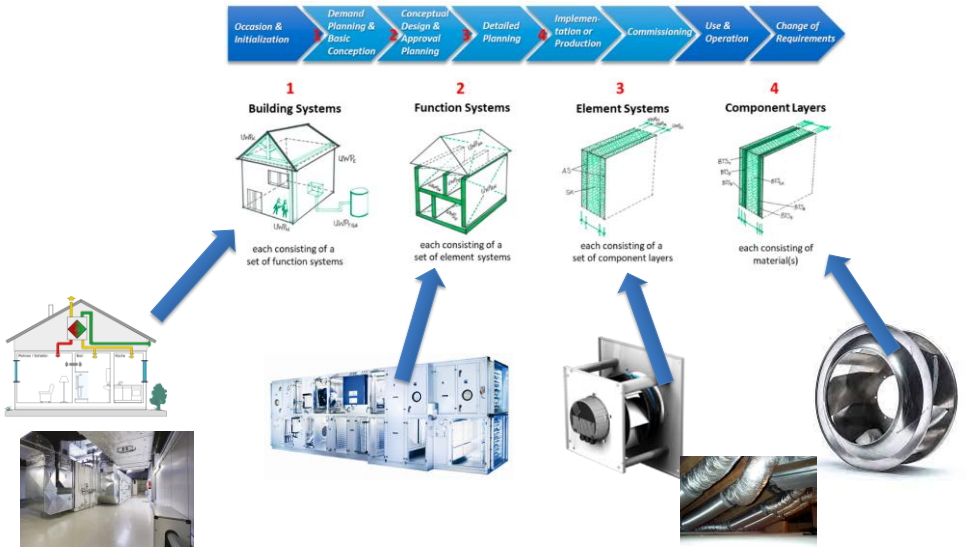
- When setting energy performance requirements for technical building systems, Member States should use, where available and appropriate, harmonised instruments, in particular testing and calculation methods and energy efficiency classes developed under measures implementing Directive 2009/125/EC and Regulation (EU) 2017/1369 of the European Parliament and of the Council (14), with a view to ensuring consistency with related initiatives and minimise, to the extent possible, potential fragmentation of the market.

- Where product-specific regulations for energy-related products adopted under Directive 2009/125/EC include specific product information requirements for the purpose of calculating energy performance and life-cycle GWP under this Directive, national calculation methods shall not require additional information.

FAQ on ESPR Q 15

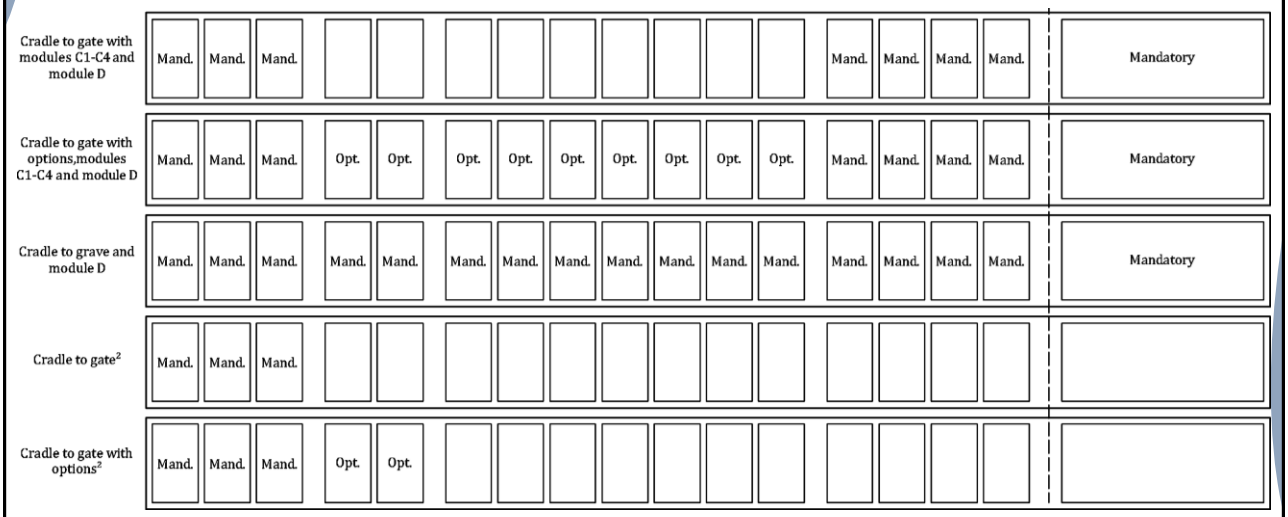
- **15. How will you ensure coherence of parallel product regulations (for vehicles, construction materials, toys, etc.) with the ESPR in terms of requirements?**
- **With regard to construction products, the revised Construction Products Regulation will be in principle the main tool for addressing the sustainability of construction products.**
- **But construction products also fall within the scope of the ESPR, which will be able to function as a safety net and allow setting requirements in case the revised Construction Product Regulation does not achieve the intended results.**
- **However, there are basically two exemptions from this rule: energy-related products which are also construction products (e.g. heaters, boilers, heat pumps, or ventilating systems) will be regulated primarily under the ESPR, in continuation of the practice under the Ecodesign Directive, while the revised Construction Products Regulation may complement this by regulating other aspects of these products, especially safety. Similarly, the ESPR will have priority for the setting of sustainability requirements for construction products that are intermediate products, …**

Data sets in the Design and Installation timeframe

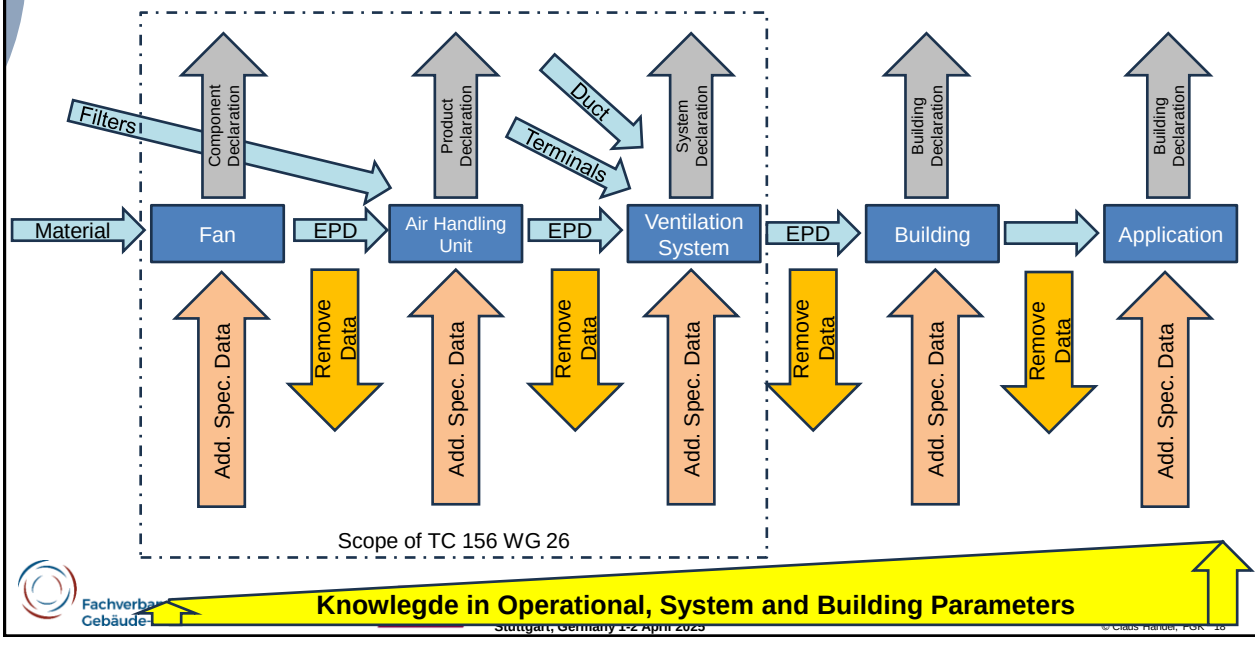


Possible correlation of ventilation products

EN 15804 - Types of EPD with respect to life cycle stages covered and life cycle stages and modules for the construction works assessment

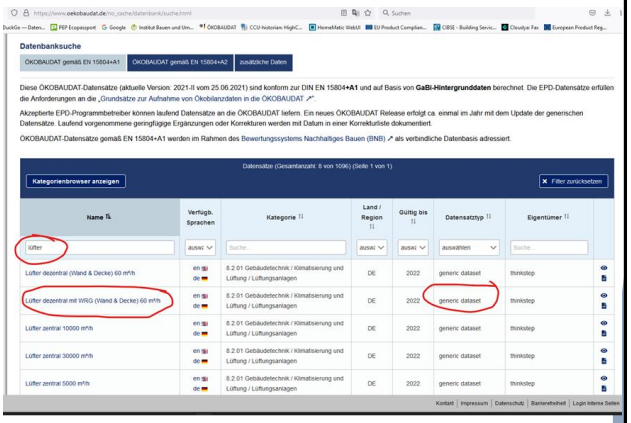


Product Declaration form Component to System



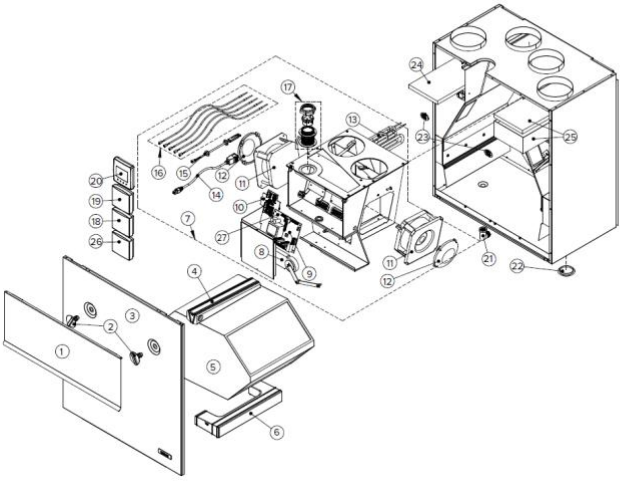
Datasets - Example Ökobaudat

- **ÖKOBAUDAT distinguishes between the following data set types ("subtypes"):- specific dataset**
  - **manufacturer (company) specific dataset for a concrete product of a plant.**
  - **average dataset - average datasets of industrial associations, several companies, several plants or several products (i.e. based on industrial production data of companies)**
  - **representative dataset - datasets that are representative for a country / region**
  - **template dataset - non-specific datasets for specific products, based on a "template EPD**
  - **generic dataset - generic datasets according to DIN EN 15804 as well as other datasets not modelled on the basis ofindustry data (e.g. based on literature, expert knowledge, etc.).**



Consequences for regulation and performance data

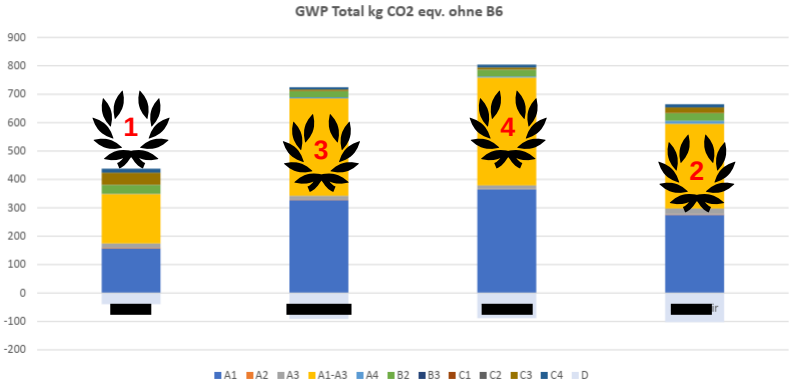
- **When developing or updating regulation and related standards for technical building systems (fans, ventilation, etc.):**
  - **Ensure, that the data provided by ErP or EDSP fulfil the needs of EPBD and possible other regulation.**
  - **Ensure that EPBD requirments and calculations are based on data delivered by ErP and ESPR.**
  - **Declaration based on CPR may provide only additional data with respect to fire and smoke aspects.**
  - **Member states are allowed to specify minimum performance of buildings individual (EPSR Article 3) but shall not limit free movement of products and components.**
  - **At each stage of products for TBS:**
    Comparability needs to be ensured: Craddle to Grave



Detaillierte Übersicht der Produkte und Bauteile

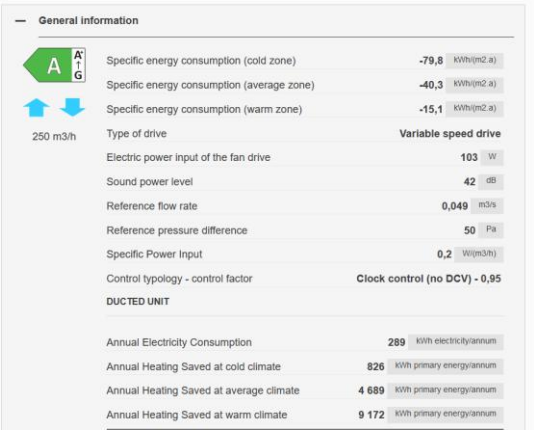
Life Cycle Inventory (LCI)

Four different units comparable sizing - CO2-Impact without B6 per piece



EU 1254/2024 Energy labelling as a tool for B6 declaration

- **Data declared in Energy Labelling:**
- **SEC is a model for primary energy savings based on a common scenario per m²**
  - **Cold climates**
  - **Average climates**
  - **Warm climates**
- **SEC considers (mainly)**
  - **Fan powert**
  - **Heat recovery**
  - **Demand Controls**
- **EU agreed !**

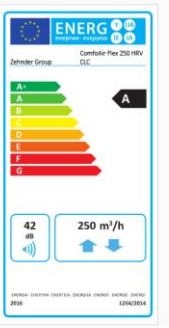


General information

A (A–G)

250 m3/h

Specific energy consumption (cold zone)	-79,8	kWh/(m2.a)
Specific energy consumption (average zone)	-40,3	kWh/(m2.a)
Specific energy consumption (warm zone)	-15,1	kWh/(m2.a)
Type of drive	Variable speed drive	
Electric power input of the fan drive	103	W
Sound power level	42	dB
Reference flow rate	0,049	m3/s
Reference pressure difference	50	Pa
Specific Power Input	0,2	W/(m3/h)
Control typology - control factor	Clock control (no DCV) - 0,95	
DUCTED UNIT		
Annual Electricity Consumption	289	kWh electricity/annum
Annual Heating Saved at cold climate	826	kWh primary energy/annum
Annual Heating Saved at average climate	4 689	kWh primary energy/annum
Annual Heating Saved at warm climate	9 172	kWh primary energy/annum



Download the label for printing

Download the label in high resolution formats

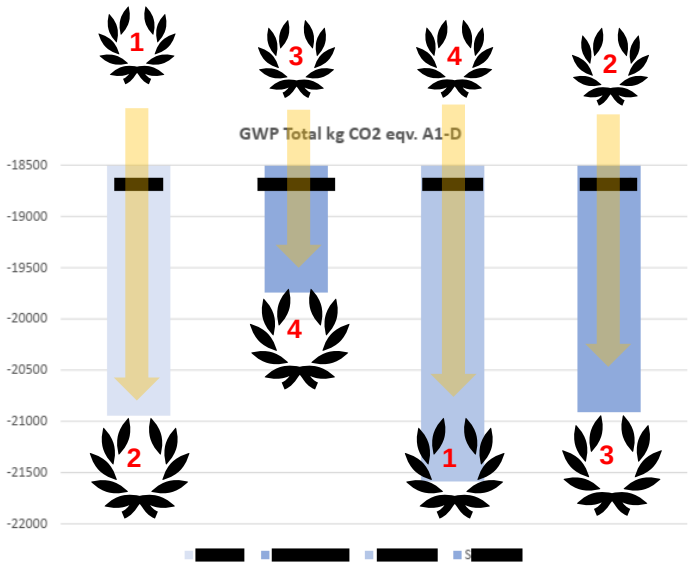
Only the PDF version is suitable for printing with the correct colour codes

Use the EU 1254/2014 and current update in LOT 6 for furhter calculation

- **Use input data from ErP**
  - **Calculalate AEC annual energy consumption**
  - **Calculate AHS annual heating saved**
- **Recalculate with CO_2 factors**
  - **EU average**
  - **Individual ?**
  - **To piece, kg, reference flow**
- **Balance Savings – Inputs**
- **Get a value for „ventilation impact“ based on agreed models**
  - **Negative is gain**

	Furhter claculation				
	Unit	single room			
	Reference flow	30,1	m³/h		
	SEC	-40,955	kWh/m²a		
	qnet	1,3	m³/hm²		
	Supplied Area	23,15	m²		
	Primary Energy demand	-948	kWh	is gain	
	AEC	1,1	kWh/m²a	Elec	
	AHS	43,8	kWh/m²a	Heat	
	electricity demand	26,28	kWh/a		
	Heat savings	1013,96	kWh/a		
	CO2 Factor electricity	0,45	kg CO2/kWh		
	CO2 Factor heat	0,23	kg CO2/kWh		
	CO2 elec - Heat	**-221**	**kg CO2/a**	**is gain**	

Four different units comparable sizing - CO2-Impact with B6 per piece



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Vielen Dank für Ihre Aufmerksamkeit

Informationen des Fachverbandes Gebäude-Klima e.V.

- ww.fgk.de/
- www.lebensmittel-luft.info
  Informationen zu unserem wichtigsten Lebensmittel
- www.mindestfeuchte40.de
  Informationen zur Luftbefeuchtung
- www.ventilatorentausch.de
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- www.weissbuch-klimatechnik.de
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  Informationen zur Hygiene in der Wohnungslüftung
- www.normen.fgk.de
  Informationen zu Normen (DIN, EN, ISO)

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