April 2017

Renewable Energy Directive:
Why Heat Recovery should be treated in the same manner as Renewable Energy

EVIA calls upon decision makers to put in place an adequate regulatory framework for Heat Recovery, recognizing it as a waste energy technology in the revised Renewable Energy Directive (RED) and accounting for the renewable part of the energy recovered by Heat Recovery Ventilation units (HRV).

The Renewable Energy Directive (RED) recognises heat pumps as renewable energy technologies and it is commonly accepted that outdoor air is Renewable Energy. In this context, **other technologies using exhaust air should be treated in the same manner as renewable energy in the revised Directive**. Indeed, exhaust air contains energy which is readily available but will be lost outside the building, if not recovered. The use of exhaust air as a heat source is, due to the higher temperature, more efficient that the use of outside air and there is no technological or physical reason to handle recovered exhaust air differently from ambient air.

Buildings account for approximately 40% of the EU's overall energy consumption and for 36% of the EU's overall emissions of greenhouse gas. **EVIA therefore supports the objectives laid down in the Energy Performance of Buildings Directive (EPBD)**, which aims to reduce the energy consumption of buildings and to achieve Nearly Zero Emissions Buildings (NZEBs). These NZEB will have very high energy performance, while relying mostly on renewable resources.

In highly efficient Nearly Zero Energy Buildings, the power demand for ventilation is the most important part of the energy consumption. The most effective device to "generate" or recover the heating energy demand is heat recovery in ventilation units (using passive systems or heat pumps). From a regulative point of view, it would be misleading, to blow this energy to the ambient, just to generate again the same amount of energy from the ambient air to count it as renewable energy. In addition, efficient ventilation systems and solutions bring other benefits that are critical, such as ensuring adequate Indoor Air Quality (IAQ) in air-tight buildings (e.g. by removing indoor pollutants and capturing outdoor air particulates).

- ⇨ **EVIA therefore calls upon decision makers to put in place an adequate regulatory framework for heat recovery, recognizing it as a waste energy technology in the revised Renewable Energy Directive (RED) and accounting for the renewable part of the energy recovered by Heat Recovery Ventilation units (HRV)[1].**

See in the Annexes:

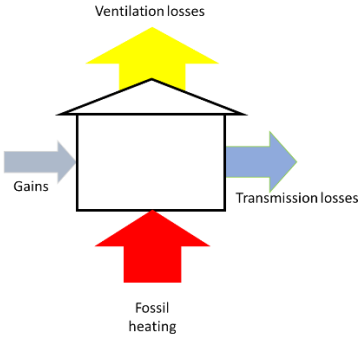
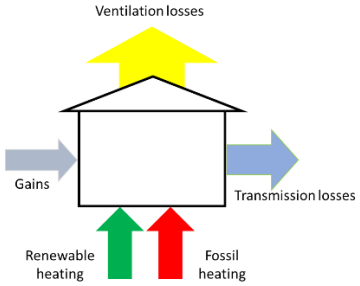
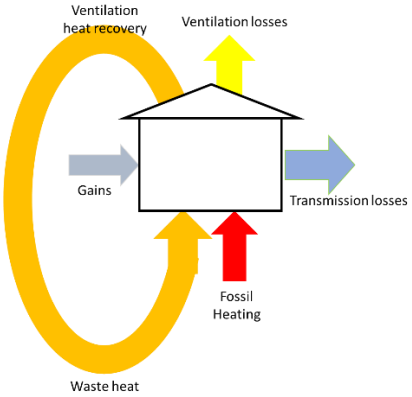
1. *EVIA proposed amendment to recognize heat recovery as a waste energy technology in the RED*
2. *Energy flow in a building and Renewable energy parts*
3. *Proposed amendment to recognize cold recovery and evaporative cooling (typically in Non-Residential applications) as a renewable energy technology*

[1] *EVIA has developed method to calculate how the energy delivered by heat recovery ventilation can be accounted as renewable energy under the Renewable Energy Directive (available upon request)*

Annex 1: Proposed amendment to recognize heat recovery as a waste energy technology

Commission's proposal	*EVIA Amendment*
Article 2 – Definitions (y) 'waste heat or cold' means heat or cold which is generated as by-product in industrial or power generation installations and which would be dissipated unused in air or water without access to a district heating or cooling system;	**Article 2 – Definitions** (y) 'waste heat or cold' means heat or cold which is generated as by-product in industrial or power generation installations **or heat or cold generated inside a building** and which would be dissipated unused in air or water ~~without access to a district heating or cooling system~~;
Justification • Waste heat or cold from exhaust air means heat or cold, which is used or dissipated in buildings and which would otherwise leave the building unused into the ambient air. • The use of 'waste heat or cold' can be done with any systems in the building and is not linked to district heating or cooling systems.	
Article 7 - Calculation of the share of energy from renewable sources 3. (…) Thermal energy generated by passive energy systems, under which lower energy consumption is achieved passively through building design or from heat generated by energy from non-renewable sources, shall not be taken into account for the purposes of paragraph 1(b).	**Article 7 - Calculation of the share of energy from renewable sources** 3. (…) Thermal energy generated by passive energy systems, under which lower energy consumption is achieved passively through building design or from heat generated by energy from non-renewable sources, ~~shall~~ **may** not be taken into account for the purposes of paragraph 1(b).

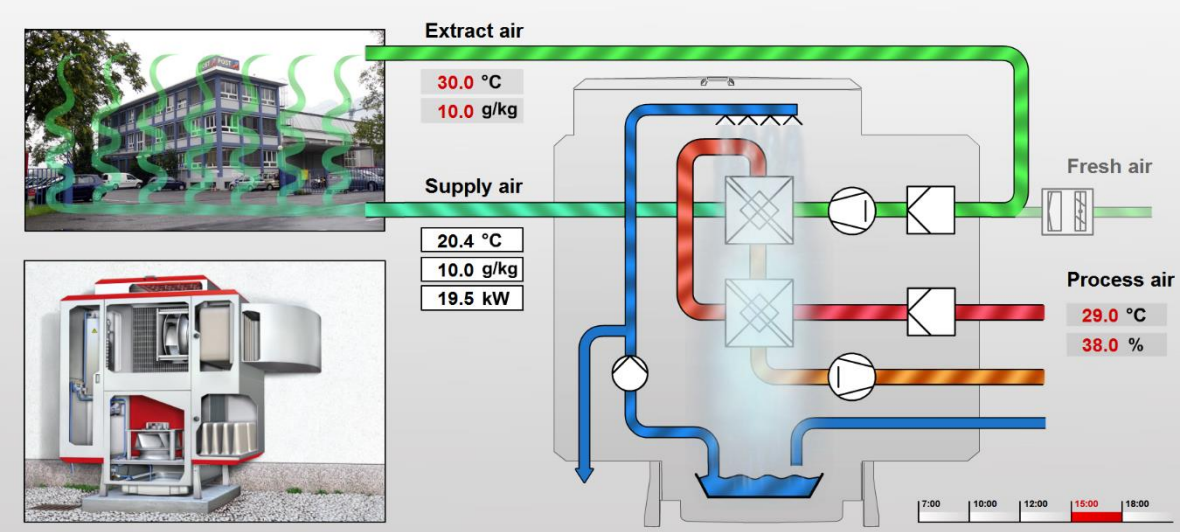
Annex 2: Energy flow in a building and Renewable energy parts

1. Fossil Heating	2. Renewable share Heating	3. Heat recovery
		
External and internal gains (solar, people, machines etc.) – same in each case		
Transmission losses though the building envelope – same in each case		
Fossil heating to cover the losses	Fossil heating to cover the losses not covered from renewables	Fossil heating to cover the losses not covered from waste heat use

Ventilation losses (airing + infiltration etc.)	Ventilation losses (airing + infiltration etc.)	Ventilation losses infiltration only
No waste heat recovered	No waste heat recovered	Energy recovered from ventilation losses. Heat recovery or heat pump
	Renewable heating (current regulation)	Waste heat use leads to the same result

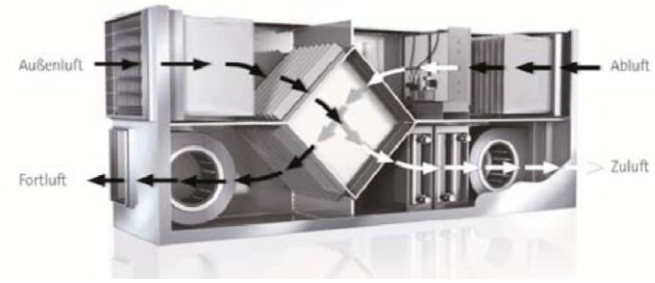
Annex 3: Proposed amendment to recognize cold recovery and evaporative cooling as a renewable energy technology

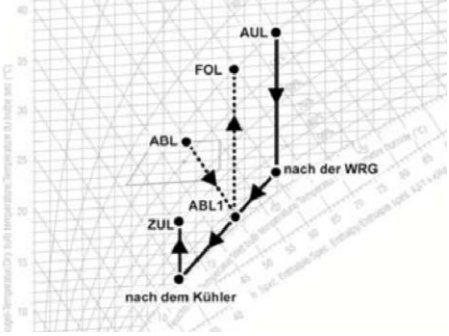
The Renewable Energy Directive covers not only heating aspects but also cooling. The use of ambient energy is in the case of cooling not only linked to heat pumps (this includes chillers) but also to other technologies. Heat recovery ventilation can also reduce overheating of indoor air in the building during summer heat waves by cooling down the higher outside temperature by a lower indoor temperature (possibly completed by evaporative cooling in non-residential applications – see below).



Depending on the cooling demands and outdoor conditions, heat recovery plus evaporative cooling devices can, in non-residential applications, replace significant mechanical cooling provided by chillers. The technology is available but rarely used.

Example: Evaporative cooling using outdoor air and heat recovery for cooling typical for production application.





Example: Evaporative cooling using extract air and heat recovery for precooling.

Evaporative cooling reduces the compressor cooling demand in air handling units in typical middle European climates by approximately 50%.

Commission's proposal	***EVIA Amendment***
Article 2 – Definitions (b)'ambient heat' means heat energy at a useful temperature level which is extracted or captured by means of heat pumps that need electricity or other auxiliary energy to function, and which can be stored in the ambient air, beneath the surface of solid earth or in surface water. The reported values shall be established on the basis of the same methodology used for the reporting of heat energy extracted or captured by heat pumps;	**Article 2 – Definitions** (b)'ambient heat' means heat energy at a useful temperature level which is extracted or captured by means of heat pumps **or heat recovery systems or cooling towers** that need electricity or other auxiliary energy to function, and which can be stored in the ambient air, beneath the surface of solid earth or in surface water. The reported values shall be established on the basis of the same methodology used for the reporting of heat energy extracted or captured by heat pumps;
Justification A technology neutral definition shall include evaporative cooling technologies among the definitions of ambient heat: • Ambient energy is not only heat captured by heat pumps • Useful cooling energy generated by evaporative cooling technologies without a compression cycle use the energy (enthalpie) of ambient air to cool the supplied air only by means of spraying water and some auxiliary energy. • Evaporative cooling systems are "machines" as shown above and they cannot be considered as passive buildings systems.	

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About EVIA:

The European Ventilation Industry Association (EVIA) was established in Brussels in July 2010. EVIA's mission is to represent the views and interests of the ventilation industry and serve as a platform between all the relevant European stakeholders involved in the ventilation sector, such as decision-makers at the EU level as well as our partners in EU Member States.

Our membership is composed of more than 35 member companies and 6 national associations across Europe, realising an annual turnover of over 7 billion euros and employing more than 45,000 people in Europe.

EVIA aims to promote highly energy efficient ventilation applications across Europe, with high consideration for health and comfort aspects. Fresh and good indoor air quality is a critical element of comfort and contributes to keeping people healthy in buildings.

Check our website: www.evia.eu