



United Technologies

DESIGNING INNOVATIVE SOLUTIONS

HEATING, VENTILATION & AIR CONDITIONING SOLUTIONS

CARRIER, COMMITTED TO ENVIRONMENTAL RESPONSIBILITY

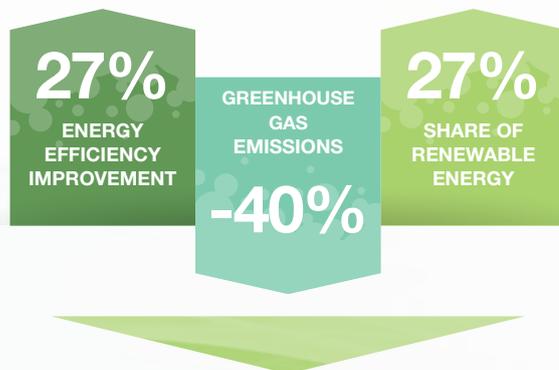


European Ecodesign regulation for air handling units

Carrier committed to environmental responsibility

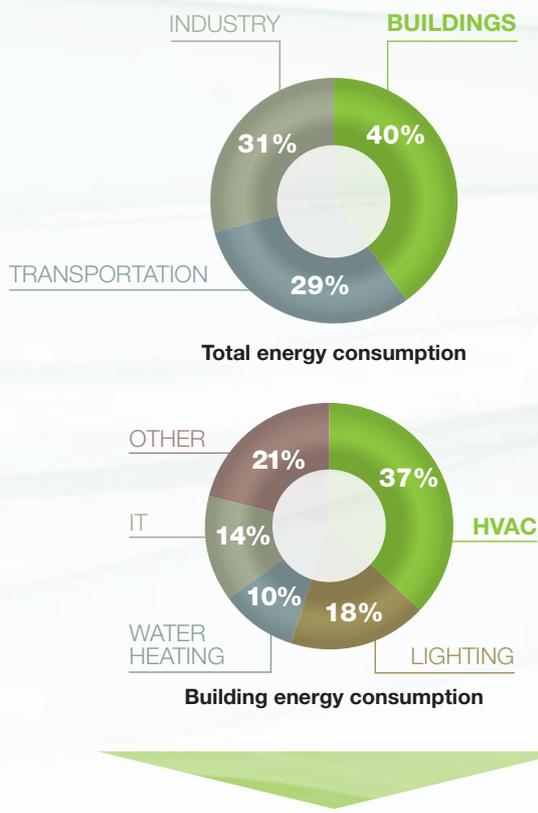


Carrier is committed to limiting the environmental impact of its products and solutions and reducing energy consumption. This commitment is in line with the targets of the European climate and energy package for 2030:



The energy efficiency improvement target strongly influences the heating, ventilation and air conditioning (HVAC) market.

Indeed buildings are the largest consumers of energy today and, of that consumption, HVAC systems account for considerably more than other equipment. Providing its customers with energy efficient solutions is therefore now a key sustainable development opportunity for the HVAC industry.



In order to achieve these objectives, the European Union has developed a regulation on equipment consumption, including lighting, IT, water heating and HVAC:

Ecodesign

Ecodesign regulation

Ecodesign is an approach to product design that encourages manufacturers to consider the environmental impact of the product over its entire lifecycle. Since January 1st 2016, the European Regulation No.1253/2014 has been setting new energy efficiency requirements for ventilation units equipped with filters, energy recovery devices, fans and motors. These requirements will be reinforced from January 1st 2018.

APPLICATION SCOPES

Both residential (RVU) and non residential (NRVU) ventilation units (VU) are concerned with the new regulations.

Flowrate		
≤ 250 m ³ /h	250 m ³ /h < [...] < 1000 m ³ /h	≥ 1000 m ³ /h
RVU	RVU (if exclusively for a residential ventilation application)	NRVU
	NRVU (if not exclusively for a residential ventilation application)	

Carrier air handling unit ranges are part of the NRVU segment

Examples of applications out of the scope of the regulation:
 Unit with outdoor air volume less than 10% - Unit for agricultural applications, eg: greenhouses, stables... - Professional kitchen exhaust hoods - Unit to extract heat rejected by equipment or a manufacturing process, eg: data centres, TV studio, compressors, industrial ovens ... - Unit for marine application, eg: offshore platforms - Unit intended for a building not designed for people or where the presence of people is occasional, eg: paint booth... - ATEX (explosive areas) - Unit with a heat pump to transfer heat between exhaust and supply air streams - Unit operating in an environment with abrasive substances - Unit for emergency use, eg: toxic gas or smoke extraction

GLOSSARY

Terms and abbreviations used in this document, as defined by the European regulation n°1253/2014.

■ **VU - Ventilation Unit:** An electricity driven appliance equipped with at least one impeller, one motor and a casing and intended to replace utilised air by outdoor air in a building or a part of a building.

■ **RVU - Residential Ventilation Unit:** A ventilation unit where:
 (a) the maximum flow rate does not exceed 250 m³/h
 (b) the maximum flow rate is between 250 and 1000 m³/h, and the manufacturer declares its intended use as being exclusively for a residential ventilation application.

■ **NRVU - Non Residential Ventilation Unit:** A ventilation unit where the maximum flow rate of the ventilation unit exceeds 250 m³/h, and, where the maximum flow rate is between 250 and 1000 m³/h, and the manufacturer has not declared its intended use as being exclusively for a residential ventilation application.

■ **UVU - Unidirectional Ventilation Unit:** A ventilation unit producing an air flow in one direction only, either from indoors to outdoors (exhaust) or from outdoors to indoors (supply), where the mechanically produced air flow is balanced by natural air supply or exhaust.

■ **BVU - Bidirectional Ventilation Unit:** A ventilation unit which produces an air flow between indoors and outdoors and is equipped with both exhaust and supply fans).

OVERALL PRODUCT IMPROVEMENT



ENERGY EFFICIENCY / SPECIFIC FAN POWER

A ventilation unit with higher energy efficiency (less absorbed energy per m³ of air treated): higher fan efficiency, lower internal pressure drops.



ENERGY RECOVERY

More efficient heat recovery, lower pressure drops



INDOOR AIR QUALITY

Better filtration for better air quality and energy efficiency



INFORMATION

Reinforced product information

Technical and information requirements

TECHNICAL REQUIREMENTS FOR NRVU

Requirements		2016	2018
UVU			
Variable or multiple speed motors		Yes	Yes
η_{vu} (Fan efficiency)	$P < 30 \text{ kW}$	$\eta_{vu} > 35\% + 6.2\% \ln(P)$	$\eta_{vu} > 42\% + 6.2\% \ln(P)$
	$P > 30 \text{ kW}$	$\eta_{vu} > 56.1\%$	$\eta_{vu} > 63.1\%$
Internal Specific Fan Power $W/(m^3/s)$ for reference configuration		250	230
BVU			
Variable or multiple speed motors		Yes	Yes
Heat recovery system		Yes	Yes
Heat exchanger thermal by-pass		Yes	Yes
Thermal efficiency	Run-around exchangers with intermediary fluid	$\eta_t > 63\%$	$\eta_t > 68\%$
	Other exchangers	$\eta_t > 67\%$	$\eta_t > 73\%$
Visual filter change warning or alarm in case of filter pressure drop $> \Delta_{max}$		-	Yes
Internal Specific Fan Power $W/(m^3/s)$ for reference configuration		$< SFP_{int_limit}$ depend upon: Exchanger type & efficiency, $q_{nominal}$, filters	

UVU

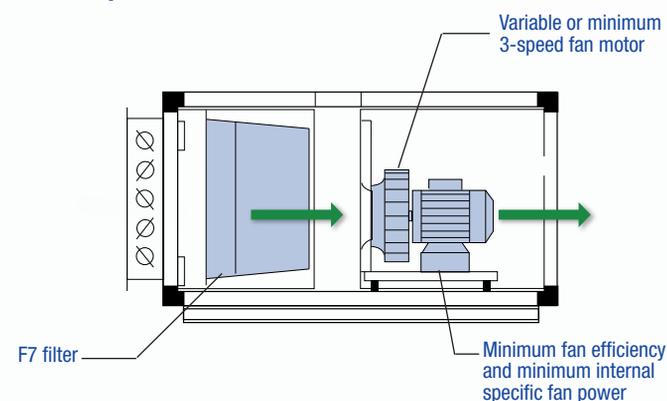


BVU

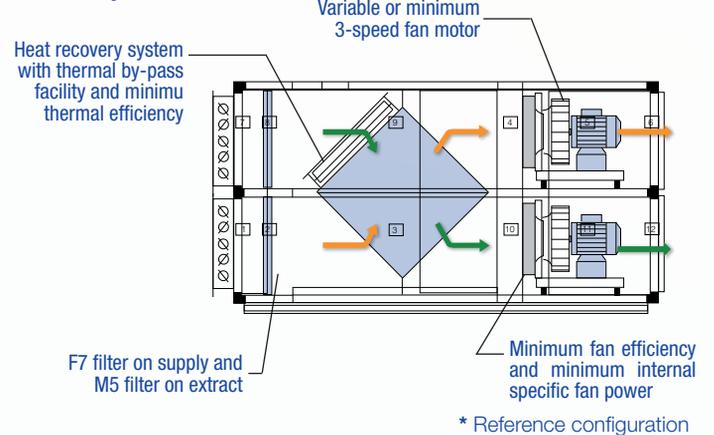


* heat recovery unit

UVU requirements*



BVU requirements*



INFORMATION REQUIREMENTS FOR NRVU

For each specific unit, the corresponding detailed technical information (such as product and components identification, type of motorisation, type of exchanger, performances as per regulation...) shall be provided.

High-level expertise and forward-looking solutions

Carrier's Research & Development teams and its laboratories, among the largest such facilities dedicated to HVAC in Europe, are an important part of what makes the company a natural leader. As a result, many Carrier products already meet the demands of the Ecodesign regulations.

Ultra modern laboratories

Carrier benefits from unique facilities, both in terms of cooling coverage, air treatment capacities and measurement accuracy.

Cooling:

- 15 individual test rooms
- ambient control from -25°C to 55°C
- total test capacity of 6 MW

Ventilation:

- acoustics, aeraulics, characterisation of heat recovery systems
- wall panels insulation, casing air leakage and strength, filter bypass leakage
- air flow testing on heat recovery units from -10°C to +90°C
- individual unit test capacity up to 35 000 m³/h, humidity from 30 % to 90 %

Eurovent Certification:

Although products and performances are assessed in Carrier's laboratories under their application conditions Carrier also supports and participates at the stringent independent Eurovent Certification Programmes for refrigeration, air conditioning, air handling and heating products including tests in accordance with relevant European standards (EN 1886 and EN 13053).

Carrier solutions, already compliant

Carrier's air handling units are in line with the European Ecodesign regulation requirements on energy efficiency. All Carrier's ranges will be compliant with the 2018 Ecodesign regulation.

Ranges like the AiroVision 39CP have been designed to meet the 2016 regulation and is already compliant with the 2018 regulation.

The 39HX is equipped with a highly efficient heat recovery unit with high performance EC motor, designed to offer Class A energy efficiency ratings.



AiroVision® 39CP

39HX



AquaSnap® 30RQP

Carrier a natural leader

Introduced in 2010, the Carrier CO₂NSERVATION Meter calculates avoided greenhouse gas emissions as a result of the installation of high-efficiency Carrier air conditioning, heating and refrigeration systems by customers around the world since 2000. In 2017, the Carrier CO₂NSERVATION Meter reached **213 million metric tonnes** of greenhouse gases saved, the equivalent of:



Approximately 39.000.000 vehicles removed from the road for one year*



Saved the electricity consumed by approximately 25.000.000 homes during one year*

* According to the United States Environmental Protection Agency Green Power Equivalency Calculator. The model compares the projected GHG emissions from select Carrier products to emissions from comparable baseline products, with the difference representing the avoided emissions. The meter also incorporates energy savings as measured from energy service contracts. Learn more on <http://naturalleader.com/>

Carrier Service

To ensure an air conditioning system has minimum environmental impact, it must be run and maintained at optimum capability levels.

For Carrier, that means ensuring its products are environmentally responsible for their entire life on site and that's why Carrier undertakes all refurbishment activities on machines that have already been installed.

To bring peace of mind to its customers, Carrier provides service offerings tailored to their specific requirements, including:

- Comprehensive and efficient preventive maintenance programs.
- Advanced monitoring offer based on secure connectivity allowing real-time access to system operating data, alerts at any event and actionable functioning reports.
- Continuous internal training.
- On-site inspection.
- Control solutions for low energy and high-performance systems.

Presence in more than

60
countries

24/7
availability

More than

110 years of experience



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