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TEP974-RATE research group

(University of Córdoba)

[wedistrict@uco.es](mailto:wedistrict@uco.es)

[rate@uco.es](mailto:rate@uco.es)

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of the RACU prototype:

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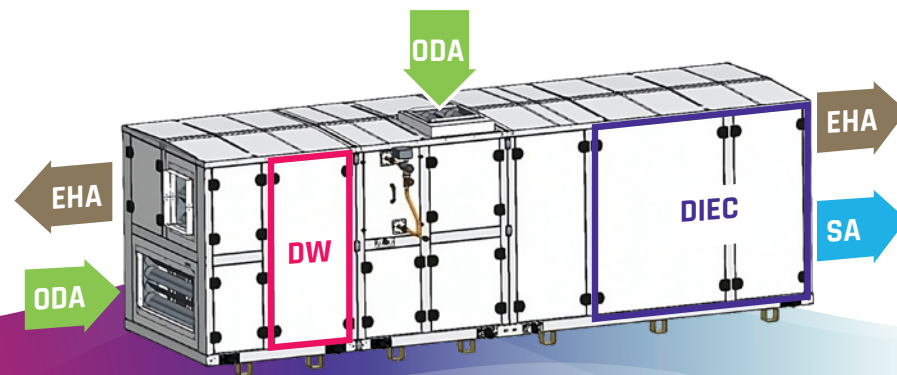
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# RACU

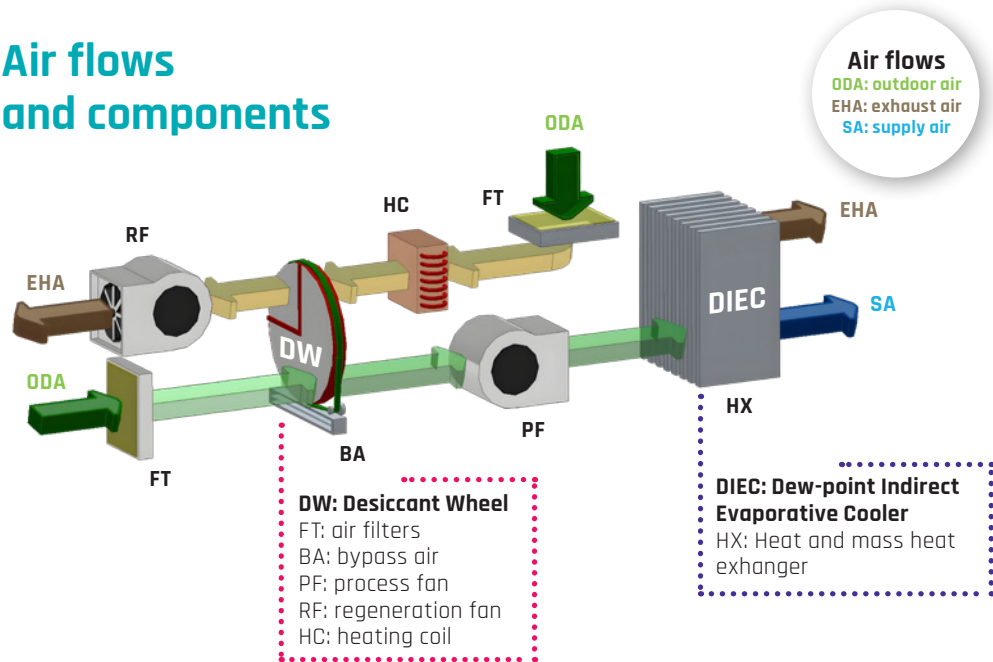
## Renewable Air-Cooling Unit

Designed and tested by the research group TEP974-RATE at the University of Córdoba



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N°857801.

## Air flows and components



## Operational modes

Mode	Ventilation control	Temperature and ventilation control	Humidity and ventilation control	Temperature, humidity and ventilation control
Ventilation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Air temperature	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Air humidity	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

## Main technical characteristics and advantages

Independent control of air temperature, air humidity and CO<sub>2</sub> concentration in buildings. Improvement of thermal comfort and indoor air conditions with a high energy efficiency.

Parameter	Unit	Nominal	Maximum
Supply airflow rate	m <sup>3</sup> /h	2880	3300
Regeneration airflow rate	m <sup>3</sup> /h	1667	1733
Cooling capacity	kW	12.7	22.8
Dehumidification capacity	kg/h	6.2	14.3
Dimensions	m	4.87 x 1.63 x 1.71	-
Weight	kg	1550	-
Energy Efficiency Ratio (EER) <sup>1</sup>	-	6.0	10.5
Seasonal EER (SEER) <sup>2</sup>	-	3.2	4.5

(1) Nominal conditions ODA 34°C and 11 g/kg; maximum conditions ODA 42°C and 11 g/kg  
 (2) Nominal conditions ODA hot-humid climate (Bilbao); maximum conditions ODA hot-dry climate (Cordoba)



Low environmental impact



Low carbon footprint



Without refrigerants



Very high energy efficiency



Use of renewable energy sources and integration into district networks



100% outdoor air to improve Indoor Air Quality (IAQ)



Independent control of temperature (T), humidity (RH) and CO<sub>2</sub> concentration (CO<sub>2</sub>)