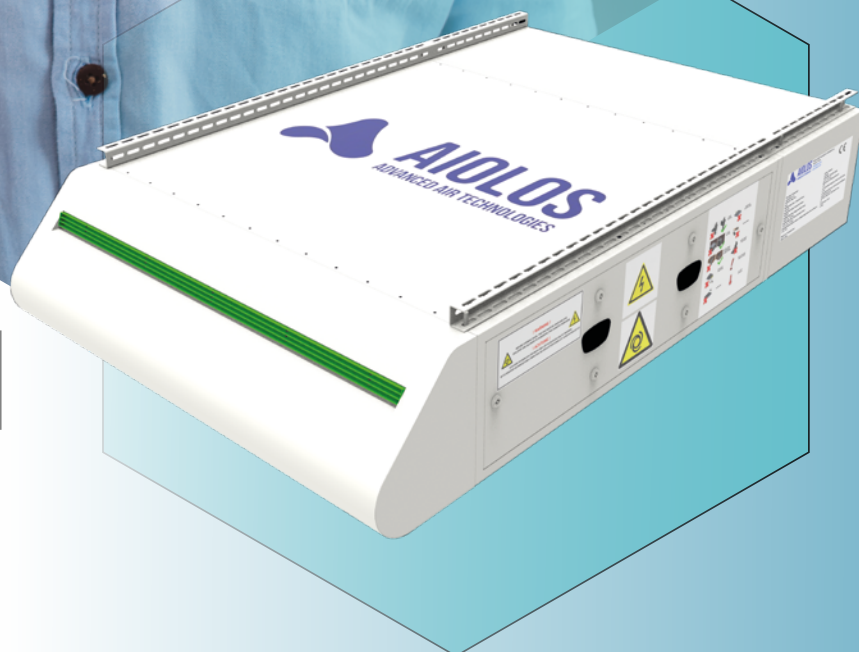




*Fresh Air for Everyone*

**%100**  
**Fresh Air**  
**Ventilation Unit**

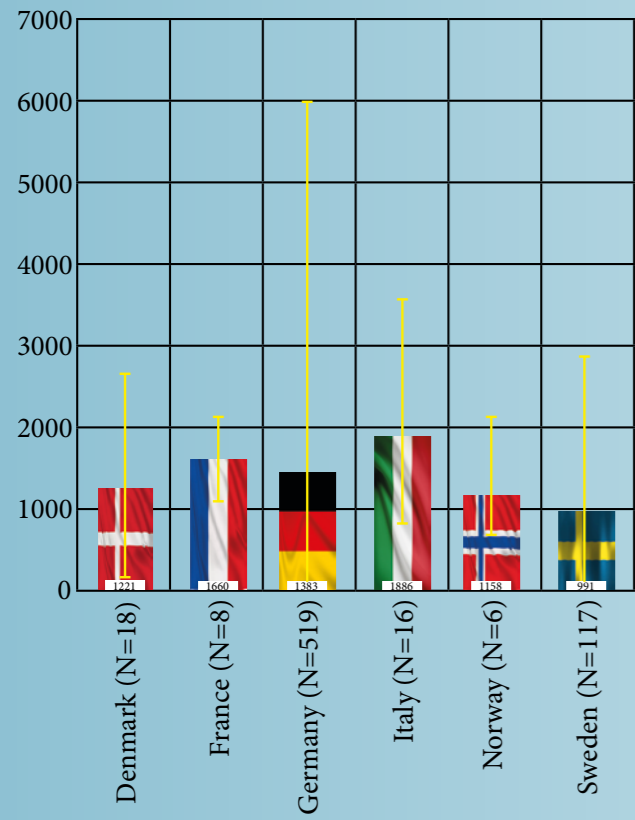


**Classroom Ventilation**



**Ultra Silent**

**AiolosAir Aura**  
**%100 Fresh Air Heat Recovery Ventilation Unit**



Ventilation Typical values for the CO<sub>2</sub> concentration in classrooms very broadly. In different studies values between approximately 750 ppm up to 6000 ppm are reported (see figure 1). The figure below shows measured values of CO<sub>2</sub> concentrations in schools in six European countries. The average values are all within the recommendations are exceeded. Renovation should focus on these schools with poor indoor air quality.

As classrooms are densely occupied spaces with a metabolic production of CO<sub>2</sub> by the occupants, the CO<sub>2</sub>-concentration is directly dependent on the ventilation rate. Typical recommended values; levels below 1000 ppm are considered as hygienically unproblematic and above 2000 ppm as hygienically unacceptable.

Obviously such values are not reached very often, which is most likely associated with insufficient ventilation behaviour of the occupants, especially during winter.

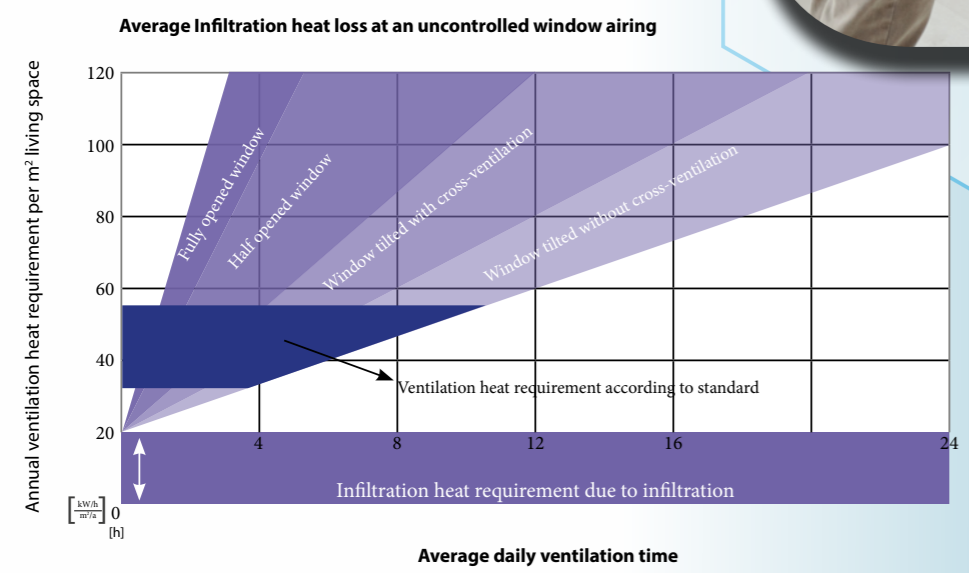
**Figure 1\*:** Measured values of CO<sub>2</sub> concentrations in schools in six European countries. The bars depict mean values, also stated as numbers, the whiskers indicate the minima and the maxima from the underlying studies.

\* Study Report - Impact of the indoor environment on learning in schools in Europe -Gunnar Grün, Susanne Urlaub - Holzkirchen, Stuttgart, December 2015.



Concentration	Effect
250...450 ppm	Outdoor Air Quality
600...800 ppm	Healthy Indoor Air Quality (IAQ)
1000 ppm	Limit for Healty IAQ
5000 ppm	More than 8 hours max. working concentration
6000...30000 ppm	Room to be atayed only for shprt period
%3 to %8	Increase on breathing frequency, headache
>%10	Nausea, vomiting, unconsciousness
>%20	Rapid loss of consciounes and health

**Figure 2:** Effects of CO<sub>2</sub> concentration on human health.

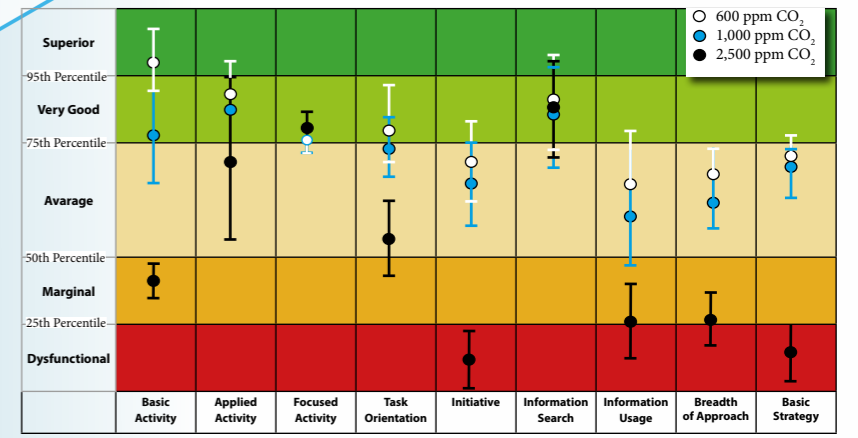


100 m<sup>2</sup> x 50 kWh / m<sup>2</sup>a = 5000 kWh/a

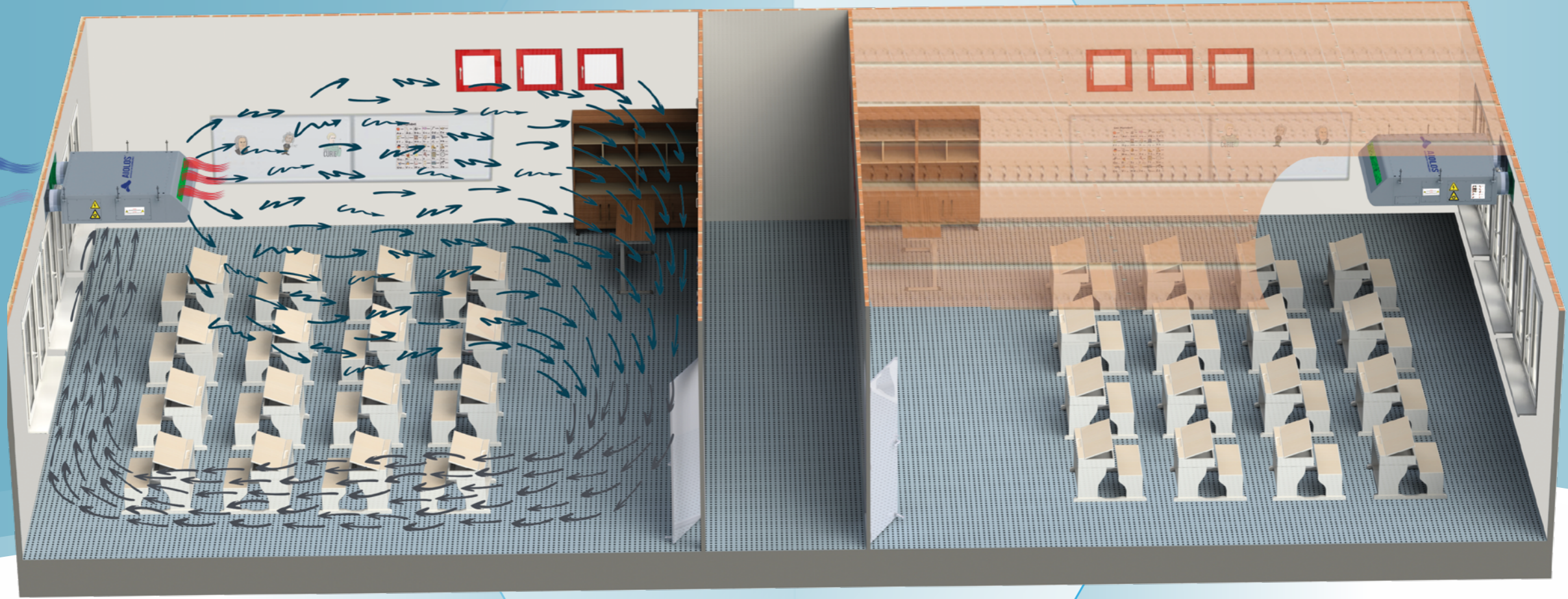
This corresponds with the annual heating needs of a classroom.

The indoor environment should not hinder the learning of the children, e.g. with a high noise level, overheated rooms or inadequate lightning conditions or a tuffy and unhealthy air. Unfortunately, many schools do not provide an adequate indoor environment. Many schools fail to provide a sufficient outdoor air supply rate and they are too warm in the summer months.

Our children spend most of their time during the day in a classroom where they should learn things that are important for their later achievements in education and finally in their profession. The classrooms should promote, therefore, a good learning environment.



**Figure 3\*\* :** Impact of CO<sub>2</sub> on human decision-making performance.  
 \*\* Is CO<sub>2</sub> an Indoor Pollutant? Direct Effects of Low-to-Moderate CO<sub>2</sub> Concentrations on Human Decision-Making Performance Usha Satish, Mark J. Mendell, Krishnamurthy Shekhar, Toshifumi Hotchi, Douglas Sullivan, Siegfried Streufert, and William J. Fisk.



Ultra Silent

Room Controller

Heat Recovery, Electric Heater and Fresh Air Supply Capacity upto 80 m<sup>2</sup> Classroom

%100 Fresh Air

Easy Installation

ISO ePM<sub>2.5</sub> Final Filter

Direct Installation to Building Facade

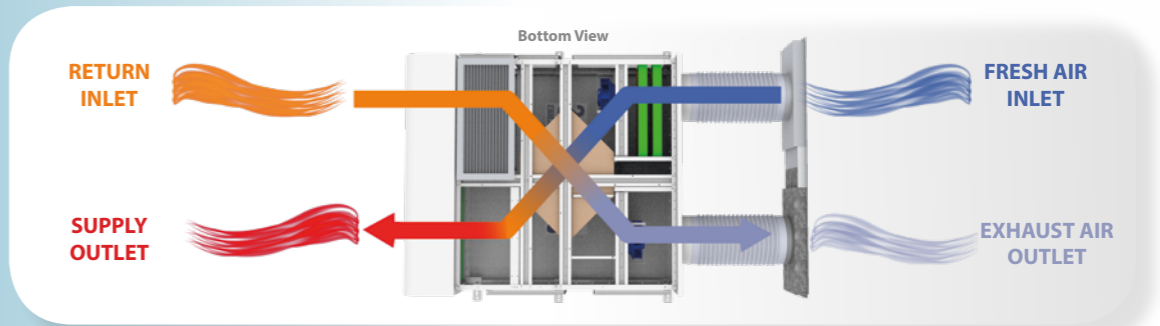
Elegant Design

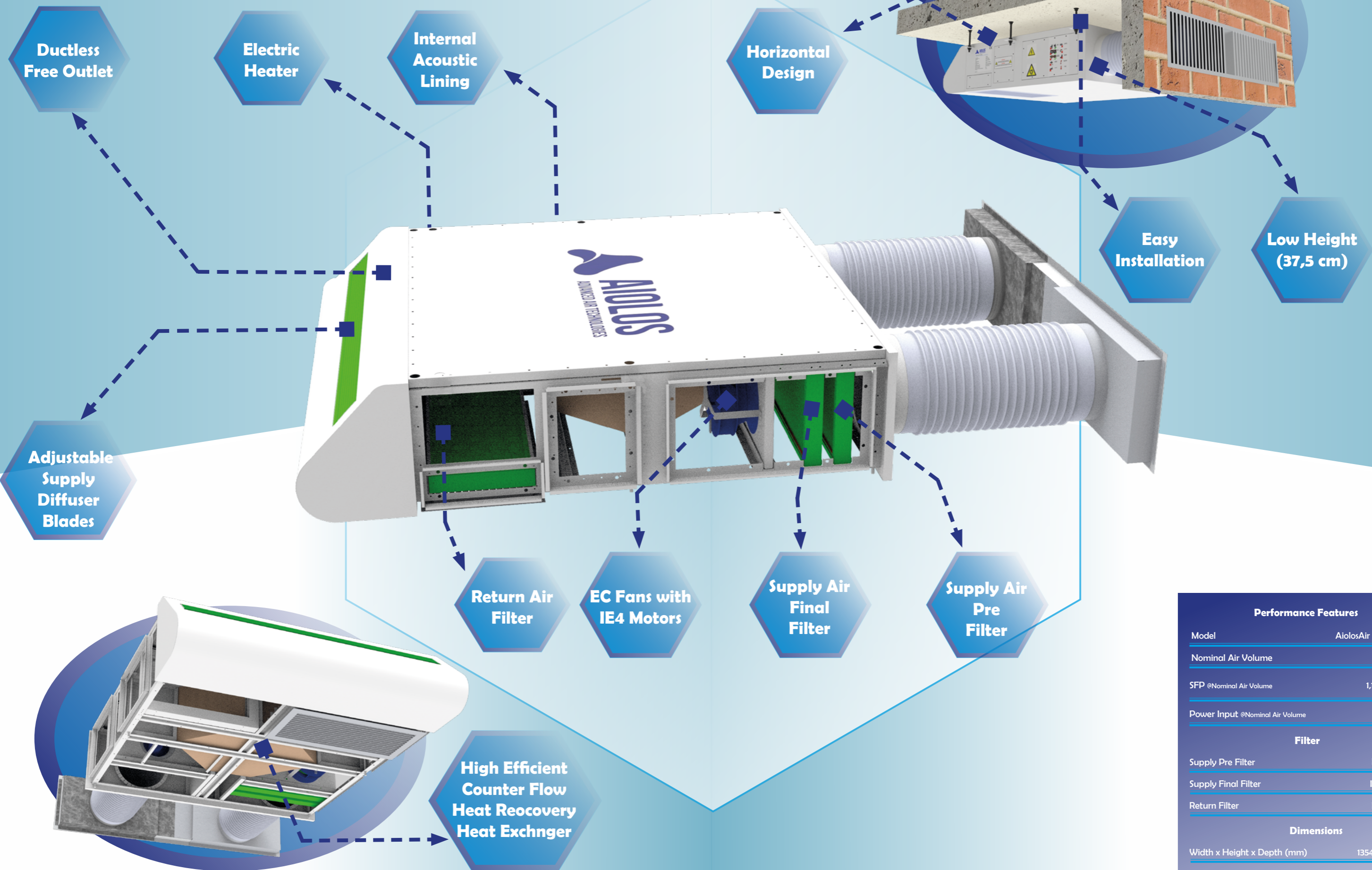
High Efficient EC Fans

High Efficiency Heat Recovery Ventilation

Low Height Design for Horizontal Installation

Heat Recovery Ventilation





Performance Features	
Model	AiolosAir Aura 800
Nominal Air Volume	800 m <sup>3</sup> /h
SFP @Nominal Air Volume	1,15 kW/m <sup>3</sup>
Power Input @Nominal Air Volume	256 Watt
Filter	
Supply Pre Filter	ISO ePM <sub>10</sub>
Supply Final Filter	ISO ePM <sub>2,5</sub>
Return Filter	ISO ePM <sub>10</sub>
Dimensions	
Width x Height x Depth (mm)	1354x375x1637

## Horizontal Type %100 Fresh Air Heat Recovery Ventilation Unit

Horizontal Type %100 Fresh Air Heat Recovery Ventilation Unit dedicated for school class room ventilation. Unit casing is air tight, outer surface powder coated single skin, aluminium folio covered 25 mm A1 fire resistant Rockwool (EN 14303) insulated for lowest heat transfer and sound absorption. 1,5 mm steel inner frame sustain rigid construction. To ensure high energy efficiency, unit is equipped with counterflow heat exchanger with %87 heat recovery efficiency. Thanks to low internal pressure loss design to meet 1,15 kW/m<sup>3</sup> SFP. Free cooling mode is available when outside air conditions are convenient. Supply air is heated to room temp with standard equipped electric heater, or optional high capacity electric heater for the classrooms without any additional heating needed.



Unit is equipped with 2 stage filter, as standard, in supply air side ISOePM<sub>10</sub> + ISOePM<sub>2,5</sub> and single stage filter in return air side ISOePM<sub>10</sub>. Optional ISOePM<sub>1</sub> compact filter is also possible when requested. Unit air volume is adjustable in 5 stages in manual mod, or via 0-10V proportional with optional CO<sub>2</sub> sensor in auto mod. IE4 efficiency class EC direct driven fans, without any need of frequency inverter. Unit is ready for operation with, factory installed, control panel and fully equipped with control components. Unit can be remote monitored and controlled via ModBUS communication protocol.

Dedicated room controller with display, maintains easy control and operation. With optional wall type CO<sub>2</sub> sensor unit can operate in Auto Mod depending on the room CO<sub>2</sub> level.

## Standard and Optional Features

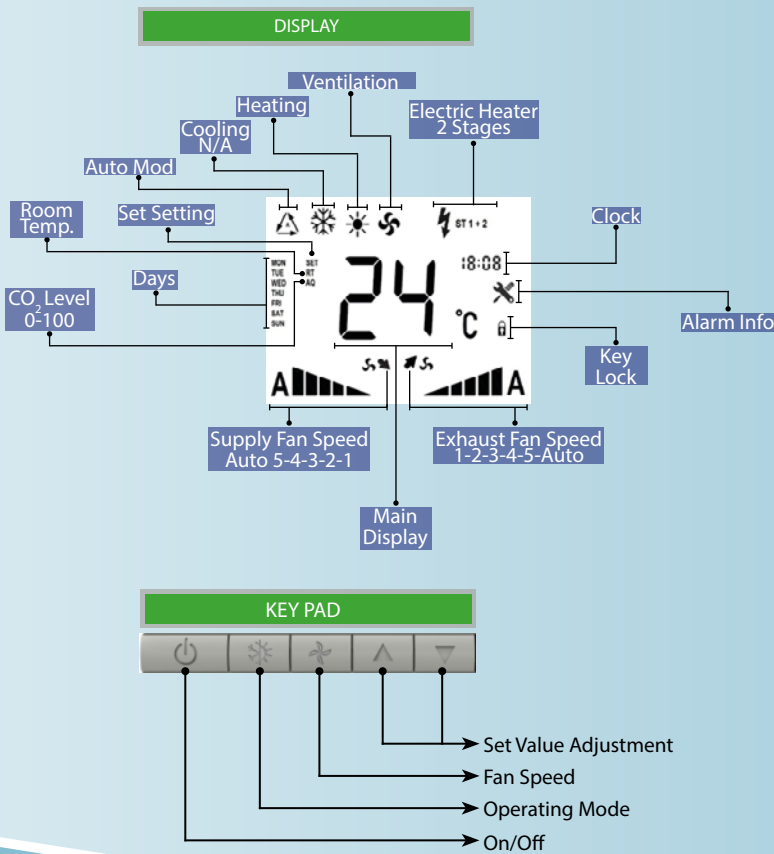
### ✓ Standard Features

- EC Fans
- Counterflow Heat Recovery Exchanger
- Free Cooling Bypass Control
- Room Controller
- ModBUS Communication
- Door Contact Switch
- Weekly Schedule with Timer
- 25 mm Rockwool Insulation
- Powder Coated Outer Skin
- ISO ePM<sub>10</sub> + ISO ePM<sub>2,5</sub> Supply Airfilter
- ISO ePM<sub>10</sub> Return Air Filter

### ✓ Options and Accessories:

- Electric Reheat
- CO<sub>2</sub> Sensor (wall type)
- CO<sub>2</sub> Sensor (return air side)
- Exhaust Air Shut Off Flap with Actuator
- Supply Air Shut Off Flap with Actuator
- Covering of The Exhaust/Supply Ducts
- Outside Wall Grill/Louver
- Insulated Flexible Duct Kit - 1m
- ISO ePM<sub>1</sub> Final Filter

**Room Controller**



- ✓ User friendly room controller with display
- ✓ Integrated temperature sensor
- ✓ 7 day schedule with timer
- ✓ Operating mode selection
- ✓ 5 stage fan speed control
- ✓ Auto/Manuel mode
- ✓ Modbus BMS communication
- ✓ Thermal Free Cooling Control
- ✓ Dirty filter alarm display
- ✓ Fire alarm contact
- ✓ 2 Stage Electrical Heater Control
- ✓ Alarm monitoring
- ✓ CO<sub>2</sub> sensor, wall type (optional)



Aiolos room controller with temperature sensors maintain thermal comfort in heating mode. High temperature sensors secure safe operation electrical heater. Door contact switches automatically stops the unit during maintenance and any uncontrolled intervention

**Performance Features**

Model	AiolosAir Aura 800
Nominal Air Volume	800 m <sup>3</sup> /h
SFP @Nominal Air Volume	1,15 kW/m <sup>3</sup>
Power Input @Nominal Air Volume	256 Watt

**Heat Recovery Heat Exchanger**

Fresh Air Inlet (°C)	-10
Supply Outlet (°C)	17,9
Heat Recovery Efficiency (%)	87
Heat Recovery Capacity (kW)	7,4

**Filter**

Supply Pre Filter	ISO ePM <sub>10</sub>
Supply Final Filter	ISO ePM <sub>2,5</sub>
Return Filter	ISO ePM <sub>10</sub>

**Electric Heater (optional)**

Capacity (kW)	6,0
Stages	2 Stage

**Power Input**

Fan Motor Power (kW)	0,17 x 2
Fan Power Input @Nominal (kW)	0,26
Power Supply	230 V / 1 Ph / 50 Hz
Control	24VAC

**Dimensions**

Width x Height x Depth (mm)	1354x1637x375
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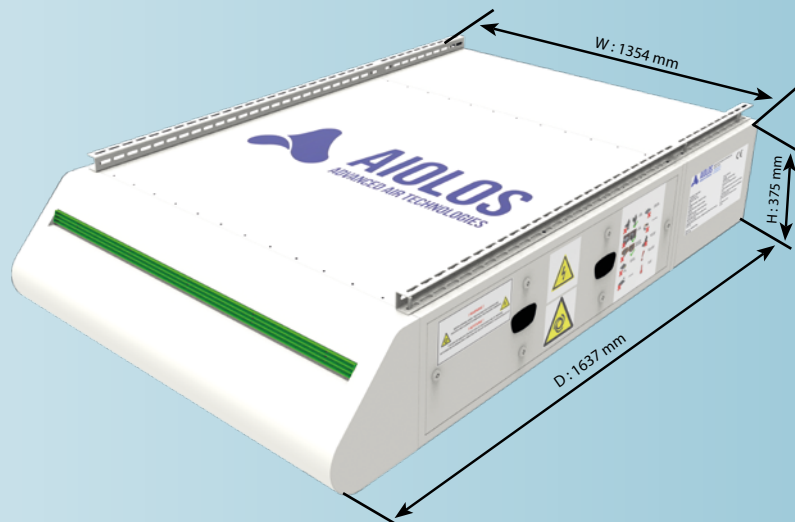
**Note:** Performance according to 22 C room return air temperature

## Heating Mode

Outdoor Dry Bulb Temperature		°C		-20			-10			0			7			10			15		
Fresh Air Ratio	Air Flow	Indoor Dry Bulb Temp. °C	Heating Mode	EFF	Heat Recovery Capacity kW	Outlet temp. °C	EFF	Heat Recovery Capacity kW	Outlet temp. °C	EFF	Heat Recovery Capacity kW	Outlet temp. °C	EFF	Heat Recovery Capacity kW	Outlet temp. °C	EFF	Heat Recovery Capacity kW	Outlet temp. °C	EFF	Heat Recovery Capacity kW	Outlet temp. °C
100%	400 m³/h	18	HR Exch.	89,5%	4,5	14,0	88,3%	3,3	14,7	86,2%	3,4	15,5	84,7%	3,5	16,3	85,2%	3,5	16,8	86,0%	3,6	17,0
			1 <sup>st</sup> Stage El.Heater	-	3,0	36,5	-	3,0	37,2	-	3,0	38,0	-	3,0	38,8	-	3,0	39,3	-	3,0	40,0
			2 <sup>nd</sup> Stage El.Heater	-	3,0	58,9	-	3,0	59,7	-	3,0	60,5	-	3,0	61,3	-	3,0	61,8	-	3,0	62,5
		20	HR Exch.	89,5%	4,7	15,8	88,7%	3,5	16,6	86,7%	3,6	17,3	84,7%	3,7	18,0	84,9%	3,8	18,5	85,7%	3,9	19,3
			1 <sup>st</sup> Stage El.Heater	-	3,0	38,3	-	3,0	39,1	-	3,0	39,8	-	3,0	40,5	-	3,0	41,0	-	3,0	41,8
			2 <sup>nd</sup> Stage El.Heater	-	3,0	60,7	-	3,0	61,5	-	3,0	62,3	-	3,0	62,9	-	3,0	63,4	-	3,0	64,2
		22	HR Exch.	89,5%	5,0	17,6	89,2%	3,8	18,5	87,1%	3,8	19,2	85,2%	3,9	19,8	84,6%	4,0	20,2	85,4%	4,1	21,0
			1 <sup>st</sup> Stage El.Heater	-	3,0	40,1	-	3,0	41,0	-	3,0	41,6	-	3,0	42,2	-	3,0	42,6	-	3,0	43,4
			2 <sup>nd</sup> Stage El.Heater	-	3,0	62,6	-	3,0	63,5	-	3,0	64,1	-	3,0	64,7	-	3,0	65,1	-	3,0	65,9
		24	HR Exch.	89,5%	5,2	19,4	89,4%	4,0	20,4	87,5%	4,1	21,0	85,8%	4,2	21,6	84,9%	4,2	21,9	85,1%	4,3	22,7
			1 <sup>st</sup> Stage El.Heater	-	3,0	41,9	-	3,0	42,9	-	3,0	43,5	-	3,0	44,1	-	3,0	44,4	-	3,0	45,1
			2 <sup>nd</sup> Stage El.Heater	-	3,0	64,4	-	3,0	65,3	-	3,0	65,9	-	3,0	66,5	-	3,0	66,8	-	3,0	67,6
26	HR Exch.	89,5%	5,5	21,2	89,6%	4,3	22,3	87,9%	4,3	22,9	86,3%	4,4	23,4	85,4%	4,5	23,7	84,9%	4,5	24,3		
	1 <sup>st</sup> Stage El.Heater	-	3,0	43,6	-	3,0	44,7	-	3,0	45,3	-	3,0	45,9	-	3,0	46,1	-	3,0	46,8		
	2 <sup>nd</sup> Stage El.Heater	-	3,0	66,1	-	3,0	67,2	-	3,0	67,8	-	3,0	68,3	-	3,0	68,6	-	3,0	69,1		
100%	600 m³/h	18	HR Exch.	88,6%	6,7	13,7	87,0%	4,8	14,4	84,3%	5,0	15,2	82,3%	5,2	16,1	82,8%	5,3	16,6	83,6%	5,5	17,5
			1 <sup>st</sup> Stage El.Heater	-	3,0	28,6	-	3,0	29,3	-	3,0	30,2	-	3,0	31,0	-	3,0	31,6	-	3,0	32,5
			2 <sup>nd</sup> Stage El.Heater	-	3,0	43,6	-	3,0	44,3	-	3,0	45,1	-	3,0	46,0	-	3,0	46,6	-	3,0	47,5
		20	HR Exch.	88,6%	7,1	15,4	87,5%	5,2	16,3	85,0%	5,4	17,0	82,2%	5,5	17,7	82,5%	5,6	18,3	83,3%	5,8	19,2
			1 <sup>st</sup> Stage El.Heater	-	3,0	30,4	-	3,0	31,2	-	3,0	32,0	-	3,0	32,7	-	3,0	33,2	-	3,0	34,1
			2 <sup>nd</sup> Stage El.Heater	-	3,0	45,4	-	3,0	46,2	-	3,0	47,0	-	3,0	47,6	-	3,0	48,2	-	3,0	49,1
		22	HR Exch.	88,7%	7,4	17,3	87,9%	5,6	18,1	85,5%	5,7	18,8	83,1%	5,9	19,5	82,2%	5,9	19,9	83,0%	6,1	20,8
			1 <sup>st</sup> Stage El.Heater	-	3,0	32,2	-	3,0	33,1	-	3,0	33,8	-	3,0	34,4	-	3,0	34,8	-	3,0	35,8
			2 <sup>nd</sup> Stage El.Heater	-	3,0	47,2	-	3,0	48,1	-	3,0	48,8	-	3,0	49,4	-	3,0	49,8	-	3,0	50,8
		24	HR Exch.	88,6%	7,8	19,0	88,2%	6,0	20,0	86,0%	6,1	20,6	83,8%	6,2	21,2	82,6%	6,3	21,6	82,8%	6,50	22,5
			1 <sup>st</sup> Stage El.Heater	-	3,0	34,0	-	3,0	35,0	-	3,0	35,6	-	3,0	36,2	-	3,0	36,5	-	3,0	37,4
			2 <sup>nd</sup> Stage El.Heater	-	3,0	48,9	-	3,0	49,9	-	3,0	50,6	-	3,0	51,2	-	3,0	51,5	-	3,0	52,4
26	HR Exch.	88,7%	8,1	20,8	88,4%	6,3	21,8	86,5%	6,5	22,5	84,5%	6,6	23,1	83,3%	6,6	23,3	82,5%	6,8	24,1		
	1 <sup>st</sup> Stage El.Heater	-	3,0	35,8	-	3,0	36,8	-	3,0	37,5	-	3,0	38,0	-	3,0	38,3	-	3,0	39,1		
	2 <sup>nd</sup> Stage El.Heater	-	3,0	50,8	-	3,0	51,8	-	3,0	52,4	-	3,0	53,0	-	3,0	53,3	-	3,0	54,0		
100%	800 m³/h	18	HR Exch.	87,8%	8,9	13,4	86,2%	6,4	14,1	83,0%	6,6	14,9	81,3%	6,9	15,9	82,0%	7,0	16,6	87,8%	7,3	17,6
			1 <sup>st</sup> Stage El.Heater	-	3,0	24,6	-	3,0	25,4	-	3,0	26,2	-	3,0	27,2	-	3,0	27,8	-	3,0	28,9
			2 <sup>nd</sup> Stage El.Heater	-	3,0	35,8	-	3,0	36,6	-	3,0	37,4	-	3,0	38,4	-	3,0	39,0	-	3,0	40,1
		20	HR Exch.	87,9%	9,3	15,2	86,7%	6,9	16,0	83,8%	7,1	16,8	80,5%	7,3	17,5	81,0%	7,5	18,1	81,7%	7,7	19,1
			1 <sup>st</sup> Stage El.Heater	-	3,0	26,4	-	3,0	27,2	-	3,0	28,0	-	3,0	28,7	-	3,0	29,3	-	3,0	30,3
			2 <sup>nd</sup> Stage El.Heater	-	3,0	37,6	-	3,0	38,5	-	3,0	39,2	-	3,0	39,9	-	3,0	40,6	-	3,0	41,6
		22	HR Exch.	88,7%	9,8	16,9	87,1%	7,4	17,9	84,4%	7,6	18,6	81,5%	7,8	19,2	80,7%	7,9	19,7	81,5%	8,2	20,7
			1 <sup>st</sup> Stage El.Heater	-	3,0	28,2	-	3,0	29,1	-	3,0	29,8	-	3,0	30,5	-	3,0	30,9	-	3,0	31,9
			2 <sup>nd</sup> Stage El.Heater	-	3,0	39,4	-	3,0	40,3	-	3,0	41,0	-	3,0	41,7	-	3,0	42,2	-	3,0	43,2
		24	HR Exch.	88,0%	10,3	18,7	87,5%	7,9	19,8	84,9%	8,1	20,4	82,3%	8,2	21,0	81,0%	8,3	21,3	81,2%	8,6	22,3
			1 <sup>st</sup> Stage El.Heater	-	3,0	30,0	-	3,0	31,0	-	3,0	31,6	-	3,0	32,2	-	3,0	32,6	-	3,0	33,5
			2 <sup>nd</sup> Stage El.Heater	-	3,0	41,2	-	3,0	42,2	-	3,0	42,8	-	3,0	43,5	-	3,0	43,8	-	3,0	44,8
26	HR Exch.	88,1%	10,8	20,5	87,6%	8,4	21,5	85,5%	8,6	22,2	83,2%	8,7	22,8	81,8%	8,8	23,1	80,9%	9,0	23,9		
	1 <sup>st</sup> Stage El.Heater	-	3,0	31,8	-	3,0	32,8	-	3,0	33,5	-	3,0	34,0	-	3,0	34,3	-	3,0	35,1		
	2 <sup>nd</sup> Stage El.Heater	-	3,0	43,0	-	3,0	44,0	-	3,0	44,7	-	3,0	45,3	-	3,0	45,6	-	3,0	46,4		

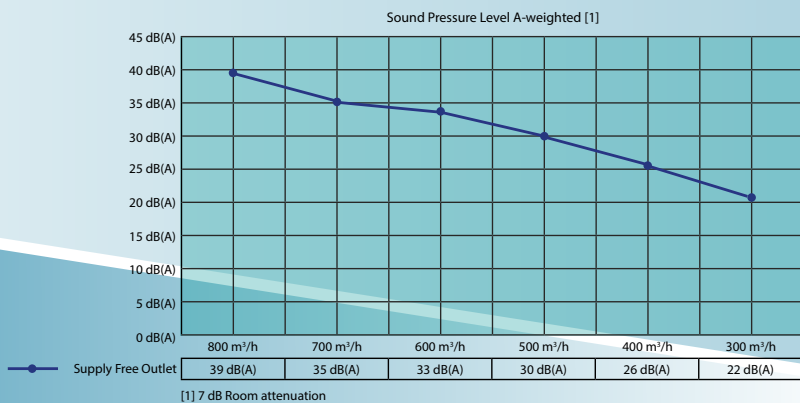
■ = Heat recovery exchanger frost risk!

\*Pre heater is recommended if outdoor air temperature below -10°C



# Acoustic Data

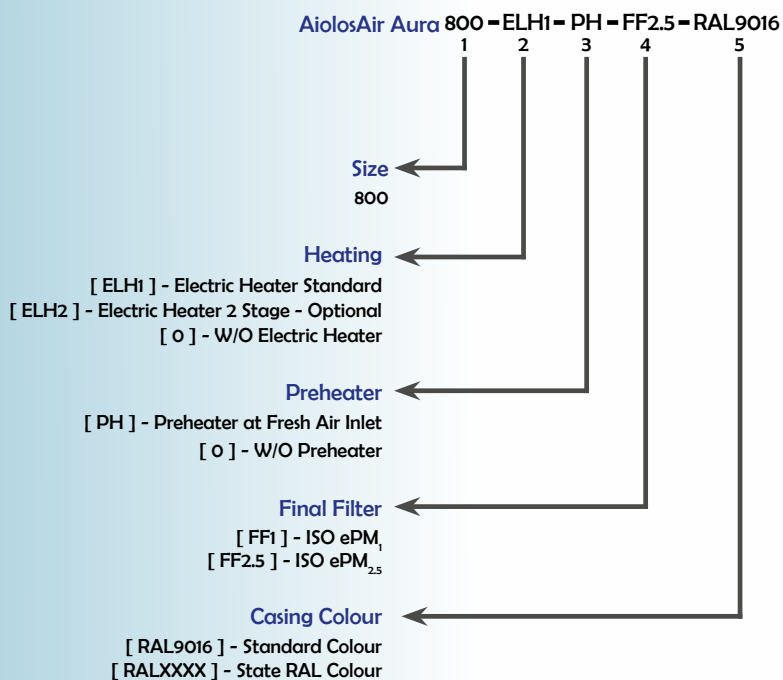
# Technical Data



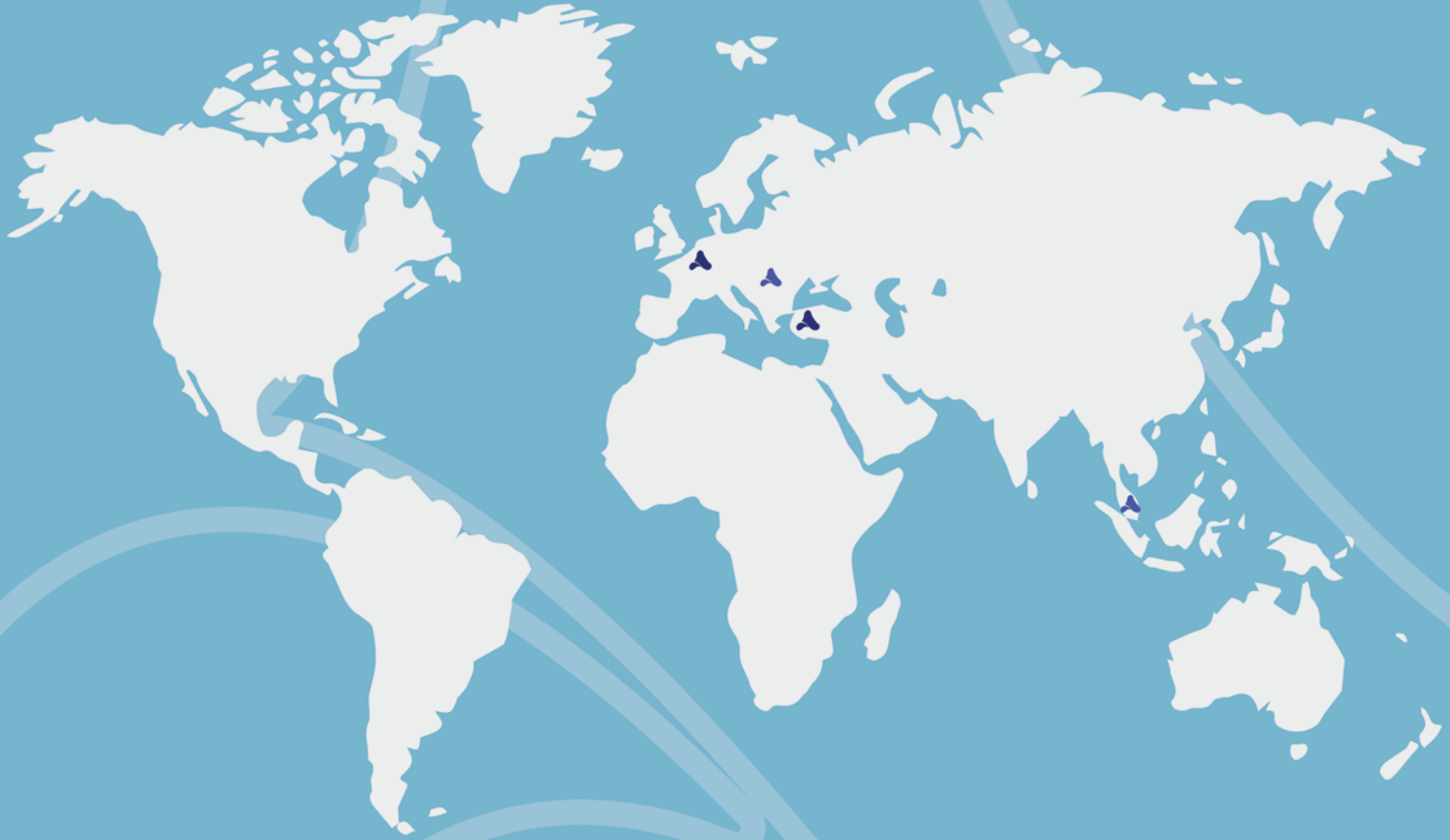
Air Volume	Supply Fan Power Input	Exhaust Fan Power Input	SFP	HR Eff.	HR Air Outlet Temp. <sup>[1]</sup>	El. Heater 1 <sup>st</sup> Stage	El. Heater 2 <sup>nd</sup> Stage	Sound Pressure Level
m³/h	Watt	Watt	kWs/m³	%	°C	°C	°C	dB(A)
800	143	133	1,15	87,1	17,9	29,1	40,3	39
700	85	76	0,72	87,5	18,0	31,1	44,2	35
600	56	42	0,44	87,9	18,1	33,1	48,1	33
500	34	27	0,27	88,6	18,3	37,1	52,0	30
400	20	18	0,17	89,2	18,5	41,0	N/A	26
300	11	12	0,1	89,8	18,7	43,0	N/A	22

[2] 22°C Indoor return air temp., -10°C outdoor supply air intake temp.

# Code Description







#### EU-West Regional Office

#### MEA Regional Office

#### EU-East Regional Office

#### APAC Regional Office



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