

NCD

Air handling units



FEATURES

- 24 sizes of central air handling units with double panelling with panel thickness of 50 mm
- Support structure realised in aluminium alloy sections and a large choice of panels.
- Wide range of sections and components to satisfy all plant engineering requirements
- Double intake centrifugal fans with forward or reverse blades.
- PLUG FAN type fan with Inverter regulation, able to adapt to the most varied system requirements

Structure:

- In aluminium sections with rounded edges both internally and externally allowing greater cleanliness
- New panelling and gaskets, able to guarantee reduced seepage in compliance with the EN1886 Standard
- Reduction of noise emission thanks to the use of material with high sound-absorption power
- Small dimensions and contained height

Internal components:

- New high-efficiency heat exchangers with small pressure drops
- Mixing chamber with three dampers. The configurations for the mixing chambers with three dampers are the following:
 - two upper dampers and an internal one for recirculation
 - two front dampers and a horizontal one for recirculation (for overlapping control units)
 - two lateral internal dampers and an internal for recirculation (configuration for expulsion and non-ducted fresh air intake)

Large availability of filters:

- Filters with large surfaces to reduce the pressure drops and increase the duration
- Cell pre-filters
- Roll filters

- Bag filters
- Absolute filters
- Activated carbon filters
- Germicidal lamp
- New efficient drop eliminator in PVC
- New heat recoverers with high heat exchange

Electric components

- Electronic regulation available able to optimise the performance and simplify installation of the control unit itself
- New high performance selection software

ACCESSORIES

- **Technical rooms**
- **Accessories for air intake/exhaust sections:**
 - flange
 - blank panel (to be perforated with care by the customer)
 - anti-vibration sheet on the intake/flow vents (with or without damper) with earth cable
 - aluminium grille (for internal dampers only)
 - manual command on the dampers
 - proportional servo-control
 - proportional servo-control with spring return
 - pedestrian grill on the floor dampers
- **Accessories for the fan-motor sections:**
 - Damper on the flow vent
 - overpressure damper
 - micro switch on the inspection hatch
- **Accessories common to several sections:**
 - Spot light with window with 24V bulb (the installer must envision the 24V power supply)
 - manometer with dial
 - pressure switch
 - instruments-probes holder GJ 1/4" double sleeve
 - floor reinforced with non-slip sheet steel

TECHNICAL DATA

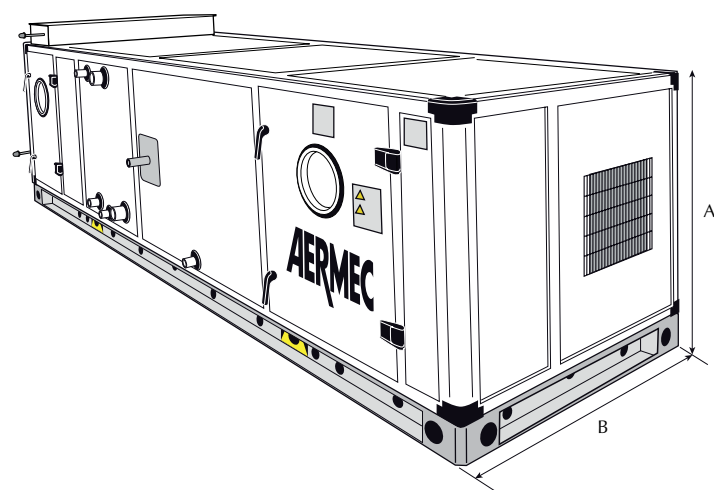
	Air flow rate (m ³ /h)	Coil section (m ²)
NCD 1	1.134	0,13
NCD 2	1.958	0,22
NCD 3	2.390	0,27
NCD 4	3.132	0,35
NCD 5	3.823	0,42
NCD 6	4.307	0,48
NCD 7	5.257	0,58
NCD 8	6.207	0,69
NCD 9	8.019	0,89
NCD 10	9.477	1,05
NCD 11	11.548	1,28
NCD 12	14.213	1,58
NCD 13	16.978	1,89
NCD 14	19.742	2,19
NCD 15	25.761	2,86
NCD 16	30.772	3,42
NCD 17	37.139	4,13
NCD 18	47.187	4,8
NCD 19	49.235	5,47
NCD 20	55.283	6,14
NCD 21	61.331	6,81
NCD 22	67.379	7,49
NCD 23	73.427	8,16
NCD 24	79.475	8,83

The performance refers to an air speed through the coils equal to 2.5 m/s.

SEZ B										
SEZ A	734	894	1054	1214	1374	1534	1694	1854	2014	
height with Stand	height without Stand	620	780	940	1100	1260	1420	1580	1740	1900
645	525	NCD1 1370-1640 m³/h	NCD1A 1880-2260 m³/h	NCD2 2350-2820 m³/h	NCD3 2870-3450 m³/h	NCD3C 3390-4070 m³/h	NCD4B 3890-4670 m³/h	NCD5B 4380-5250 m³/h	NCD6B 4860-5840 m³/h	NCD6D 5330-6400 m³/h
805	685	NCD1B 1970-2360 m³/h	NCD3A 2720-3260 m³/h	NCD4 3400-4080 m³/h	NCD5 4150-4980 m³/h	NCD6A 4900-5870 m³/h	NCD7A 5620-6740 m³/h	NCD8A 6320-7590 m³/h	NCD8C 7020-8430 m³/h	NCD8F 7700-9240 m³/h
965	845	NCD2A 2580-3090 m³/h	NCD4A 3550-4260 m³/h	NCD6 4440-5330 m³/h	NCD7 5420-6500 m³/h	NCD8 6400-7680 m³/h	NCD8D 7350-8820 m³/h	NCD9 8270-9920 m³/h	NCD9C 9180-11020 m³/h	NCD9F 10070-12090 m³/h
1125	1005	NCD3B 3180-3820 m³/h	NCD5A 4390-5270 m³/h	NCD6E 5490-6580 m³/h	NCD8B 6700-8030 m³/h	NCD8H 7910-9490 m³/h	NCD9A 9080-10890 m³/h	NCD10 10210-12250 m³/h	NCD10C 11340-13610 m³/h	NCD11 12440-14930 m³/h
1285	1165		NCD6C 5220-6270 m³/h	NCD7B 6530-7830 m³/h	NCD8G 7970-9560 m³/h	NCD9E 9410-11290 m³/h	NCD10A 10800-12960 m³/h	NCD10F 12150-14580 m³/h	NCD11A 13500-16200 m³/h	NCD12 14810-17770 m³/h
1445	1325			NCD8E 7570-9090 m³/h	NCD9B 9240-11090 m³/h	NCD10B 10910-13100 m³/h	NCD10G 12530-15040 m³/h	NCD11D 14100-16920 m³/h	NCD12A 15660-18800 m³/h	NCD12C 17180-20610 m³/h
1765	1645				NCD10D 11790-14150 m³/h	NCD11B 13920-16710 m³/h	NCD12B 15990-19190 m³/h	NCD13A 17990-21580 m³/h	NCD13D 19980-23980 m³/h	NCD14B 21920-26300 m³/h
2085	1965						NCD13B 19440-23330 m³/h	NCD14A 21870-26250 m³/h	NCD14E 24300-29160 m³/h	NCD15 26650-31980 m³/h
2405	2285								NCD15D 28620-34350 m³/h	NCD15G 31390-37670 m³/h
2565	2445									NCD16B 33760-40510 m³/h
SEZ B										
SEZ A	2334	2654	2974	3294	3614	3934	4254	4574		
height with Stand	height without Stand	2220	2540	2860	3180	3500	3820	4140	4460	
645	525									
805	685	NCD9D 9200-11040 m³/h								
965	845	NCD10E 12030-14440 m³/h	NCD11C 13990-16790 m³/h							
1125	1005	NCD11E 14860-17830 m³/h	NCD12D 17280-20730 m³/h	NCD13C 19700-23640 m³/h						
1285	1165	NCD13 17690-21230 m³/h	NCD14 20570-24680 m³/h	NCD14C 23450-28140 m³/h	NCD15B 26330-31590 m³/h					
1445	1325	NCD13E 20520-24620 m³/h	NCD14D 23860-28630 m³/h	NCD15C 27200-32640 m³/h	NCD15E 30540-36650 m³/h	NCD16A 33880-40660 m³/h				
1765	1645	NCD15A 26180-31410 m³/h	NCD15F 30440-36530 m³/h	NCD16C 34700-41640 m³/h	NCD17A 38970-46760 m³/h	NCD17D 43230-51870 m³/h	NCD18B 47490-56990 m³/h			
2085	1965	NCD16 31840-38200 m³/h	NCD16D 37020-44430 m³/h	NCD17C 42210-50650 m³/h	NCD18C 47390-56870 m³/h	NCD19A 52570-63090 m³/h	NCD20A 57760-69310 m³/h	NCD21A 62940-75530 m³/h	NCD21C 68130-81750 m³/h	
2405	2285	NCD17 37500-45000 m³/h	NCD18 43600-52320 m³/h	NCD19 49710-59650 m³/h	NCD20 55810-66980 m³/h	NCD21 61920-74300 m³/h	NCD22 68030-81630 m³/h	NCD23 74130-88960 m³/h	NCD24 80240-96280 m³/h	
2565	2445	NCD17B 40330-48390 m³/h	NCD18A 46890-56270 m³/h	NCD19B 53460-64150 m³/h	NCD20B 60030-72030 m³/h	NCD21B 66590-79910 m³/h	NCD22A 73160-87790 m³/h	NCD23A 79730-95670 m³/h	NCD24A 86290-103550 m³/h	

The performance refers to an air speed through the coils equal to 2.5 m/s.

DIMENSIONAL



	Section A (mm)	Section B (mm)
NCD1	645	735
NCD2	645	1055
NCD3	645	1215
NCD4	805	1055
NCD5	805	1215
NCD6	965	1055
NCD7	965	1215
NCD8	965	1375
NCD9	965	1695
NCD10	1.130	1695
NCD11	1.130	2015
NCD12	1.285	2015
NCD13	1.285	2335
NCD14	1.285	2655
NCD15	2.085	2015
NCD16	2.085	2335
NCD17	2.405	2335
NCD18	2.405	2655
NCD19	2.405	2975
NCD20	2.405	3295
NCD21	2.405	3615
NCD22	2.405	3935
NCD23	2.405	4255
NCD24	2405	4575

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responsibility or liability for errors or omissions.

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SPL 025-130

Swimming Pool Lines Air handling unit high efficiency for health centres

Air flow from 4000 to 13000 m³/h



DESCRIPTION

The units from the SPL series represent the ideal solution to guarantee the comfort conditions in small-medium spaces such as health centres, spa areas, fitness centres, small swimming pools, sports facilities, etc. The unit contains a refrigerant circuit and a system for the recovery of sensible and latent heat coming from the humid air extracted from the space, thereby being optimised for the reduction of energy consumption. The main function of the unit, which is a "plug and play" machine ready for use, is that of dehumidifying and at the same time ensuring control of the temperature and humidity conditions of the area served. The unit is fitted with an efficient heat recovery system on the water side, to be used to partially heat the swimming pool water at no cost. The structure and all the internal components are built to ensure the maximum resistance to corrosion.

CHARACTERISTICS

Sizes

- 5 sizes available

Structure

- Anodised aluminium profile with reinforced nylon corner pieces. Casing made from sandwich type panels (50mm thickness), with internal surface pre-painted galvanised steel, external in pre-painted galvanised steel and insulating material hot injected polyurethane with a density of 42 kg/m³, fixed without screws but with panel locking profiles, doors with keyless handles. This fixing method allows a uniform pressure on the casing, ensuring an excellent resistance to the leakage of air and water. The support structures and the seals around components are completely painted to ensure the maximum corrosion resistance. The bottom surfaces of the unit are fitted with drain panels in pre-painted galvanised steel with a central drain point piped sideways.

Thermal recovery section

- High efficiency static cross flow in pre-painted aluminium. Including dampers: recirculating damper used for the quick start up of the space, recirculating damper for the "primary" cycle, dampers on the air inlet and extract. All dampers are manufactured in anodised aluminium and are individually controlled by an external actuator for precise air flow control.

Refrigerant circuit

- Fitted with scroll compressor supplied with rubber anti-vibration feet, refrigerant gas/air heat exchanger coil with copper tubes and pre-painted aluminium fins and painted frame, filter, electronic expansion valve, liquid receiver, filter drier, controls (pressure transducers and visual indicators) and safeties (high and low pressure pressostats), brazed copper connections, refrigerant charge of environmentally friendly R410A. The refrigerant circuit is installed in a compartment isolated from the air flow to facilitate checks and maintenance.
- The units on request can also be realized without the refrigerant circuit. The size of the machine remains unchanged

Fan section:

- Treated with epoxy paint resistant to corrosion, fitted with "plug fans" with backward curved impeller of high output. Electrical motor directly coupled to the impeller suitable for inverter control (standard).

Filtration systems:

- Fitted as standard with panel filters in extract (G4 efficiency class according to EN779) and panel + bag filters (G4 + F9 efficiency class according to EN779) meet the requirements for the applicable standards for indoor air quality. Dirty filter differential pressure switches are provided as standard.

Hot water heating coil:

- With copper tubes and pre-painted aluminium fins to heat the supply air after dehumidification, controlled by a modulating 3 way valve (standard); this allows the accurate control of the supply air temperature. The frame of the coil is in painted galvanised steel to ensure the maximum resistance to corrosion.

Electrical panel:

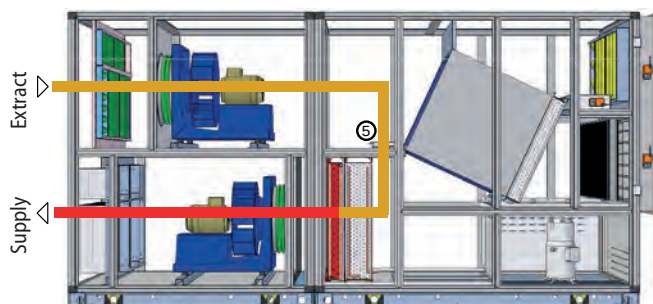
- Power and controls panel unit mounted. Electrical installation for the connection of power and controls, set in tubes or conduits with glands and grommets, IP55 protective rating. Remote panel supplied as standard for the control of all the main functions and display of alarms.

OPERATING SCHEMATICS

The principal operation modes of the unit are shown in the example schematics below.

In all the following schematics the hot water coil is always operating because the external air temperature is below 10°C with a required supply air temperature to compensate for the heat losses from the building.

"START UP" CYCLE



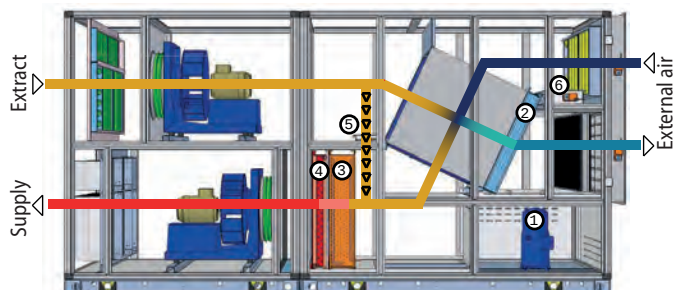
The operating mode is with no external air flow. The whole air flow is recirculated through damper 5 and returned to the pool area.

The hot water coil is operational.

The "start up cycle" is activated for the time necessary to heat up the area.

"DEHUMIDIFICATION" CYCLE

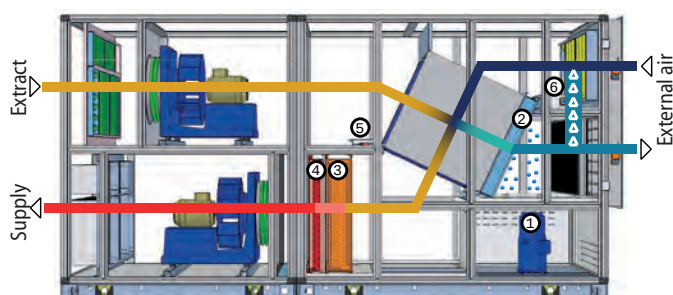
Dehumidification with external air



The operating mode is with external air dehumidifying the space, compensating for evaporation from the pool. The refrigerant circuit (consisting of the compressor 1 and the coils 2 and 3) allows the sensible and latent heat recovery of the extracted air to be transferred to the supply air or the water, through the thermal heat exchange consisting of the double heat exchanger on the water side.

The hot water coil 4 supplements, if necessary, the heating capacity provided by the refrigerant circuit, placed downstream of the entering air flow (condensing coil 3).

Dehumidification with external air and primary cycle

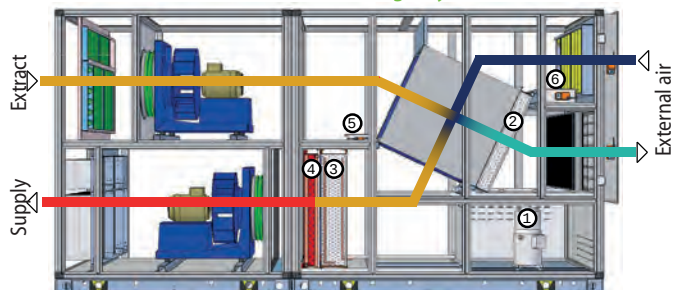


When required the compressor also assists in the dehumidification of the pool area.

The supply air flow is modulated by the fan inverter to reach the required hygrometric conditions.

As a function of the external ambient temperature the unit modifies the operating mode to achieve the best efficiency possible.

Dehumidification with external air (night cycle)



In night time mode the unit modifies the operating settings to adapt to the changes of evaporation from the pool and reduce consumption to the minimum.

TECHNICAL DATA

SPL		025	040	060	100	130
Nominal airflow (supply/extract)	m ³ /h	2500	4000	6300	10000	13000
Available pressure (supply/extract)	Pa	400	400	400	400	400
Heat recovery capacity recovered ¹	kW	7,9	12,6	20,4	32,0	41,5
Max heat recovery efficiency ¹	%	80,8	79,3	80,1	79,5	79,4
Refrigerant circuit recovered capacity ¹	kW	7,5	10,5	21,3	31,7	45,7
Total recovered capacity ¹	kW	15,4	23,1	41,6	63,7	87,3
Compressor power input ¹	kW	1,3	1,6	3,7	6,0	8,4
COP ¹	-	11,8	14,4	11,2	10,6	10,4
COP ²	-	3,9	4,0	4,1	4,0	4,1
Total dehumidification capacity ¹	kg/h	15,5	25,2	40,1	63,7	82,7
Supply fan power input	kW	1,6	2,6	3,7	5,9	7,6
Extract fan power input	kW	1,2	1,9	2,7	4,5	5,7
Type / number of compressors	n°	Scroll / 1				
Hot water heating coil (standard)						
Capacity (without recovery active) ¹	kW	26,1	35,4	61,6	95,3	124,5
Water flow rate ³	l/h	2250	3050	5300	8200	10700
Water pressure drop ³	kPa	23,5	43,7	33,1	48,8	46,3
Plate heat exchanger R410A/non aggressive water (standard)						
Water flow rate nominal ⁴	l/h	950	1120	2500	3600	5400
Pressure drop ⁴	kPa	19	19	31	32	33
Plate heat exchanger accessible non aggressive water/pool water (standard)						
Water flow rate nominal pool ⁵	l/h	1200	1400	3100	4500	6800
Pressure drop pool side ⁵	kPa	32,4	34	31,4	33	34,5
Pressure drop intermediate circuit side ⁵	kPa	21,2	22,3	20,6	21,6	22,5
Electrical data						
Unit power supply		400 V - 3 ph - 50 Hz				
Maximum total current input supply fan	A	3,5	6,2	11	14,6	15
Maximum total current input extract fan	A	2,6	4,9	6,4	11,3	11,3
Unit maximum current input	A	11,6	17,1	32,4	49,3	61,3
Unit starting current	A	32,1	46,1	91,4	181,9	184,3

¹ External air 0°C, 80% RH; internal air 29°C, 60% RH.

² Values as per conditions of D.M. 7 april 2008 for heating only operation.

³ Water temperature inlet/outlet 70/60°C; water pressure drop including 3 way valve.

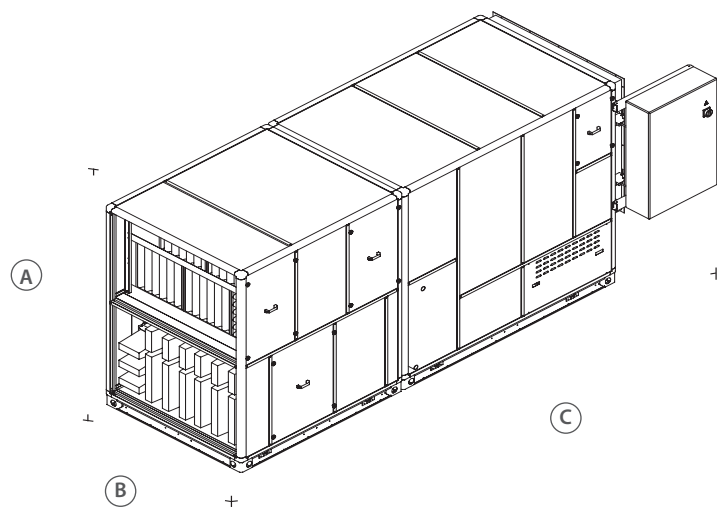
⁴ Water temperature inlet/outlet non aggressive 27/37°C.

⁵ Water temperature inlet/outlet intermediate circuit 37/27°C;

water temperature inlet/outlet pool 25/35°C

Preliminary technical data, subject to modification.

DIMENSIONAL DATA



SPL			025	040	060	100	130
Height (including base H=120mm) *	A	mm	1765	1765	2245	2405	2405
Width *	B	mm	895	895	1055	1375	1695
Length *	C	mm	3230	3390	4190	4190	4670
Weight		kg	900	1000	1350	2060	2600

* The dimensions remain unchanged even if the unit, on request, is supplied without a refrigerant circuit.

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SPL 160-250

Swimming Pool Lines Air handling unit high efficiency for health centres.

Air flow from 16000 to 25000 m³/h.



DESCRIPTION

The units from the SPL series represent the ideal solution to guarantee the comfort conditions in small-medium spaces such as health centres, spa areas, fitness centres, small swimming pools, sports facilities, etc. The unit contains a refrigerant circuit and a system for the recovery of sensible and latent heat coming from the humid air extracted from the space, thereby being optimised for the reduction of energy consumption. The main function of the unit, which is a "plug and play" machine ready for use, is that of dehumidifying and at the same time ensuring control of the temperature and humidity conditions of the area served. The unit is fitted with an efficient heat recovery system on the water side, to be used to partially heat the swimming pool water at no cost. The structure and all the internal components are built to ensure the maximum resistance to corrosion.

CHARACTERISTICS

Sizes

- 3 sizes available

Structure

- Anodised aluminium profile with reinforced nylon corner pieces. Casing made from sandwich type panels (50mm thickness), with internal surface pre-painted galvanised steel, external in pre-painted galvanised steel and insulating material hot injected polyurethane with a density of 42 kg/m³, fixed without screws but with panel locking profiles, doors with keyless handles. This fixing method allows a uniform pressure on the casing, ensuring an excellent resistance to the leakage of air and water. The support structures and the seals around components are completely painted to ensure the maximum corrosion resistance. The bottom surfaces of the unit are fitted with drain panels in pre-painted galvanised steel with a central drain point piped sideways.

Thermal recovery section

- High efficiency static cross flow in pre-painted aluminium. Including dampers: recirculating damper used for the quick start up of the space, recirculating damper for the "primary" cycle, dampers on the air inlet and extract. All dampers are manufactured in anodised aluminium and are individually controlled by an external actuator for precise air flow control.

Refrigerant circuit

- Fitted with scroll compressor supplied with rubber anti-vibration feet, refrigerant gas/air heat exchanger coil with copper tubes and pre-painted aluminium fins and painted frame, filter, electronic expansion valve, liquid receiver, filter drier, controls (pressure transducers and visual indicators) and safeties (high and low pressure pressostats), brazed copper connections, refrigerant charge of environmentally friendly R410A. The refrigerant circuit is installed in a compartment isolated from the air flow to facilitate checks and maintenance.
- The units on request can also be realized without the refrigerant circuit. The size of the machine remains unchanged

Fan section:

- Treated with epoxy paint resistant to corrosion, fitted with "plug fans" with backward curved impeller of high output. Electrical motor directly coupled to the impeller suitable for inverter control (standard).

Filtration systems:

- Fitted as standard with panel filters in extract (G4 efficiency class according to EN779) and panel + bag filters (G4 + F9 efficiency class according to EN779) meet the requirements for the applicable standards for indoor air quality. Dirty filter differential pressure switches are provided as standard.

Hot water heating coil:

- With copper tubes and pre-painted aluminium fins to heat the supply air after dehumidification, controlled by a modulating 3 way valve (standard); this allows the accurate control of the supply air temperature. The frame of the coil is in painted galvanised steel to ensure the maximum resistance to corrosion.

Electrical panel:

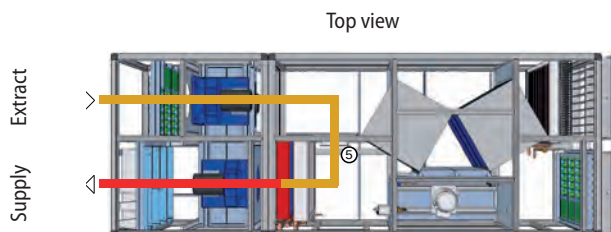
- Power and controls panel unit mounted. Electrical installation for the connection of power and controls, set in tubes or conduits with glands and grommets, IP55 protective rating. Remote panel supplied as standard for the control of all the main functions and display of alarms.

OPERATING SCHEMATICS

The principal operation modes of the unit are shown in the example schematics below.

In all the following schematics the hot water coil is always operating because the external air temperature is below 10°C with a required supply air temperature to compensate for the heat losses from the building.

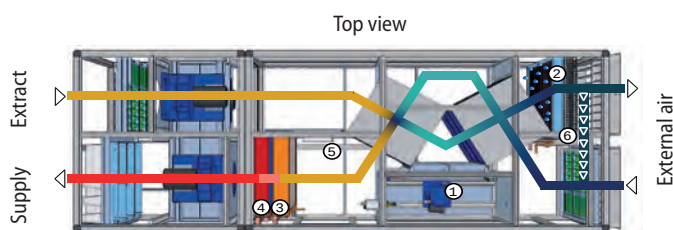
"START UP" CYCLE



The operating mode is with no external air flow. The whole air flow is recirculated through damper 5 and returned to the pool area. The hot water coil is operational. The "start up cycle" is activated for the time necessary to heat up the area

"DEHUMIDIFICATION" CYCLE

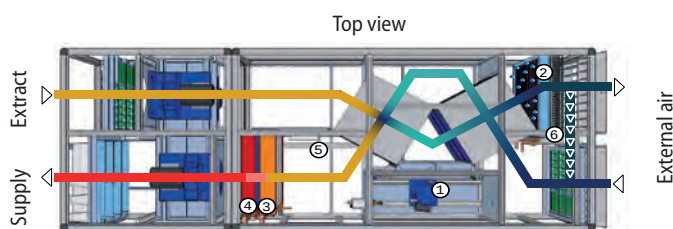
Dehumidification with external air



The operating mode is with external air dehumidifying the space, compensating for evaporation from the pool. The refrigerant circuit (consisting of the compressor 1 and the coils 2 and 3) allows the sensible and latent heat recovery of the extracted air to be transferred to the supply air or the water, through the thermal heat exchange consisting of the double heat exchanger on the water side.

The hot water coil 4 supplements, if necessary, the heating capacity provided by the refrigerant circuit, placed downstream of the entering air flow (condensing coil 3).

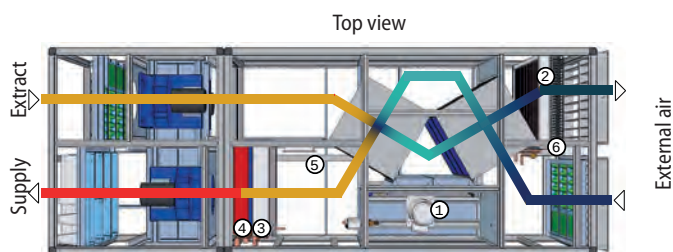
Dehumidification with external air and alpha cycle



When required the compressor also assists in the dehumidification of the pool area. The supply air flow is modulated by the fan inverter to reach the required hygrometric conditions.

As a function of the external ambient temperature the unit modifies the operating mode to achieve the best efficiency possible.

Dehumidification with external air (night cycle)



In night time mode the unit modifies the operating settings to adapt to the changes of evaporation from the pool and reduce consumption to the minimum.

TECHNICAL DATA

SPL		160	200	250
Nominal airflow (supply/extract)	m³/h	16000	20000	25000
Available pressure (supply/extract)	Pa	400	400	400
Heat recovery capacity recovered ¹	kW	59,6	68,6	89,2
Max heat recovery efficiency ¹	%	93	86	89
Refrigerant circuit recovered capacity ¹	kW	46,3	53,6	69,4
Total recovered capacity ¹	kW	105,9	122,2	158,6
Compressor power input ¹	kW	8,5	9,2	12,8
COP ¹	-	12,5	13,3	12,4
COP ²	-	4,0	3,9	3,9
Total dehumidification capacity ¹	kg/h	102,2	127,6	159,5
Supply fan power input	kW	10,9	13,7	17,7
Extract fan power input	kW	8,3	9,8	12,4
Type / number of compressors	n°	Scroll / 1		
Hot water heating coil (standard)				
Capacity (without recovery active) ¹	kW	131,9	182,7	205,9
Water flow rate 3	l/h	11300	15700	17700
Water pressure drop ³	kPa	43,7	37,9	42,2
Plate heat exchanger R410A/non aggressive water (standard)				
Water flow rate nominal ⁴	l/h	5760	6450	8260
Pressure drop ⁴	kPa	33	33	33
Plate heat exchanger accessible non aggressive water/pool water (standard)				
Water flow rate nominal pool ⁵	l/h	7200	8100	10400
Pressure drop pool side ⁵	kPa	34,2	34,7	34,2
Pressure drop intermediate circuit side ⁵	kPa	22,3	22,7	22,2
Electrical data				
Unit power supply		400 V - 3 ph - 50 Hz		
Maximum total current input supply fan	A	29,2	41	42
Maximum total current input extract fan	A	22	22,6	30
Unit maximum current input	A	86,2	99,6	123
Unit starting current	A	209	223	287

¹ External air 0°C, 80% RH; internal air 29°C, 60% RH.

² Values as per conditions of D.M. 7 april 2008 for heating only operation.

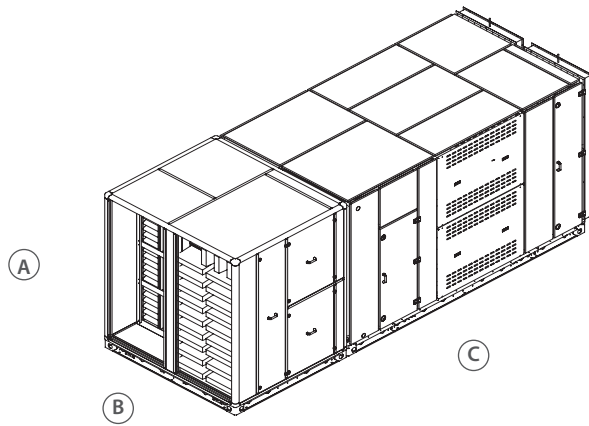
³ Water temperature inlet/outlet 70/60°C; water pressure drop including 3 way valve.

⁴ Water temperature inlet/outlet non aggressive 27/37°C.

⁵ Water temperature inlet/outlet intermediate circuit 37/27°C;
water temperature inlet/outlet pool 25/35°C

Preliminary technical data, subject to modification.

DIMENSIONAL DATA



SPL			160	200	250
Height (including base H=120mm) *	A	mm	2085	2405	2405
Width *	B	mm	2015	2175	2335
Length*	C	mm	5790	5790	6430
Weight		kg	2780	3250	3580

* The dimensions remain unchanged even if the unit, on request, is supplied without a refrigerant circuit.

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ENERGY

Air handling unit for outside air with high energy efficiency

Airflow from 4000 to 25000 m³/h



DESCRIPTION

The units of the Energy series represent the maximum expression of technical innovation for the treatment of outside air. The Energy series has been specifically designed to reduce to the minimum the operating energy consumption, which represents around 80% of the entire life cycle cost of an air treatment unit. The double heat recovery system (static and active) and the innovative cooling and adiabatic humidification system, allow the supply of air at the desired conditions with the minimum energy expenditure. The damper for total bypass allows free-cooling in the intermediate season, exploiting to the maximum the free external thermal contribution. The Energy series is manufactured in full compliance with the standard EN1886 with regards to mechanical resistance, air leakage, thermal and acoustical insulation of the casing.

CHARACTERISTICS

Versions

- 5 sizes available

Plug and play

- The units of the Energy series are delivered ready for use. In particular, the machine is equipped with a complete control system and the refrigerant circuit is completely assembled and tested, minimising the time and cost of installation and start up

Structural assembly

- In aluminium profile with rounded edges and reinforced nylon corner pieces. The casing is manufactured from sandwich panels of 50 mm thickness, fixed to the frame with an exclusive panel fixing without the use of screws. This fixing method allows a uniform pressure on the casing, ensuring an excellent resistance to the leakage of air and water

Modulating bypass damper

- In aluminium with opposed aerofoil blades, installed in the extract air flow to permit free-cooling. Additional recirculating damper (only in the Eco version). The accurate manufacturing minimises air leakage

Plug fans

- Very high efficiency directly coupled to the motor. Inverter for continuous control of supply and extract air flow

Filtration systems

- Various types of filters are available (panel and bag), to satisfy any filtration requirement and ensure compliance with the current air quality standards. Dirty filter pressure switches supplied as standard

Static heat recovery

- Integrated reversible heat pump. Tandem scroll compressor (single for sizes 040 and 060) supplied with rubber anti-vibration feet; continuous capacity control through an inverter to ensure the maximum energy savings even at part load. Double expansion valve electronically controlled. 4 way refrigerant cycle reversing valve. Coils manufactured with copper tubes and prepainted aluminium fins. Environmentally friendly refrigerant R410A ensures improved energy efficiency for the refrigerant cycle

Re-heat coil

- Water in the Standard version (optional) and Eco version (standard), hot gas in the Dry version (standard)

Cooling system

- Adiabatic with water spray in the extract air, with self cleaning spray nozzles and high pressure pump module, having the function of maximising the heat exchange in the double heat recovery system

Water humidification system

- Spray in the supply air. Lower surfaces of the unit equipped with drain panels with central condensate drain to ensure the continuous drainage of water and avoid stagnation

Electrical panel

- Complete with power and controls unit mounted. Remote panel for the control of all the main functions and display of alarms

Microprocessor controller

- Capable of controlling the various operating modes (control of outside air, control of total air), ensuring the maximum energy saving in each operating condition. RS485 interface supplied as standard (MODBUS protocol) for connection to a supervisory systems and remote control. Manual season change over (summer/winter)

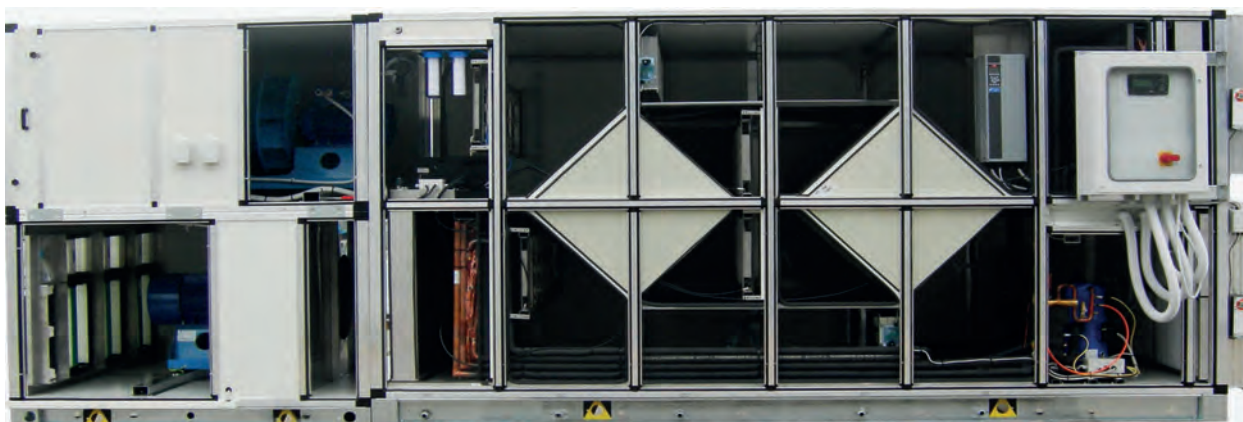
On demand

- Hot water re-heat coil (only Standard version, as standard on Eco version), enthalpy free-cooling (available only with ambient temperature control), bag filters

Refrigerant circuit with
inverter compressor

Modulating dampers for
free-cooling

Humidification system
pump



Fan inverter

Re-heater coil (optional)

Electrical panel with
power and controls

Double static heat
recovery

VERSION	Adiabatic cooling / humid- ification	Recirculating damper	Hot gas re-heat	Water re-heat
Energy Std	●	-	-	Optional
Energy Dry	●	-	●	-
Energy Eco	●	●	-	●

TECHNICAL DATA

Model - ENERGY Dry			040	060	100	160	250
Air flow rate (supply/return)	(nom)	m ³ /h	4000	6000	10000	16000	25000
	(min)	m ³ /h	3600	5100	8500	13000	20000
	(max)	m ³ /h	4800	7200	11500	17600	25000
Cooling Capacity		kW	40	57	99	155	203
Total input power		kW	10,2	14,6	25,7	39,1	56
EER		W/W	3,92	3,90	3,85	3,96	3,63
Heating Capacity		kW	67	88	146	229	313
Total input power		kW	13,5	14,3	22,1	34,7	50,5
COP		W/W	4,96	6,15	6,61	6,60	6,20
Thermodynamic recovery							
Cooling Capacity - max (f.a cooling)		kW	24,4	34,4	63,5	93	114,9
Total input power - max (f.a cooling)		kW	7,1	9,1	17	23,7	30,1
Heating capacity - max. (f.a Heating)		kW	28,5	32,1	54,9	78,6	99,6
Total input power - max (f.a Heating)		kW	10,4	8,7	13,2	18,9	23,8
Static recovery + adiabatic							
Max recovered summer power		kW	15,2	22,7	35,5	61,6	87,9
Sensitive Summer Static Efficiency		%	72	71	69	74	66
Max capacity recovered Winter		kW	38,7	55,9	90,8	150,8	213,4
Static Efficiency Sensitive Winter		%	84	82	80	80	76

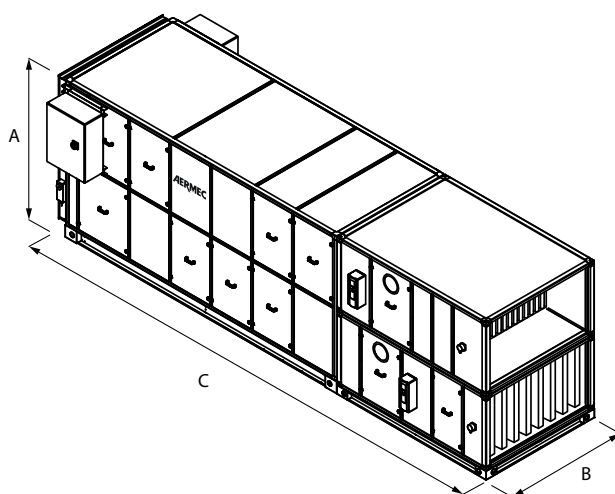
Model - ENERGY Eco/Std			040	060	100	160	250
Air flow rate (supply/return)	(nom)	m ³ /h	4000	6000	10000	16000	25000
	(min)	m ³ /h	3600	5100	8500	13000	20000
	(max)	m ³ /h	4800	7200	11500	17600	25000
Cooling Capacity		kW	37	54	95	148	194
Total input power		kW	12,2	16,8	28,8	43,9	62,8
EER		W/W	3,03	3,21	3,30	3,37	3,09
Heating Capacity		kW	60	88	146	229	313
Total input power		kW	8,9	14,3	22,1	34,7	50,5
COP		W/W	6,74	6,15	6,61	6,60	6,20
Thermodynamic recovery							
Cooling Capacity - max (f.a cooling)		kW	22,1	31,3	59,2	87,0	93,5
Total input power - max (f.a cooling)		kW	9,1	11,3	20,1	28,5	36,9
Heating capacity - max. (f.a Heating)		kW	21,0	32,1	54,9	78,6	99,6
Total input power - max (f.a Heating)		kW	5,8	8,7	13,2	18,9	23,8
Static recovery + adiabatic							
Max recovered summer power		kW	15,2	22,7	35,5	61,6	73,8
Sensitive Summer Static Efficiency		%	72	71	69	74	69
Max capacity recovered Winter		kW	38,7	55,9	90,8	150,8	179,6
Static Efficiency Sensitive Winter		%	84	82	80	80	79

- Cooling Mode
 External Air Temperature: 35 °C; RH 40%; Ambient Temperature: 26 °C; Humidity Ambient 50 %
■ Heating Mode
 External Air Temperature: -10 °C; Humidity External Air 90%; Ambient Temperature: 20 °C; Humidity Ambient 50 %

TECHNICAL DATA

GENERAL DATA		040	060	100	160	250
Electrical data						
Maximum absorbed current	A	50,3	53,6	80,3	113,4	146
Compressors						
Compressors	type	scroll	scroll	scroll	scroll	scroll
	n°	1	1	2	2	2
Circuits	n°	1	1	1	1	1
Refrigerant gas	type	R410A	R410A	R410A	R410A	R410A
Supply fans						
Fans	type			plug-fan		
	n°			1		
Recovery fans						
Fans	type			plug-fan		
	n°			1		
Power supply	V/ph/Hz			400V/3N		

DIMENSIONAL DATA



Mod. ENERGY		Vers.	040	060	100	160	250
Height	(mm) A	tutte	1810	1810	2130	2450	2450
Width	(mm) B	tutte	1055	1375	1695	2015	2335
Length	(mm) C	tutte	4830	4830	5630	6270	6270
Weight Standard version	(kg)		1400	1800	2300	2900	3500

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