SPL 160-250

Swimming Pool Lines air handling unit for health centres

Air flow rate 16000 ÷ 25000 m3/h

- **Maximum installation flexibility**
- **EC fan Plug-fan**
- **Large range of capacities.**

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

FEATURES

Sizes

Indoor unit available in 3 sizes.

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/m^3, 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.

Electric power board

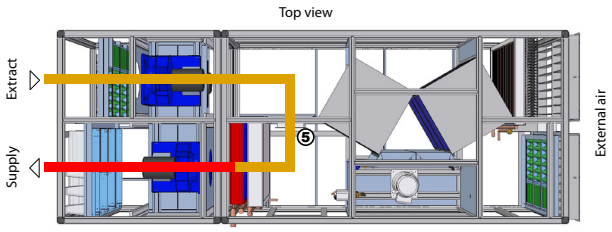
Power and controls panel unit mounted. Electrical installation for the connection of power and controls, set in tubes or conduits with glands and grommets, IP55 protective rating. Remote panel supplied as standard for the control of all the main functions and display of alarms.

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.

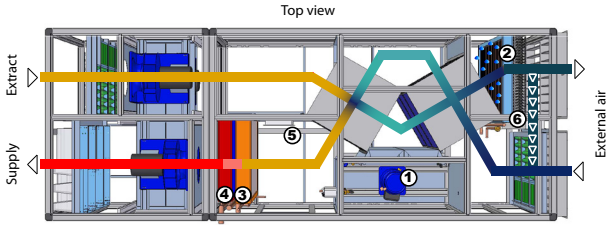
"START UP" CYCLE



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.

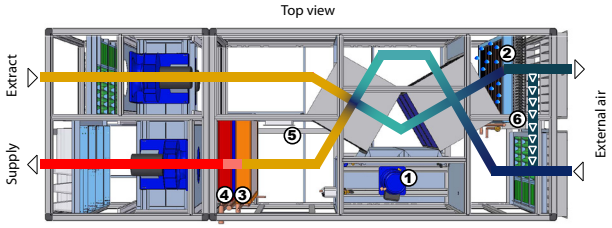
"DEHUMIDIFICATION" CYCLE

Dehumidification with external air



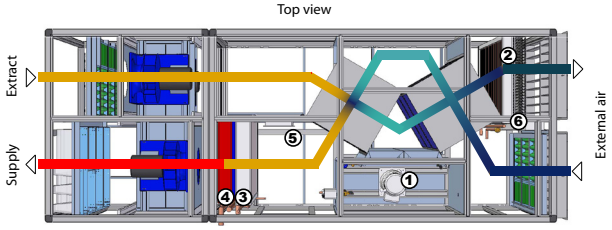
The operating mode is with external air dehumidifying the space, compensating for evaporation from the pool. The refrigerant circuit (consisting of the compressor 1 and the coils 2 and 3) allows the sensible and latent heat recovery of the extracted air to be transferred to the supply air or the water,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

ehumidification 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.

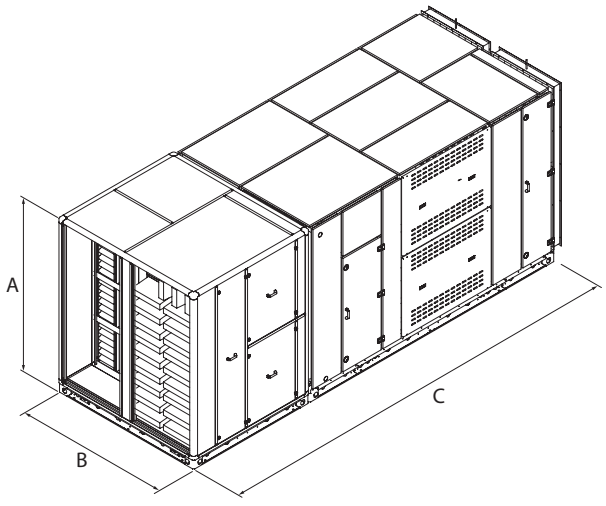
PERFORMANCE SPECIFICATIONS

SPL			160	200	250
Nominal air flow rate (supply / recovery)		m^3/h	16000	20000	25000
Available pressure (supply/recovery)		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 absorbed power	(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		no.		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)					
Nominal water flow rate	(4)	l/h	5760	6450	8260
Pressure drops	(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
Electric data					
Unit power supply				400 V - 3 ph - 50 Hz	
Maximum total current input supply fan		A	29,2	41,0	42,0
Maximum total current input extract fan		A	22,0	22,6	30,0
Unit maximum current input		A	86,2	99,6	123,0
Unit starting current		A	209,0	223,0	287,0

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.

DIMENSIONS



SPL			160	200	250
A (including base H=120mm)	*	mm	2085	2405	2405
B	*	mm	2015	2175	2335
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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