

## Air conditioning unit with counterflow plate heat exchanger for medium-sized and large public swimming pool halls

ThermoCond public



Automatically selects the most economical operating mode!

# ThermoCond 38

AIR VOLUME FLOW: 2,600 – 35,100 m<sup>3</sup>/h

Comes with our Eurovent certified MB 50 housing.



### At a glance:

- ▶ Heat recovery rate of more than 95% with just 150 Pa pressure drop
- ▶ Designed for the requirements of the highest energy efficiency classes
- ▶ HRC class H1, even at high air velocities
- ▶ Energy-saving EC fans
- ▶ Optionally: Clean water heater
- ▶ Integrated defrosting function
- ▶ Thermal bridge factor  $k_b = 0.78$  - class TB1
- ▶ Two-stage supply air filtration
- ▶ Freely configurable HVAC system
- ▶ Load-dependent variable volume flow rate adjustment
- ▶ Fulfils the requirements of VDI 6022

Devices of the series 38 achieve a very high energy efficiency, since the integrated program only adds as much air as is required for dehumidification of the pool hall air. ThermoCond 38 dehumidifies exclusively with outside air. The design ensures the cleanability according to VDI 6022. The integrated

counterflow plate heat exchanger reaches a real counter flow share of 80% with highest heat recovery rates. Optionally the device can be equipped with a fresh water heater for an even more efficient use of the heat energy contained in the exhaust air.

### Further performance parameters and options:

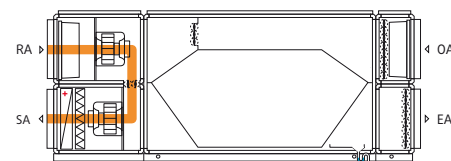
- Corrosion-free counterflow plate heat exchanger made from polypropylene
  - Pumped hot water heating coil
  - Air filtration in all operating conditions, with filters in return air, outside air supply air
  - Constantly regulated recirc air heating damper
  - Recirculation air defrost damper
  - Integrated freely programmable control and regulation unit
  - Complete unit, contains all structural elements for heating, dehumidification and ventilation
  - Intensive quality inspection with factory test run
  - Cleaning of the heat exchanger possible in mounted position
- Options:
- Integrated heat recovery bypass by means of RA/EA and OA/SA dampers
  - Recuperator in short version
  - Sound absorber
  - Outdoor installation
  - Remote maintenance
  - Clean water heater
  - And many more

## Functional description

### Standby mode

If no requirements are specified regarding temperature regulation or dehumidification when the swimming pool hall is in standby mode, the system operates

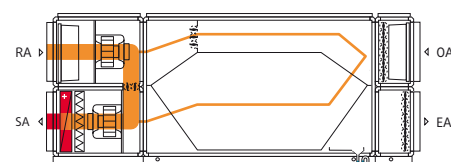
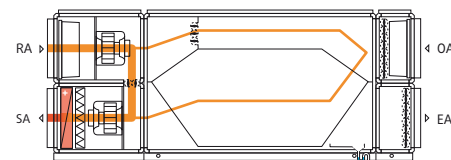
only in recirculation mode. The air circulation in the swimming pool hall is guaranteed, with the fans working at a lower capacity.



### Recirculation Air Operation (heating)

The heating coil heats the swimming pool hall as required in recirculation mode. In order to reduce the internal pressure losses, the recirculation air

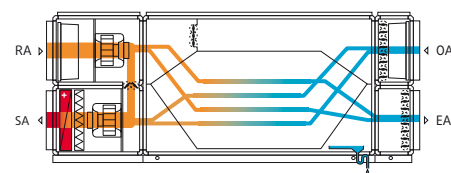
defrost damper is also opened. The outside air and exhaust air dampers are closed.



### Bathing Mode and Standby mode with Dehumidification Requirement

The swimming pool hall is dehumidified through the addition of outside air to the recirculation air volume flow. In swimming pool mode the minimum required amount of outside air is added to the recirculation air for hygienic reasons (VDI 2089). The proportion of outside air depends on the

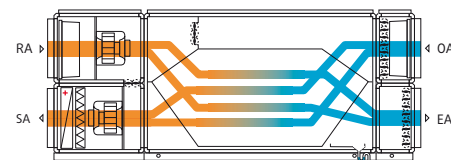
current evaporation of water (and therefore the occupancy level of the swimming pool hall), as well as the outside air humidity. This is continuously and automatically adjusted. If the waste heat recovery is not sufficient for achieving the desired supply air temperature, the supply air is reheated in the heating coil.



### Outside Air / Exhaust Air Mode

In the case of rising outside air humidity, the recirculation air damper is continuously closing as required. When the outside air humidity is high, the damper closes

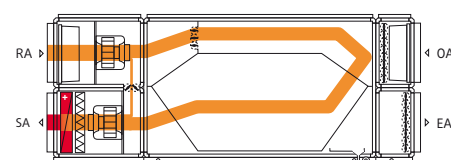
completely. The system works at 100% outside air / exhaust air operation through the counterflow plate heat exchanger.



### Defrost Operation

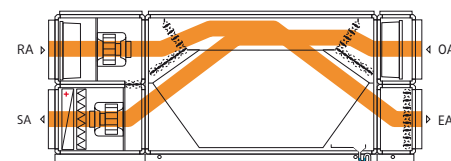
All recuperative heat exchangers tend to ice over in the case of low outside temperatures. Through the integrated recirculation air defrost damper, the heat exchanger is quickly and efficiently defrosted. The

warm return air passes right through the counterflow plate heat exchanger and melts any possible ice. During the defrosting process, the technical design prevents re-evaporation in the supply air.



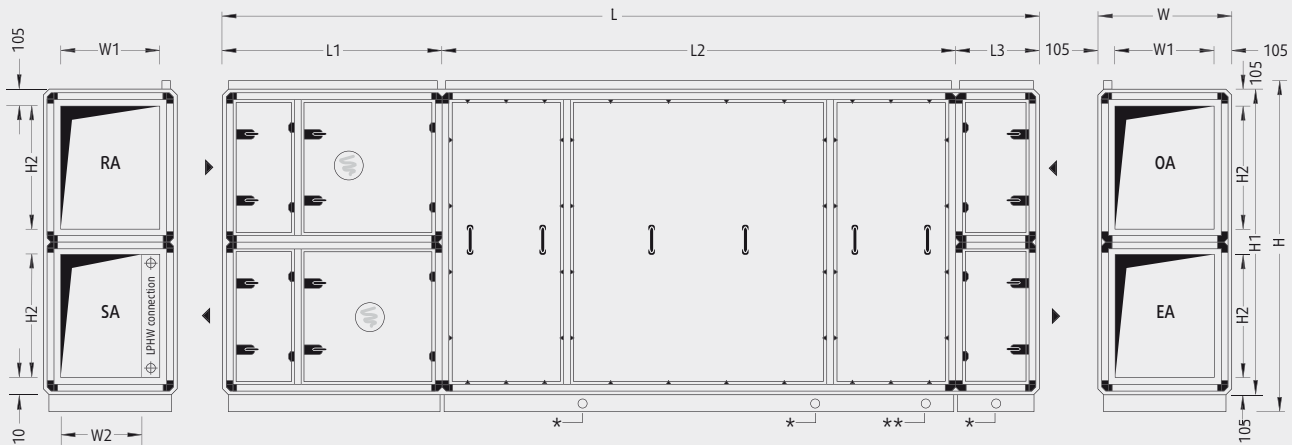
**As an option** the device unit can be equipped with the heat exchanger bypass. The proportion of the air guided through the heat exchanger and the

bypass can be regulated as required up to free ventilation.



# ThermoCond Type 38

## System dimensions and weights



**Important!** Where a system is operated in parallel, the supply air and return air ducts of the two units have to be brought together.

Where units are run in parallel, each unit has a controls cabinet.

Mirror-image design possible.

- \* Floor drain
- \*\* Condensate drainage

Unit type	L <sup>1</sup>	W <sup>2</sup>	H <sup>3</sup>	L1 <sup>1</sup>	L2 <sup>1</sup>	L3 <sup>1</sup>	W1	W2	H1	H2	Weight <sup>1</sup>
38 03 01	4,810	790	1,700	1,240	2,970	600	580	510	1,520	580	1,190
38 05 01	4,970	1,110	1,700	1,400	2,970	600	900	830	1,520	580	1,460
38 06 01	5,610	790	2,340	1,400	3,610	600	580	420	2,160	900	1,600
38 10 01	5,610	1,110	2,340	1,400	3,610	600	900	740	2,160	900	1,900
38 13 01	5,770	1,430	2,340	1,560	3,610	600	1,220	1,060	2,160	900	2,350
38 16 01	5,770	1,750	2,340	1,560	3,610	600	1,540	1,380	2,160	900	2,650
38 19 01	5,770	2,070	2,340	1,560	3,610	600	1,860	1,700	2,160	900	3,000
38 25 01	6,250	2,070	2,980	1,560	4,090	600	1,860	1,700	2,800	1,220	3,900
38 29 01	6,250	2,390	2,980	1,560	4,090	600	2,180	2,020	2,800	1,220	4,300
38 37 01	6,250	3,030	2,980	1,560	4,090	600	2,820	2,660	2,800	1,220	5,700

For service work, a clearance corresponding to dimension W is required on the operating side of the unit. If dimension W is smaller than one metre, please leave a clearance of one metre. For service work above the unit, please allow 50 mm working height clearance above the cable duct. For service work at unit type 38 37 01 a clearance at the rear of at least 1.500 mm is required.

Please comply with the dimensions for body size, air duct connections and electrical controls cabinet.

All length dimensions in mm, weight in kg., weight incl. controls cabinet.

- 1 May change depending on chosen option, e.g. recuperator in short version (- 960 mm)
- 2 Door fitting assembly increase unit width by 65 mm each operating side
- 3 incl. 120 mm base frame, incl. 60 mm cable duct

3 transportation units are supplied, including controls cabinet until unit type 38 29 01. Unit type 38 37 01 is delivered in 4 transportation units including controls cabinet. Further partitioning for smaller apertures possible (at extra cost).

### Largest transport unit

Unit Type	L <sup>1</sup>	W	H <sup>3</sup>	Weight <sup>1</sup>
38 03 01	2,970	790	1,700	620
38 05 01	2,970	1,110	1,700	760
38 06 01	3,610	790	2,340	900
38 10 01	3,610	1,110	2,340	1,100
38 13 01	3,610	1,430	2,340	1,300
38 16 01	3,610	1,750	2,340	1,500
38 19 01	3,610	2,070	2,340	1,720
38 25 01	4,090	2,070	2,980	2,300
38 29 01	4,090	2,390	2,980	2,600
38 37 01	4,090	1,515	2,980	1,750

### Controls cabinet

Unit Type	H x W x D <sup>1</sup>	Position at unit
38 03 01	1,120 x 640 x 210	SA/RA side
38 05 01	1,120 x 640 x 210	SA/RA side
38 06 01	1,120 x 640 x 210	SA/RA side
38 10 01	1,120 x 640 x 210	SA/RA side
38 13 01	1,120 x 640 x 210	SA/RA side
38 16 01	1,120 x 640 x 210	SA/RA side
38 19 01	1,120 x 640 x 210	SA/RA side
38 25 01	1,280 x 640 x 210	SA/RA side
38 29 01	1,280 x 640 x 210	SA/RA side
38 37 01	1,280 x 640 x 210	SA/RA side

## Technical specifications and services

Unit Type		38 03 01	38 05 01	38 06 01	38 10 01	38 13 01	38 16 01	38 19 01	38 25 01	38 29 01	38 37 01
Optimum flow rate	m <sup>3</sup> /h	2,600	3,900	4,000	6,000	7,900	9,800	11,800	15,800	18,400	23,600
Max. volume flow rate <sup>1</sup>	m <sup>3</sup> /h	3,500	5,300	6,000	9,500	10,500	14,000	18,000	22,500	25,900	35,100
Heat recovery efficiency <sup>2</sup>	%	over 95									
Heat recovery efficiency acc. EN 308	%	76	76	78	78	78	78	78	80	80	80
Dehumidification capacity acc. VDI 2089 at V <sub>opt</sub>	kg/h	16.8	25.2	25.8	38.8	51.0	63.3	76.2	102.1	118.9	152.5
Dehumidification capacity acc. VDI 2089 at V <sub>max</sub>	kg/h	22.6	34.2	38.8	61.4	67.8	90.4	116.3	145.4	167.3	214.3
Total electrical power rating <sup>3</sup>	kW	1.97	2.80	2.98	4.49	5.45	6.54	9.37	12.74	16.38	21.45
Max. current consumption <sup>3</sup>	A	5.2	7.2	7.2	9.2	14.6	14.6	23.9	29.2	31.4	47.1
Operating voltage		3 / N / PE 400 V 50 Hz									
Ext. pressure losses											
Supply and fresh air channel	Pa	300	300	300	300	300	300	400	400	500	500
Return and exhaust air channel	Pa	300	300	300	300	300	300	400	400	500	500
Sound power level <sup>4</sup>											
Supply air vent	dB(A)	78	79	72	72	77	71	76	84	77	80
RA connection	dB(A)	72	66	66	72	68	70	73	75	74	80
Outside air vent	dB(A)	68	69	69	66	66	62	74	72	75	80
EA connection	dB(A)	72	63	63	69	69	67	70	77	76	82
Acoustic pressure in 1 m distance from device <sup>4</sup>	dB(A)	64	63	63	59	62	58	61	69	63	72
Fan units											
Rated motor input for supply air <sup>5</sup> 100%, 60% flow rate	kW	1.12 0.69	1.60 0.95	1.71 0.99	2.46 1.25	3.06 1.73	3.62 1.94	5.22 3.06	7.02 4.18	9.04 4.96	11.67 6.81
Rated motor input for return air <sup>5</sup> 100%, 60% flow rate	kW	0.85 0.54	1.20 0.67	1.27 0.69	2.03 0.99	2.39 1.34	2.92 1.54	4.15 2.14	5.72 3.34	7.34 4.26	9.78 5.97
SFP category supply air   return air (60% V <sub>opt</sub> )		2   2	2   2	2   2	2   3	2   2	2   2	2   3	3   3	3   3	3   3
Nominal rating supply air   return air	kW	1.7   1.7	3.0   1.7	3.0   1.7	3.0   3.0	4.7   4.7	4.7   4.7	6.0   4.7	9.4   9.4	11.0   9.4	16.5   14.1
Efficiency classes according to EN 13053:2012											
Heat recovery class		H1	H1	H1	H1	H1	H1	H1	H1	H1	H1
Power consumption of fan motors SA   RA		P2   P2	P2   P1	P2   P1	P1   P1	P2   P1	P1   P1	P1   P1	P1   P1	P2   P2	P2   P2
Air velocity class		V1	V1	V2	V2	V2	V2	V2	V2	V2	V2
Filtration according to DIN EN 779											
Supply air   Outside air		F7   M5									
Return Air		M5									
LPHW											
Heating capacity max. <sup>6</sup>	kW	17.4	26.1	26.1	40.1	58.7	71.9	89.5	112.6	139.1	185.9
Water flow rate and pressure losses											
LPHW	m <sup>3</sup> /h   kPa	0.76   4.3	1.38   3.6	1.25   4.1	2.14   3.5	2.57   5.9	3.24   4.2	3.91   6.7	5.66   3.3	6.08   4.1	8.13   8.3
LPHW (pump warm water) valve	m <sup>3</sup> /h   kPa	0.76   9.3	1.38   4.8	1.25   6.3	2.14   4.6	2.57   6.6	3.24   6.7	3.91   9.8	5.66   5.1	6.08   5.9	8.13   10.6
Clean water heater (optional)											
Capacity <sup>7</sup>	kW	1.53	2.71	2.68	3.78	5.40	7.05	8.84	11.01	12.58	16.28
Clean water volume flow rate	m <sup>3</sup> /h	0.07	0.12	0.12	0.18	0.25	0.33	0.38	0.51	0.58	0.75
Connections											
LPHW connection	DN	32	32	32	32	40	40	40	50	65	65
LPHW control valve connection	DN	15	20	20	25	25	32	32	40	40	40
Condensate drainage	DN	40	40	40	40	40	40	40	40	40	40
Floor drain	DN	20	20	20	20	20	20	20	20	20	20
Clean water heater (optional)	DN	15	15	15	15	15	15	15	15	15	15

Specifications of technical data relate to the optimum flow rate and return air condition 30° C / 54% r.h., outside air condition 15° C / 84% r.h. and standard density (1.204 kg/m<sup>3</sup>), unless otherwise specified.

1 With regard to return air condition; May require alteration of the technical equipment

2 RA = 30° C / 54% r.h.; OA = -12° C / 90% r.h.; 1/3 OA rate  
 3 Depends on configuration of measurement and control system/unit  
 4 at 250 Hz mid-band frequency  
 5 with average filter contamination

6 FL = 70° C; SA = 50° C

7 Water inlet temp = 10° C, Water outgoing temperature ≈ 28° C

Please seek approval of technical data and specifications prior to start of the planning process.