

## Air conditioning unit with cross-counterflow heat exchanger for private swimming pool halls



ThermoCond 19 20 01 - simplified illustration

Automatically selects the most economical operating mode!



# ThermoCond 19

AIR VOLUME FLOW: 1,100 - 3,500 m<sup>3</sup>/h

### At a glance:

- **Dehumidifies, ventilates and heats**
- **Corrosion-free heat exchanger made from polypropylene**
- **Two-stage recuperative heat recovery**
- **Energy-saving EC fans**
- **Constantly regulated recirculation air heating damper**
- **Variable air duct connections**
- **Compact design for minimal space requirements**
- **Integrated control and regulation system, compatible with all conventional building management systems**
- **Optional: operation via smartphone or tablet**

The devices of the ThermoCond 19 series are multifunctional compact systems for air conditioning private swimming pool halls. The design and functionality of all systems are optimally adapted to your requirements. The combination of first-class components with precise control and regulation systems guarantees economical operation at all times, while

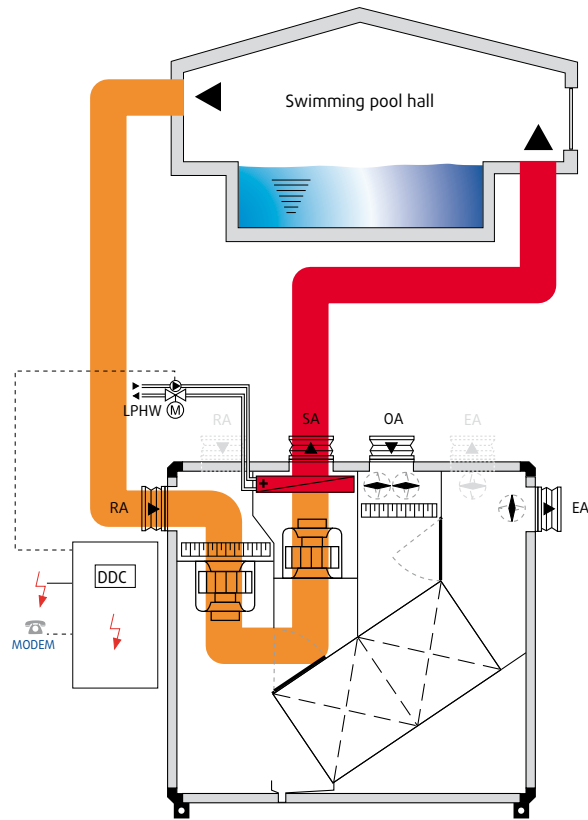
ensuring the highest degree of comfort air conditioning. The ThermoCond systems dehumidify, heat and ventilate the swimming pool hall, and simultaneously create good climate and ideal protection for the material of the building. Additional components such as radiators or panel heating systems are generally not required.

### Further performance parameters and options:

- Filtering the air in any operating mode
- pumped hot water air heater
- sound-optimised plastic impellers for even quieter operation (from 19 20 01)
- Individually controllable performance parameters
- Complete unit, ready to connect, contains all structural elements for air conditioning swimming pool hall air, including all control and regulation fittings
- Intensive quality inspection with factory test run

- Options
- bypass damper
  - water/air temperature interconnection
  - design complies with VDI 6022
  - remote maintenance
  - and many more

## Functional description



### Recirculating Air Operation (heating)

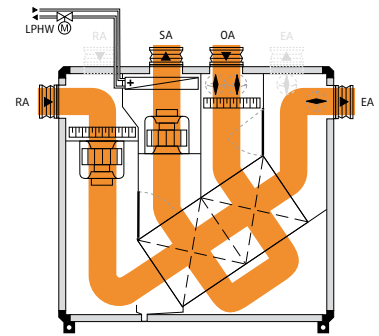
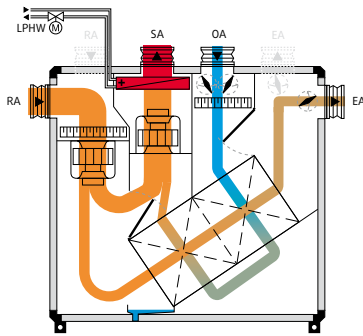
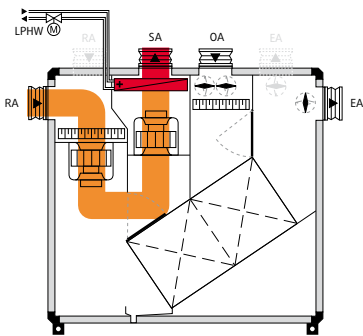
If no requirements are placed on temperature regulation or dehumidification when the device is in standby mode, the system operates only in recirculation mode with reduced air volume flow. The air circulation in the swimming pool hall is guaranteed. If heating is required, the return air is heated up using the heating coil to achieve the supply air temperature set-point.

### Dehumidification using outside air in winter

The swimming pool hall is dehumidified through the addition of outside air to the recirculated air volume flow. 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.

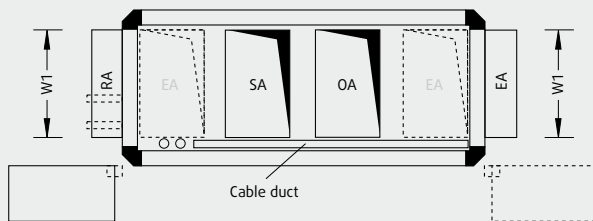
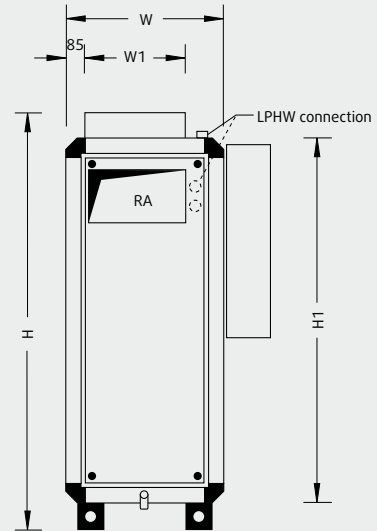
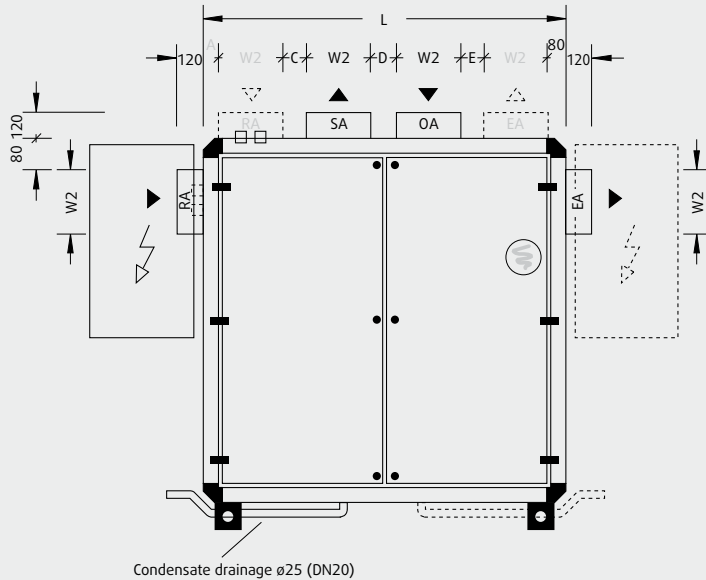
### Dehumidification using outside air in summer

In case of rising outside air humidity, the recirculated 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 heat exchanger.



# ThermoCond Type 19

## System dimensions and weights



Unit feet 100 mm  
Optional: adjustable feet from 100 to 120 mm

In the case of controls cabinet, folding on device: cabinet is folded on the front end for transportation. This reduces the transportation length by approx. 250 mm.

Return and exhaust air duct connection possible on top of unit.  
Mirror-image design possible.

Unit type	L	W <sup>1</sup>	H <sup>2</sup>	W1	W2	H1	A	C	D	E	Weight
19 11 01	1,530	570	1,590	350	200	1,370	215	150	150	135	410
19 15 01	1,530	730	1,590	500	200	1,370	215	150	150	135	440
19 20 01	1,690	730	1,910	500	300	1,690	80	105	120	105	540
19 25 01	1,690	890	1,910	600	300	1,690	80	105	120	105	610
19 35 01	1,690	1,210	1,910	920	300	1,690	80	105	120	105	720

For service work, a clearance corresponding to dimension B is required on the operating side of the unit. If dimension W is smaller than one metre, please leave a clearance of one metre.

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

Partitioning of unit for smaller apertures possible (at extra cost).

All lengths are given in mm, weights in kg.

- 1 Door fitting assembly increase unit width by 25 mm each operating side
- 2 incl. 100 mm unit feet, incl. 120 mm duct connection

### Controls cabinet

Unit Type	H x W x D	Position at unit
19 11 01	900 x 480 x 210	SA/RA side
19 15 01	900 x 480 x 210	SA/RA side
19 20 01	900 x 480 x 210	SA/RA side
19 25 01	900 x 480 x 210	SA/RA side
19 35 01	900 x 480 x 210	SA/RA side

## Technical specifications and services

Unit Type		19 11 01	19 15 01	19 20 01	19 25 01	19 35 01
Optimum flow rate	m <sup>3</sup> /h	1,100	1,500	2,000	2,500	3,500
Heat recovery efficiency <sup>1</sup>	%	76	76	79	79	80
Dehumidification capacity according to VDI 2089	kg/h	6.6	9.0	12.1	15.1	21.1
Total electrical power rating <sup>2</sup>	kW	0.87	0.98	1.52	1.73	2.76
Current consumption <sup>2</sup>	A	3.3	3.3	3.8	3.8	7.6
Operating voltage		3 / N / PE 400 V 50 Hz				
<b>Ext. pressure losses</b>						
Supply and fresh air channel	Pa	300	300	300	300	300
Return and exhaust air channel	Pa	300	300	300	300	300
<b>Sound power level <sup>3</sup></b>						
Supply air vent	dB(A)	79	81	71	68	76
RA connection	dB(A)	71	70	61	61	64
Outside air vent	dB(A)	66	65	57	55	62
EA connection	dB(A)	71	70	60	59	64
Acoustic pressure at a distance of 1 m from the device <sup>3</sup>	dB(A)	61	62	52	50	57
<b>Fan units</b>						
Rated motor input for supply air <sup>4</sup>	kW	0.51	0.56	0.84	0.96	1.58
Rated motor input for return air <sup>4</sup>	kW	0.36	0.42	0.68	0.77	1.18
Rated motor input for supply air recirc mode <sup>4</sup>	kW	0.18	0.22	0.37	0.49	0.66
Rated motor input for return air recirc mode <sup>4</sup>	kW	0.18	0.22	0.37	0.49	0.66
SFP category (supply air   return air) recirc mode		1   1	1   1	1   1	1   1	1   1
Nominal rating supply air   return air	kW	1.0   1.0	1.0   1.0	1.2   1.2	1.2   1.2	2.4   2.4
<b>Filtration according to DIN EN 779</b>						
Outside air		M5				
Return air		M5				
<b>LPHW</b>						
Heating capacity <sup>5</sup> recirc mode	kW	8.2	11.7	13.9	18.1	25.8
Heating capacity <sup>5,6</sup> OA-EA operation	kW	9.9	14.2	16.7	21.7	30.7
<b>Water flow rates and pressure losses <sup>5,6</sup></b>						
LPHW	m <sup>3</sup> /h   kPa	0.43   3.6	0.62   7.9	0.73   3.8	0.95   6.9	1.34   6.4
LPHW valve	m <sup>3</sup> /h   kPa	0.43   7.4	0.62   15.0	0.73   8.6	0.95   14.4	1.34   11.3
<b>Connections</b>						
LPHW connection	DN	15	15	20	20	20
LPHW control valve connection	DN	10	10	15	15	20
Condensate drainage	DN	20	20	20	20	20
Floor drain	DN	20	20	20	20	20

Specifications of technical data relate to the optimum flow rate and return air condition 30°C / 53.7% r.h., outside air condition 15°C / 84% r.h. and an altitude height of zero metres above sea level, unless otherwise specified

- 1 depends on operating condition
- 2 depends on configuration of measurement and control system/unit
- 3 at 250 Hz mid-band frequency
- 4 with average filter contamination
- 5 FL = 70°C, SA ≈ 50°C
- 6 OA = -12°C / 90% r.h., 2/3 proportion of air from outside

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

## Air conditioning unit with cross-counterflow-cross heat exchanger for private swimming pool halls



ThermoCond 23 26 01 -  
simplified illustration



Automatically selects the  
most economical operating mode!

# ThermoCond 23

AIR VOLUME FLOW: 1,600 – 5,000 m<sup>3</sup>/h

### At a glance:

- ▶ **Dehumidifies, ventilates and heats**
- ▶ **Corrosion-free heat exchanger made from polypropylene**
- ▶ **Over 80% temperature efficiency through three-stage recuperative heat recovery**
- ▶ **Energy-saving EC fans**
- ▶ **Constantly regulated recirculation air heating damper**
- ▶ **Flat design, ideal for integration into pool periphery**
- ▶ **Integrated control and regulation system, compatible with all conventional building management systems**
- ▶ **Optional: operation via smartphone or tablet**

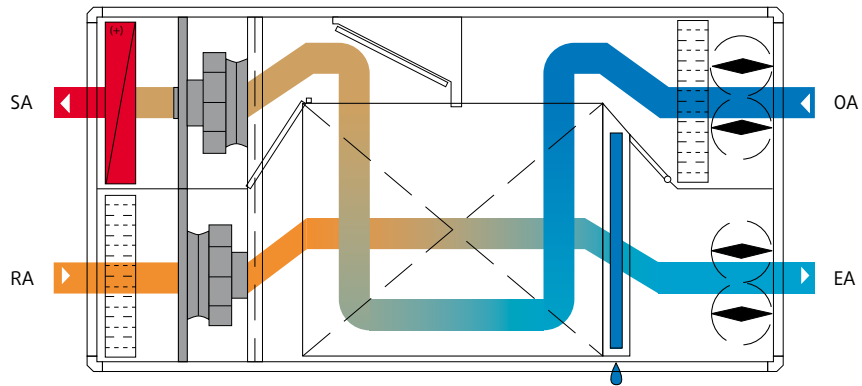
The devices of the ThermoCond 23 series are multi-functional compact systems for air conditioning private swimming pool halls. The design and functionality of all systems are optimally adapted to your requirements. The combination of first-class components with precise control and regulation systems guarantees economical operation at all times,

while ensuring the highest degree of comfort air conditioning. The ThermoCond systems dehumidify, heat and ventilate the swimming pool hall, and simultaneously create good climate and ideal protection for the material of the building. Additional components such as radiators or panel heating systems are generally not required.

### Further performance parameters and options:

- Filtering the air in any operating mode
  - Pumped hot water air heater
  - Individually controllable performance parameters
  - Complete unit, ready to connect, contains all structural elements for air conditioning swimming pool hall air, including all control and regulation fittings
  - Bypass damper
  - Intensive quality inspection with factory test run
- Options
- Water/air temperature interconnection
  - Remote maintenance
  - And many more

## Functional description



### Dehumidification using outside air in winter

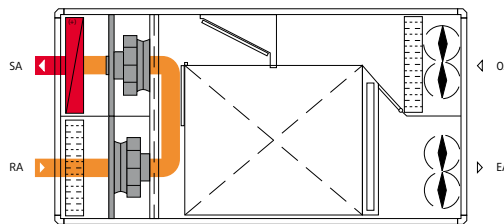
A large proportion of the sensitive and latent heat is recovered from the return

air and is transferred to the supply air in the heat exchanger. The cross-counter-flow-cross heat exchanger enables the recovery of up to 80% of the heat

contained in the return air. The ventilation heat losses that have to be covered by the pumped hot water heating coil are thus kept to a minimum.

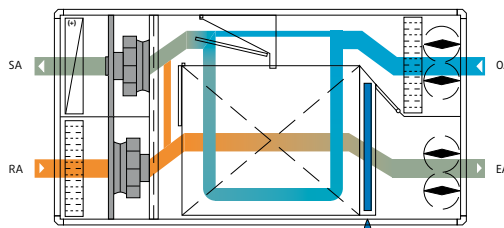
### Recirculating Air Operation (heating)

If no requirements are placed on temperature regulation or dehumidification when the device is in standby mode, the system operates only in recirculating mode with reduced air volume flow. The air circulation in the swimming pool hall is guaranteed. If heating is required, the return air is heated to the supply air temperature as required using the heating coil.



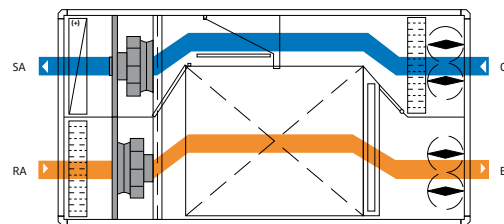
### Dehumidification in the transitional period

When outside air temperatures rise, the output of the heating coil can be reduced. The heat recovered can be regulated by means of the controllable bypass damper. A proportion of the outside air is by-passed the plate heat exchanger.



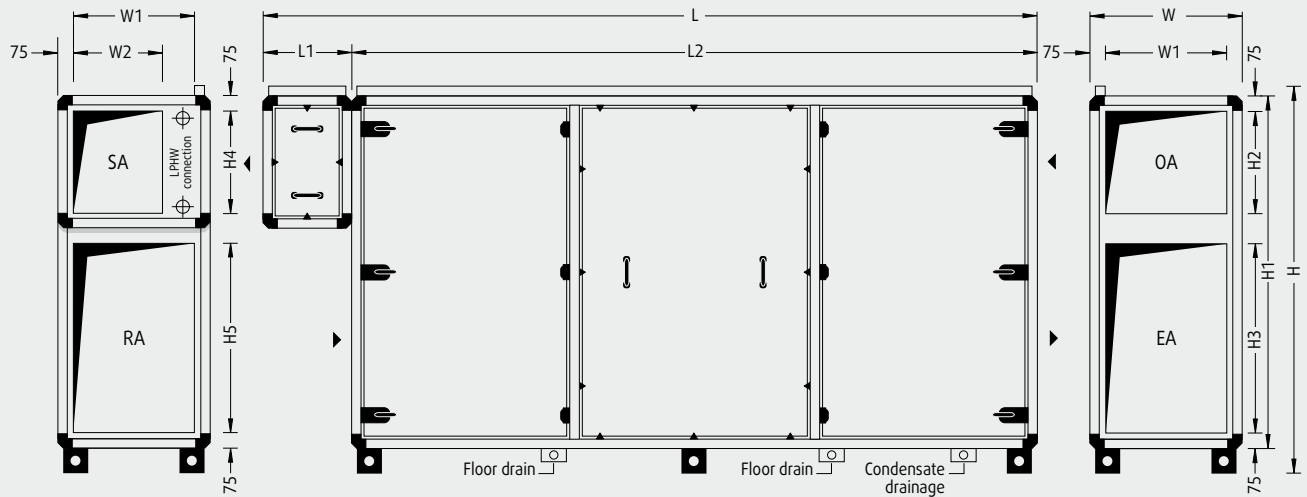
### Summertime conditions

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 heat exchanger. Heat recovery is not required.



# ThermoCond Type 23

## System dimensions and weights



Unit feet 100mm  
Optionally: adjustable feet from 100 to 120 mm

Unit type	L	W <sup>1</sup>	H <sup>2</sup>	L1	L2	W1	W2	H1	H2	H3	H4	H5	Weight
23 12 01	2,580	570	1,210*	410	2,170	420	350	1,050	325	420	420	325	450
23 18 01	3,060	730	1,530*	410	2,650	580	505	1,370	485	580	580	485	600
23 26 01	3,700	730	1,850	410	3,290	580	505	1,690	485	900	580	580	870
23 36 01	3,700	1,050	1,850	410	3,290	900	825	1,690	485	900	580	580	1,100

\* Controls cabinet arranged on top of unit, please add cabinet height (480 mm).

### Controls cabinet

Unit Type	H x W x D	Position at unit
23 12 01	480 x 640 x 210	On top of unit
23 18 01	480 x 640 x 210	On top of unit
23 26 01	900 x 480 x 210	OA/EA side
23 36 01	900 x 480 x 210	OA/EA side

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.

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

Partitioning of unit for smaller apertures possible (at extra cost).

All lengths are given in mm, weights in kg, weight incl. Controls cabinet.

- 1 Door fitting assembly increase unit width by 25 mm each operating side
- 2 incl. 100 mm unit feet and 60 mm cable duct

## Technical specifications and services

Unit Type		23 12 01	23 18 01	23 26 01	23 36 01
Optimum flow rate	m <sup>3</sup> /h	1,600	2,500	3,200	5,000
Heat recovery efficiency <sup>1</sup>		83	83	88	85
Dehumidification capacity according to VDI 2089	kg/h	9.7	15.1	19.3	30.2
Total electrical power rating <sup>2</sup>	kW	0.98	1.88	2.36	3.70
Current consumption <sup>2</sup>	A	6.0	13.8	8.0	6.6
Operating voltage		1 / N / PE 230 V 50 Hz		3 / N / PE 400 V 50 Hz	
<b>Ext. pressure losses</b>					
Supply and fresh air channel	Pa	300	300	300	300
Return and exhaust air channel	Pa	300	300	300	300
<b>Sound power level<sup>3</sup></b>					
Supply air vent	dB(A)	66	68	71	75
RA connection	dB(A)	65	67	69	70
Outside air vent	dB(A)	55	57	60	59
EA connection	dB(A)	70	72	74	75
Acoustic pressure at a distance of 1 m from the device	dB(A)	50	52	55	55
<b>Fan units</b>					
Rated motor input for supply air <sup>4</sup>	kW	0.46	0.87	1.09	1.68
Rated motor input for return air <sup>4</sup>	kW	0.52	1.01	1.27	2.02
Rated motor input for supply air recirc mode <sup>4</sup>	kW	0.25	0.48	0.56	0.93
Rated motor input for return air recirc mode <sup>4</sup>	kW	0.24	0.48	0.56	0.93
SFP category (supply air   return air) recirc mode		1   1	1   1	2   2	2   2
<b>Filtration according to DIN EN 779</b>					
Outside air				M5	
Return air				M5	
<b>LPHW</b>					
Heating capacity recirc mode <sup>5</sup>	kW	8.7	13.9	16.7	28.0
Heating capacity OA-EA operation <sup>5,6</sup>	kW	8.5	13.7	15.3	26.7
<b>Water flow rate and pressure losses</b>					
LPHW <sup>5,6</sup>	m <sup>3</sup> /h   kPa	0.25   4.6	0.46   6.2	0.67   9.1	0.93   12.0
LPHW valve <sup>5,6</sup>	m <sup>3</sup> /h   kPa	0.25   6.4	0.46   8.3	0.67   17.3	0.93   13.8
<b>Connections</b>					
LPHW connection	DN	32	32	32	32
LPHW control valve connection	DN	10	15	15	20
Condensate drainage	DN	20	20	20	20
Floor drain	DN	20	20	20	20

Specifications of technical data relate to the optimum flow rate and return air condition 30°C / 53.7% r.h., outside air condition 15°C / 84% r.h. and an altitude height of zero metres above sea level, unless otherwise specified

- 1 depends on operating condition
- 2 depends on configuration of measurement and control system/unit
- 3 at 250 Hz mid-band frequency
- 4 with average filter contamination
- 5 FL = 70°C; SA = 50°C
- 6 OA = -12°C / 90% r.h., 2/3 proportion of air from outside

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



## Air conditioning unit with cross-counterflow heat exchanger and integrated heat pump for private swimming pool halls

Automatically selects the most economical operating mode!



# ThermoCond 29

AIR VOLUME FLOW: 1,100 – 3,500 m<sup>3</sup>/h



ThermoCond 29 20 01 - simplified illustration

### At a glance:

- ▶ **Dehumidifies, ventilates and heats**
- ▶ **Corrosion-free heat exchanger made from polypropylene**
- ▶ **Integrated heat pump**
- ▶ **Energy-saving EC fans**
- ▶ **Constantly regulated recirculation air heating damper**
- ▶ **Compact design for minimal space requirements**
- ▶ **Variable air duct connections**
- ▶ **Integrated control and regulation system, compatible with all conventional building management systems**
- ▶ **Optionally: operation via smartphone or tablet**

The devices of the ThermoCond 29 series are multi-functional compact systems for air conditioning private swimming pool halls. The design and functionality of all systems are optimally adapted to your requirements. The integrated heat pump increases the total efficiency of the system and allows the dehumidification of swimming pool hall air in recirculation mode. In addition, an existing domestic heat pump can be used for energy-efficient heating of the swimming pool hall air. The

combination of first-class components with precise control and regulation systems guarantees economical operation at all times, while ensuring the highest degree of comfort air conditioning. ThermoCond systems dehumidify, heat and ventilate the swimming pool hall, and simultaneously create good climate and ideal protection for the material of the building. Additional components such as radiators or panel heating systems are generally not required.

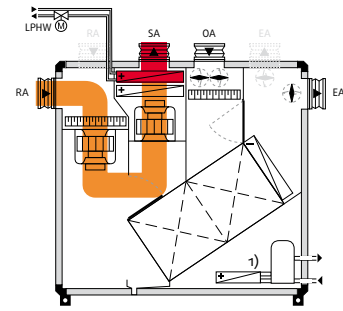
### Further performance parameters and options:

- Filtering the air in any operating mode
  - Pumped hot water air heater
  - Sound-optimised plastic impellers for even quieter operation (from 29 20 01)
  - Individually controllable performance parameters
  - Complete unit, ready to connect, contains all structural elements for air conditioning swimming pool hall air, including all control and regulation fittings
  - Intensive quality inspection with factory test run
- Options
- Bypass damper
  - Water/air temperature interconnection
  - Filter design complies with VDI 6022
  - Pool water condenser
  - Domestic heat pump coupling
  - Remote maintenance
  - And many more

## Functional description

### Recirculating Air Operation (heating)

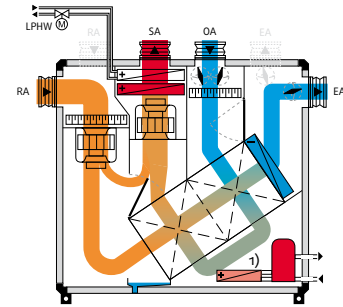
If no requirements are placed on temperature regulation or dehumidification when the device is in standby mode, the system operates only in recirculation mode with reduced air volume flow. The air circulation in the swimming pool hall is guaranteed. If heating is required, the return air is heated up using the heating coil to achieve the supply air temperature set-point.



### Dehumidification using outside air in winter

A large proportion of the sensitive and latent heat is recovered from the return air, and is transferred to the supply air in the cross-counterflow heat exchanger and evaporator. If the heat output of the heat pump is not sufficient, the supply air will be reheated using the heating coil. Excess

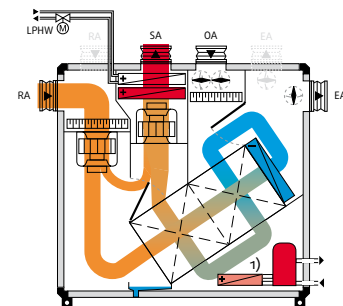
heat can be transferred to the optionally available pool water condenser for heating in the pool water.



### Recirculating air dehumidification

In recirculation mode, the air is dehumidified in the evaporator of the heat pump. This process is boosted by the pre-cooling effect in the heat exchanger. The air that has already cooled down and been dried is preheated in the heat exchanger by the return air from the swimming pool hall. On the other side of the heat exchanger, the transmission of heat produces a pre-cooling effect, lowering the temperature of the drawn-in humid and warm air from the swimming pool hall near to its dew

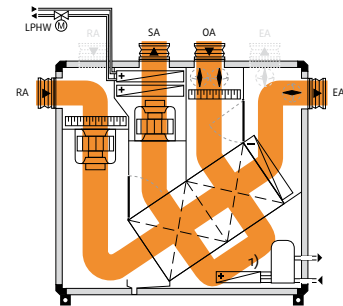
point. The preheated, dehumidified air is then mixed with a proportion of untreated recirculation air, is reheated at the condenser of the heat pump using the heat extracted during the dehumidification process, and is returned to the swimming pool hall as supply air. The heat pump is optimally designed, with a dehumidification energy requirement of less than 0.25 kWh/kg. If the heat output of the heat pump is not sufficient, the supply air will be reheated using the heating coil.



### Summertime conditions

In 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

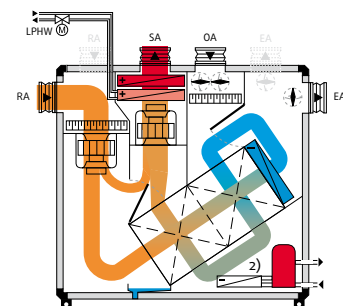
completely. The system works at 100% outside air / exhaust air operation through the heat exchanger.



### Domestic heat pump operation (for unit type 29 xx 01)

An existing domestic heat pump can be used for energy-efficient heating of the swimming pool hall air. The domestic heat pump is connected to the heating coil. Typically, the low flow temperatures of the domestic heat pump are not sufficient for heating the swimming pool hall air – the heating coil is therefore

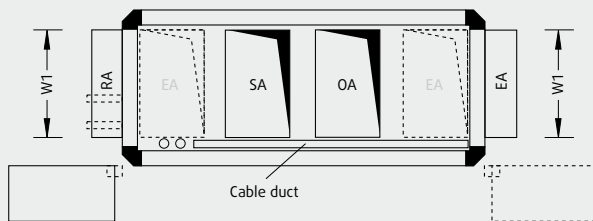
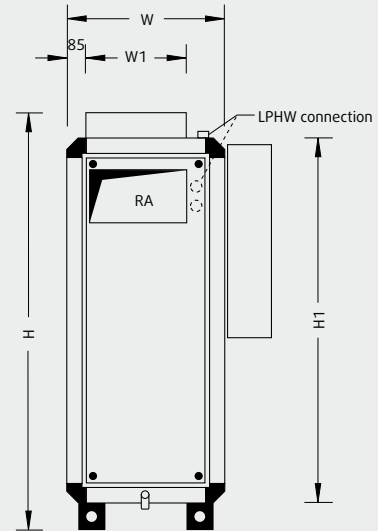
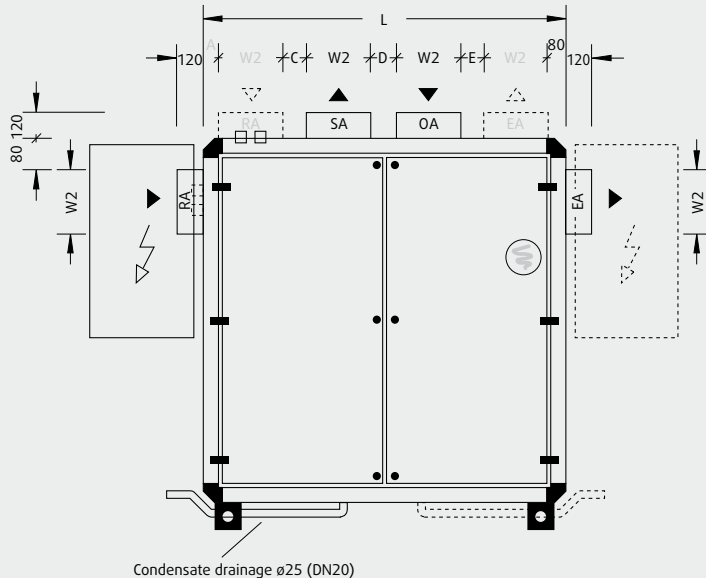
installed upstream of the air condenser of the integrated heat pump. The advantage of this is that the domestic heat pump can be operated with an optimal COP without a change in the low flow temperatures. In combination, the two systems heat the supply air to the desired temperature level.



- 1 Option: pool water condenser
- 2 Option: domestic heat pump operation

# ThermoCond Type 29

## System dimensions and weights



Unit feet 100 mm  
Optional: adjustable feet from 100 to 120 mm

In the case of controls cabinet, folding on device: Controls cabinet is folded on the front end for transportation. This reduces the transportation length by approx. 250 mm.

Return and exhaust air duct connections possible on top of unit.  
Mirror-image design possible.

Unit type	L	W <sup>1</sup>	H <sup>2</sup>	W1	W2	H1	A	C	D	E	Weight
29 11 01	1,530	570	1,590	350	200	1,370	215	150	150	135	460
29 15 01	1,530	730	1,590	500	200	1,370	215	150	150	135	500
29 20 01	1,690	730	1,910	500	300	1,690	80	105	120	105	600
29 25 01	1,690	890	1,910	600	300	1,690	80	105	120	105	680
29 35 01	1,690	1,210	1,910	920	300	1,690	80	105	120	105	830

For service work, a clearance corresponding to dimension W is required on the operating side of the unit. If dimension B is smaller than one metre, please leave a clearance of one metre.

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

Partitioning of unit for smaller apertures possible (at extra cost).

All lengths are given in mm, weights in kg, weight incl. Controls cabinet.

- 1 Door fitting assembly increase unit width by 25 mm each operating side incl. 100 mm unit feet, incl. 120 mm duct connection
- 2

### Controls cabinet

Unit type	H x W x D	Position at unit
29 11 01	900 x 480 x 210	SA/RA side
29 15 01	900 x 480 x 210	SA/RA side
29 20 01	900 x 480 x 210	SA/RA side
29 25 01	900 x 480 x 210	SA/RA side
29 35 01	900 x 480 x 210	SA/RA side

## Technical specifications and services

Unit Type		29 11 01	29 15 01	29 20 01	29 25 01	29 35 01
Optimum flow rate	m <sup>3</sup> /h	1,100	1,500	2,000	2,500	3,500
Heat recovery efficiency <sup>1</sup>	%	76	76	79	79	80
Dehumidification capacity according to VDI 2089	kg/h	6.6	9.0	12.1	15.1	21.1
Dehumidification capacity in recirc mode	kg/h	4.0	4.9	6.4	8.2	11.8
Heating capacity of heat pump <sup>2</sup>	COP	4.82	5.08	4.94	5.25	5.17
Total electrical power rating <sup>3</sup>	kW	2.07	2.38	3.37	3.90	5.96
Current consumption <sup>3</sup>	A	13.3	7.5	8.9	10.1	17.6
Operating voltage		3 / N / PE 400 V 50 Hz				
<b>Ext. pressure losses</b>						
Supply and fresh air channel	Pa	300	300	300	300	300
Return and exhaust air channel	Pa	300	300	300	300	300
<b>Sound power level <sup>4</sup></b>						
Supply air vent	dB(A)	77	78	69	66	74
RA connection	dB(A)	72	71	63	61	67
Outside air vent	dB(A)	67	66	58	56	63
EA connection	dB(A)	69	70	60	57	63
Acoustic pressure at a distance of 1 m from the device <sup>4</sup>	dB(A)	62	63	54	51	58
<b>Fan units</b>						
Rated motor input for supply air <sup>5</sup>	kW	0.56	0.61	0.91	1.04	1.72
Rated motor input for return air <sup>5</sup>	kW	0.41	0.47	0.76	0.86	1.34
Rated motor input for supply air recirc mode <sup>5</sup>	kW	0.24	0.28	0.48	0.59	0.88
Rated motor input for return air recirc mode <sup>5</sup>	kW	0.31	0.35	0.60	0.71	1.10
SFP category (supply air   return air) recirc mode		1   2	1   1	2   2	2   2	2   3
Nominal rating supply air   return air	kW	1.0   1.0	1.0   1.0	1.2   1.2	1.2   1.2	2.4   2.4
<b>Integrated heat pump</b>						
Filling volume of refrigerant type R407C <sup>6</sup> (without   with PWC)	kg	1.8   2.5	2.0   3.5	2.3   3.5	2.5   4.0	3.5   5.0
Heating capacity heat pump	kW	5.3	6.6	8.4	10.5	15.0
Rated compressor input for recirc air dehumidification	kW	1.1	1.3	1.7	2.0	2.9
Rated compressor input for OA-EA operation <sup>7</sup>	kW	1.0	1.2	1.5	1.8	2.5
<b>Filtration according to DIN EN 779</b>						
Outside air				M5		
Return air				M5		
<b>LPHW</b>						
Heating capacity <sup>8</sup> recirc mode	kW	6.5	8.8	11.3	14.0	20.7
Heating capacity <sup>7,8</sup> OA-EA operation	kW	4.6	6.8	8.6	10.9	16.1
<b>Water flow rate and pressure losses</b>						
LPHW	m <sup>3</sup> /h   kPa	0.29   6.5	0.39   4.8	0.49   8.2	0.61   7.1	0.91   17.7
LPHW (pump warm water) valve	m <sup>3</sup> /h   kPa	0.29   8.1	0.39   5.8	0.49   9.5	0.61   14.6	0.91   13.2
<b>Pool water condenser <sup>9</sup> (supplementary equipment)</b>						
Heating power <sup>10</sup>	kW	5.4	6.6	8.4	10.5	14.8
Spread of pool water temperature	K	6.6	6.3	6.6	6.5	6.4
Pool water volume flow rate	m <sup>3</sup> /h	0.7	0.9	1.1	1.4	2.0
water side pressure loss	kPa	12.3	14.1	12.0	12.5	15.2
<b>Connections</b>						
LPHW connection	DN	15	15	15	20	20
LPHW control valve connection	DN	10	10	10	10	15
Condensate drainage	DN	20	20	20	20	20
Floor drain	DN	20	20	20	20	20
PWC connection <sup>11</sup>	DN	20	20	25	25	25

Specifications of technical data relate to the optimum flow rate and return air condition 30°C / 53.7% r.h., outside air condition 15°C / 84% r.h. and an altitude height of zero metres above sea level, unless otherwise specified

- 1 depends on operation condition  
2 dehumidifying in recirc mode without PWC

- 3 depends on configuration of measurement and control system/unit  
4 at 250 Hz mid-band frequency  
5 with average filter contamination  
6 where domestic heat pump coupling: Refrigerant type = R134a; filling volumes vary  
7 OA = -12°C / 90% r.h., 2/3 proportion of air from outside

- 8 FL = 70°C; SA = 50°C  
9 heat emission full and proportional; when water inlet temp. 28°C  
10 dehumidifying in recirc mode with PWC  
11 for units with pool water condensers

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