



## THE CHALLENGE

Atmospheric air contains moisture which when left unchallenged can lead to mould or possible structural damage or collapse.

### Why dehumidify?

There are many important factors to consider when planning and designing an indoor swimming pool. These include safeguarding the building structure from dangerous condensation and optimising the internal environment for the safety and comfort of bathers, to saving energy whilst minimising running costs and CO<sub>2</sub> emissions as far as possible for commercial and environmental reasons.

Maintaining a comfortable pool environment requires the pool water and air to be heated and held at approximately 27°C and 29°C respectively. In many cases this heating is normally carried out by heat exchangers via LPHW boilers using oil or gas as fuel.

As a result of continuous evaporation, uncomfortable warm humid air containing vast amounts of valuable heat in the form of latent energy must be removed from the pool hall. This is to protect the pool building from destructive condensation and chemical damage, whilst maintaining a safe and comfortable leisure environment for bathers.

### Humidity control

In contrast to most buildings, indoor swimming pools constantly evaporate large volumes of moisture into the space around them. Unless this moisture is removed, humidity will rise creating an uncomfortable environment and structural and fabric damage.

Calorex AHUs will remove this moisture and recover energy from it which is then re-used to assist water and air heating. By utilising this method, a heat cycle is created and energy costs are kept to a minimum.

Typically, for every unit of power that a Calorex heat pump consumes, it will convert three times this amount to usable heat. The potential energy savings are huge. In fact, compared to traditional heat and ventilation methods, cost savings of over 50% are achievable while corresponding CO<sub>2</sub> emissions can be dramatically reduced by up to 70%.

### Get In Touch



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### Our Address

Puravent, Adremit Limited, Unit 5a, Commercial Yard,  
Settle, North Yorkshire, BD24 9RH



**Calorex air handling units** take care of heating, humidity control, ventilation and energy recovery in an efficient and economical way.

## THE SOLUTION

The answer to this problem is the Calorex range of purpose built, air handling units for environmental control in indoor swimming pools.

### Our products

Calorex are a leading manufacturer of swimming pool environmental control systems that provide dehumidification, heat recovery and ventilation solutions based around heat pump technology.

A swimming pool environmental control unit must carry out its primary task of dehumidifying the pool hall air, be designed and constructed to withstand pool air chemical condition, and provide a continuously modulated quantity of heated or cooled fresh air for the comfort of users.

Calorex AHUs will provide the complete answer to humidity control, water/air temperature control and real time fresh air requirements.

By recovering the latent energy in the moisture laden air of a pool hall, a Calorex AHU will return this energy to heat the pool water or use it to assist with pool air heating.

Furthermore, there is usually sufficient recovered energy to provide all the operational water heating requirements with any further surplus used for air heating.

### Energy efficiency and CO<sub>2</sub> savings

Huge rises in gas, electricity and water tariffs have added tens of millions of pounds of massive costs to a country's annual community swimming bill. Consequently, local authorities and leisure operators find themselves under more pressure than ever to demonstrate effective energy efficiency.

Calorex systems can simultaneously care for and preserve the building structure, reduce energy usage by up to 70% and lessen associated CO<sub>2</sub> emissions by up to 70% when compared to a conventional full fresh air ventilation system with cross plate heat exchanger. As the units are based on heat pump technology, efficiencies are normally around 300% which is well above the 50-60% normally offered by a cross plate heat exchanger.

### Benefits

- Dehumidification and ventilation systems with dynamic heat pump heat recovery to air and water
- Purpose built to withstand aggressive swimming pool atmospheres
- Automatic operation
- Energy efficient with running costs reduced by up to 70%
- Carbon emissions reduced by up to 70%

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# POOL AIR HANDLING UNITS

## AA 300/500

Ducted heat pump dehumidification



**AA 300**  
**AA 500**



**FLANGE KIT**

### Options

- Flexible flange kit to reduce vibration



### Features

All models:

- Pool hall dehumidification
- Dynamic heat pump heat recovery
- Constant flow fan with two speed settings
- Remote control panel (12V) with 1.8m lead (10m cable optional)

LPHW Air models add:

- Integral LPHW heat exchanger for air heating

LPHW Air+Water models add:

- Integral LPHW heat exchangers for pool and air

### Applications



- Indoor pools
- Private pools
- Therapy pools
- Health clubs and wellness centres
- Hotels and spa pools

Specifications	Units	AA 300	AA 500
Air flow	m <sup>3</sup> /h	1300 ± 10%	1800 ± 10%
External available static pressure	Pa	250	250
Dehumidification @ 30°C/60% RH	l/h	3.6	4.5
<b>Heat to air</b>			
Via heat pump	kW	4.4	6.1
Via LPHW (LPHW Air models)	kW	7.3	7.5
Total (heat pump + LPHW)	kW	9.8	11.7
<b>Heat to water</b>			
Via LPHW (LPHW Air + Water models)	kW	9.5	9.5
Product size (h x w x d)	mm	850 x 1027 x 730	850 x 1027 x 730
Weight	kg	111	111

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# POOL AIR HANDLING UNITS

## VARIHEAT SYSTEMS

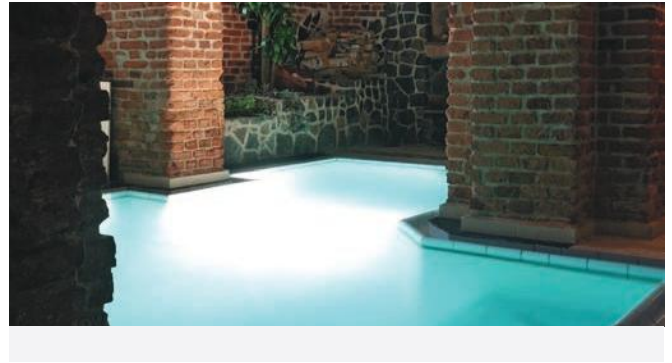
Ducted heat pump dehumidification with heat recovery



**AW 1200**



**VARIHEAT TOUCHSCREEN**



### Features

- Pool hall dehumidification
- Dynamic heat pump heat recovery to pool and air
- Constant flow EC fan (models 600, 900, 1200)
- Speed controllable EC fan (model 1500)
- PLC control with 3.5" touchscreen user interface
- Remote monitoring/control

AA+LPHW models add:

- Integral LPHW heat exchanger for air heating

AW models add:

- Dynamic heat pump heat recovery to pool and air
- Integral LPHW heat exchangers for pool and air

### Options

- Fresh air module
- Upgraded LPHW heat exchanger for air
- Electric resistance air heaters (6/12/18kW)
- Air cooling with remote condenser
- Titanium pool condenser (AW models only)

### Electrical heater option notes

- In lieu of LPHW heat exchangers
- 6kW or 12kW is available for 600 and 900 models
- 12kW or 18kW is available for 1200 and 1500 models

### Applications

- Spa and therapy pools
- Hotel pools and wellness centres
- Holiday parks & campsites



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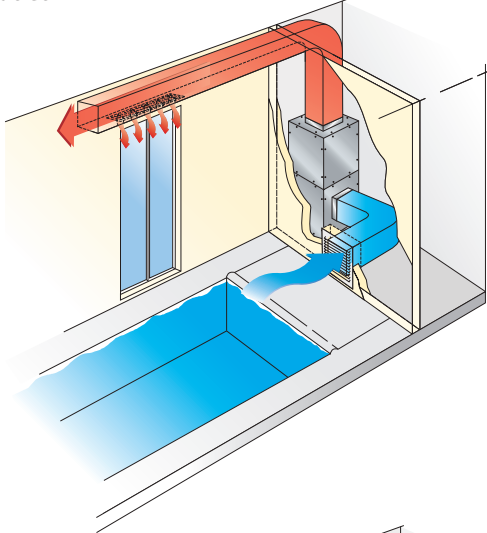
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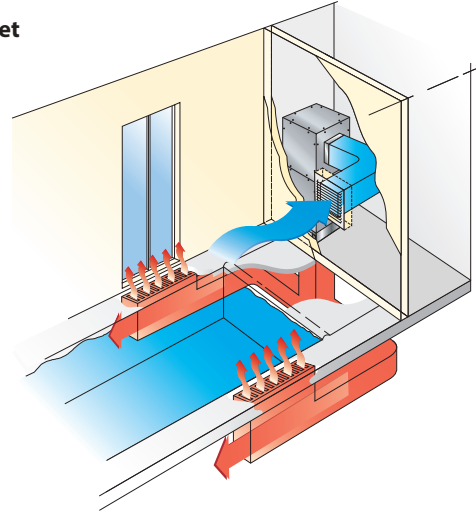
# POOL AIR HANDLING UNITS VARIHEAT SYSTEMS

## Installation options

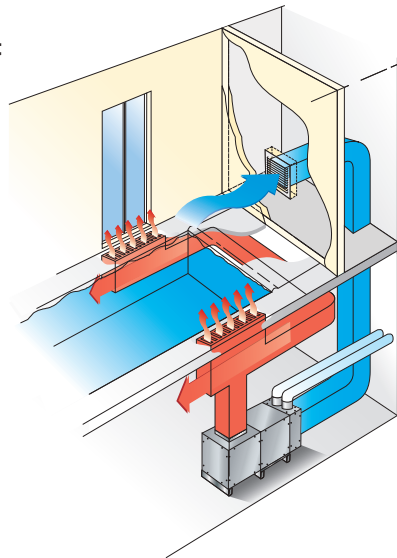
**Top outlet**



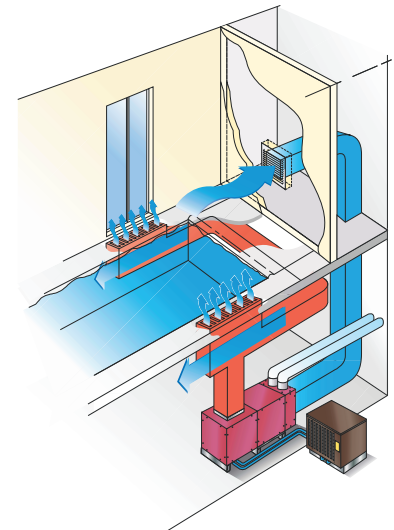
**Bottom outlet**



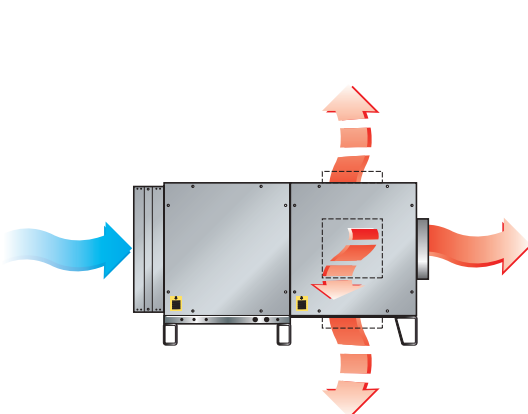
**Basement outlet**



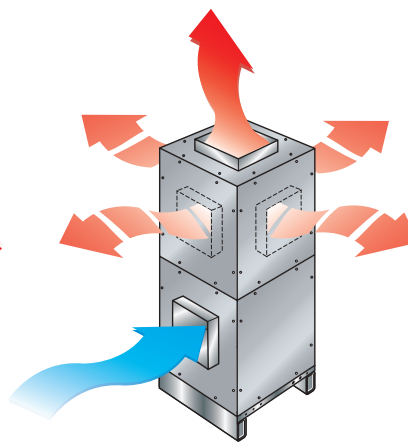
**Remote condensing unit option**



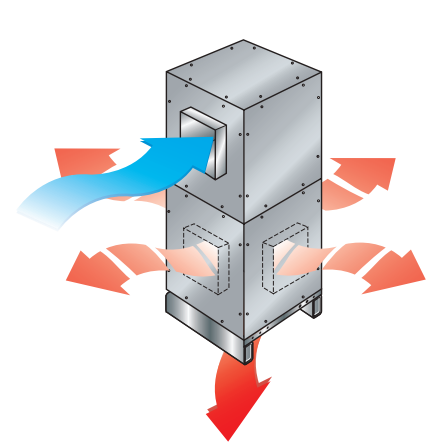
**Horizontal outlet**



**Top outlet**



**Bottom outlet**



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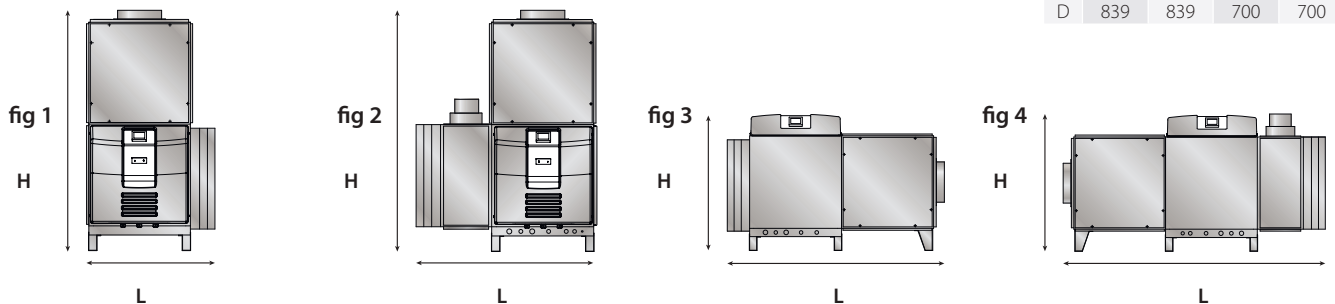
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# POOL AIR HANDLING UNITS

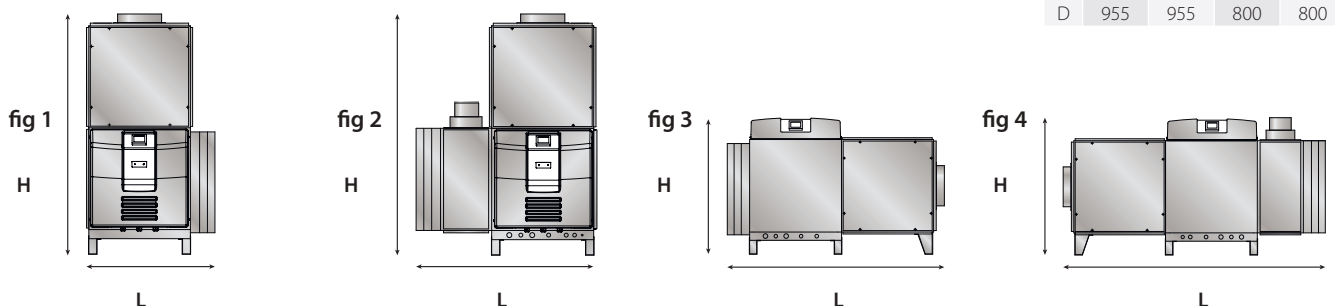
## VARIHEAT SYSTEMS

### Configurations

#### Variheat 600/900



#### Variheat 1200/1500



Example configurations are shown but alternative configurations are available.

Specifications	Units	AW 600	AA 600	AW 900	AA 900	AW 1200	AA 1200	AW 1500	AA 1500
Air flow	m <sup>3</sup> /h	2000	2000	2500	2500	3500	3500	4300	4300
External available static pressure	Pa	330	330	220	220	290	290	350	350
Fresh air flow (option)	m <sup>3</sup> /h	0-900	0-900	0-900	0-900	0-900	0-900	0-900	0-900
External available static pressure	Pa	100	100	100	100	100	100	100	100
Dehumidification @ 30°C/60% RH	l/h	4.6	4.6	6.5	6.5	8.5	8.5	10.5	10.1
Dehumidification @ 30°C/70% RH	l/h	5.5	5.5	7.8	7.8	10.8	10.8	13.2	13.2
<b>Heat to air</b>									
Net via heat pump (Mode B)	kW	5.1	5.1	7.1	7.1	10.0	10.0	14.0	14.0
Via standard LPHW @ 80°C	kW	11.0	11.0	13.5	13.5	24.0	24.0	28.0	28.0
Max. available (Mode B + standard LPHW)	kW	14.0	14.0	18.6	18.6	30.0	30.0	36.0	36.0
Via upgraded LPHW @ 55°C	kW	9.4	9.4	11.5	11.5	20.4	20.4	23.8	23.8
Max. available (Mode B + upgraded LPHW)	kW	12.7	12.7	16.9	16.9	27.0	27.0	36.8	36.8
<b>Heat to water</b>									
Net via heat pump (Mode A)	kW	5.5	0	7.4	0	10.0	0	12.5	0
Via LPHW @ 80°C	kW	18.0	0	30.0	0	30.0	0	40.0	0
Max. available (Mode A + LPHW)	kW	23.5	0	37.4	0	40.0	0	52.5	0
Nominal power consumed	kW	2.1	2.1	2.8	2.8	3.6	3.6	4.7	4.7

AW denotes heat recovery to air/water and LPHW heaters for air/water  
AA denotes heat recovery to air and optional LPHW heater for air only

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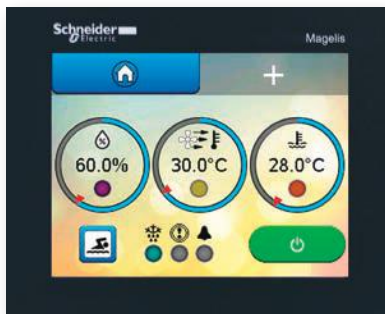
# POOL AIR HANDLING UNITS

## DELTA SYSTEMS

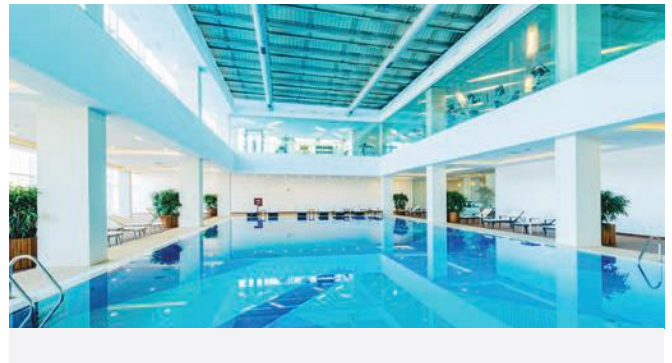
Ducted heat pump dehumidification, ventilation and heat recovery



**DELTA 4**



**DELTA TOUCHSCREEN**



### Features

- Dynamic heat pump heat recovery to pool and air
- Self-regulating fresh air control with heat recovery
- Automatic control of exhaust air volume to match pool usage
- Free-cooling (Delta 1-2)
- Free-cooling and heat pump air cooling (Delta 4-16)
- Integral LPHW heat exchangers for pool and air
- Speed controllable EC/inverter fans in all models
- PLC control with 5.7" touchscreen user interface
- Remote monitoring/control

### Remote monitoring/control

As standard the following remote connectivity is available:

- Screen mirroring to Android/iOS mobile devices using third-party app
- Screen mirroring to web browser with ActiveX
- BMS interfaces for Modbus, BACnet IP and BACnet MS/TP
- Wired remote control interfaces

### Applications

- Health clubs and wellness centres
- Holiday parks and campsites
- Hotel and spa pools
- Leisure centres
- Water parks



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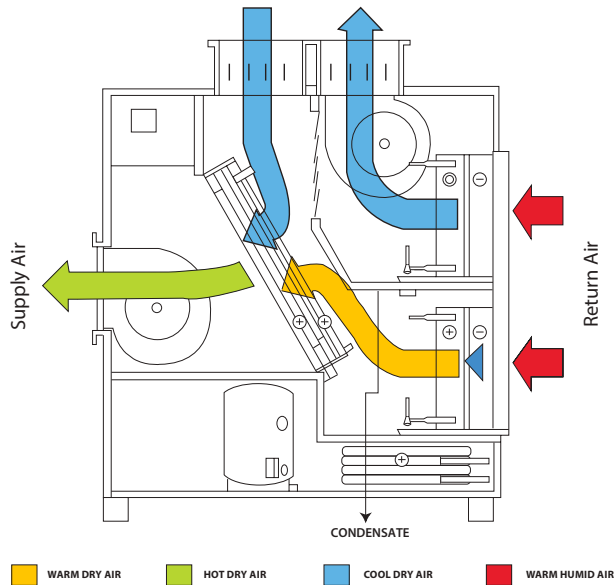
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# POOL AIR HANDLING UNITS

## DELTA SYSTEMS

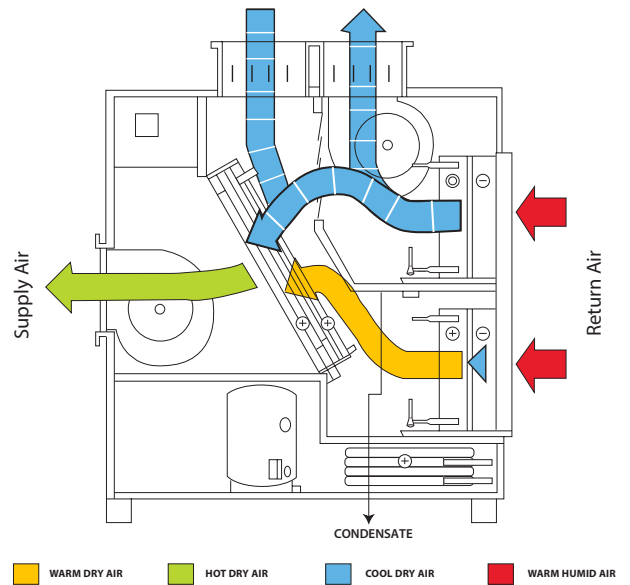
### How the air flows through the Delta

#### Full dehumidification and heat recovery



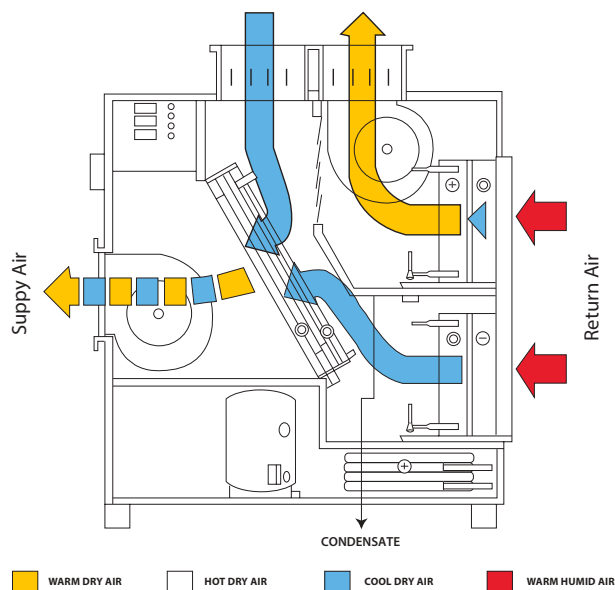
Delta operating on maximum dehumidification of pool air with full heat recovery to pool water and air. Available energy is removed from exhaust air stream. Supplementary heat, if required, supplied by LPHW (water or air).

#### Light dehumidification and heat recovery



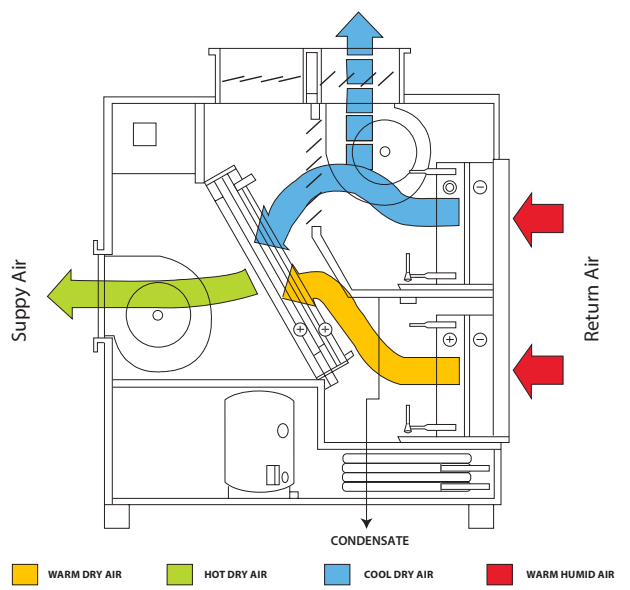
Delta operating on light dehumidification with full heat recovery and reduced fresh air stream – control system automatically selects correct operating mode and damper position. LPHW heat available when required.

#### Air-conditioning



Delta models 4 and above provide an air conditioning facility to minimise the effects of solar gain from larger glazed areas or very high usage. Automatic damper and mode control.

#### Night set back



Air temperature set back control is incorporated as standard in all Delta units and controlled by a time clock. Pool hall air is dropped to a lower temperature for maximum economy. Air recirculation is maintained, dampers allow low fresh air flow.

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# POOL AIR HANDLING UNITS


## DELTA SYSTEMS

Specifications	Units	DT 1	DT 2	DT 4	DT 6	DT 8	DT 10	DT 12	DT 14	DT 16
Nominal recirculation air flow	m <sup>3</sup> /h	2500	2600	3000	4000	5000	6000	7000	10000	12000
Exhaust/fresh air flow (stepped control)	m <sup>3</sup> /h	120-1200	130-1300	150-1500	200-2000	250-2500	300-3000	350-3500	670-6700	850-8000
Total dehumidification @ 28°C/60% RH by heat pump and maximum fresh air	l/h	9.8	10.9	12.5	16.6	20.8	25.0	29.2	56.5	62.4
<b>Heat to air</b>										
Via heat pump (Mode B)	kW	3.8	4.9	5.1	6.6	8.0	10.0	12.1	30.0	35.0
Via standard LPHW @ 80°C	kW	20	22	25	30	35	38	42	85	90
Via upgraded LPHW @ 55°C	kW	17	19	21	26	30	32	36	72	77
Total Mode B + standard LPHW	kW	23.8	26.9	30.1	36.6	43.0	48.0	54.1	115.0	125.0
<b>Heat to pool water</b>										
Via heat pump (Mode A)	kW	4.0	5.5	5.8	8.0	10.0	12.5	15.0	35.0	43.0
Via LPHW @ 80°C	kW	23	23	33	33	33	40	40	65	65
Via LPHW @ 55°C	kW	11	11	16	16	16	20	20	32	32
Total Mode A + LPHW	kW	27.0	28.5	38.8	41.0	43.0	52.5	55.0	100.0	108.0
<b>Cooling duty</b>										
Total	kW	0	0	-4.2	-5.5	-6.7	-8.4	-10.1	-23.0	-28.0
Sensible	kW	0	0	-2.9	-3.9	-4.7	-5.9	-7.1	-13.0	-15.0
Nominal power consumed	kW	2.6	2.9	2.9	3.4	4.4	5.9	7.4	12.3	17.0
Width	mm	1740	1740	1840	1840	1840	1840	1840	2860	2860
Depth	mm	654	654	704	704	704	854	854	1126	1126
Height	mm	1685	1685	1970	1970	1970	1970	1970	2120	2120
Weight	kg	300	310	350	360	370	410	460	954	1020

### Options

- Delta 1-6 single or three phase
- Delta 8-16 three phase only
- Upgraded LPHW heat exchanger for air heating
- Left-hand or right-hand orientation (Delta 4-16)
- Top, side or bottom supply fan outlet
- Front or rear supply fan outlet (Delta 14-16)
- Rear exhaust and fresh air connections (Delta 14-16)

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# POOL AIR HANDLING UNITS

## HRD SYSTEMS



**HRD 30**



### Features

- Dynamic heat pump heat recovery to pool and air
- Self-regulating fresh air control
- Automatic control of exhaust air volume to match pool usage
- Free-cooling (HRD 15-20)
- Free-cooling and heat pump air cooling (HRD 25-30)
- Integral LPHW heat exchanger for air heating
- Double skinned insulated cabinet
- Bespoke fan specifications

### Options

- Upgraded LPHW heat exchanger for air heating
- Left-hand or right-hand orientation
- Choice of supply fan outlet orientations
- Choice of fan static pressures
- BMS interface

### Applications

- Leisure centres
- Olympic pools
- Hotel pools
- Wellness centres
- Health clubs
- Holiday parks & campsites



Specifications	Units	HRD 15	HRD 20	HRD 25	HRD 30
Nominal recirculation air flow	m <sup>3</sup> /h	12000	19500	25000	35000
Exhaust/fresh air flow (stepped control)	m <sup>3</sup> /h	6000	13500	18000	23000
Dehumidification @ 28°C/60% RH by heat pump	l/h	31	45	68	88
Total by heat pump and maximum fresh air	l/h	63	116	152	210
<b>Heat to air</b>					
Via heat pump (Mode B)	kW	37	55	72	90
Via standard LPHW @ 80°C	kW	70	100	150	210
Maximum available (Mode B + standard LPHW)	kW	107	155	222	300
<b>Heat to water</b>					
Via heat pump (Mode A)	kW	40	60	95	117
<b>Cooling duty</b>					
Sensible Mode A	kW	-20	-30	-49	-67
Sensible Mode B	kW			-30	-37
Nominal power consumed (dependent upon main fan duty)	kW	17	23	31	44

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