

Dantherm[®]
CLIMATE SOLUTIONS



AIR HANDLING UNITS
DANX RANGE

EFFICIENT CLIMATE CONTROL SOLUTIONS FOR ALL TYPES
OF INDOOR SWIMMING POOL AREAS

Solutions for any requirement

From efficient heat recovery and humidity control to supplying clean, fresh and comforting air, our high-quality DanX air handling units provide an ideal environment in many indoor applications, right from smaller private pools to huge swimming arenas, leisure centres, water parks and more.



Great air using little energy

A complete solution like the DanX offers a wide range of benefits – from greatly improved air quality and no chlorine smell in the pool room, to options for free cooling in summer and very high dehumidification capacity during winter, when condensation problems can be serious.

Developed to endure

Designed and manufactured to endure aggressive swimming pool environments, the units can be delivered with optional powder coating of the framework and all internal surfaces along with cross flow heat exchangers made from anodised and epoxy-coated aluminium for added corrosion protection.

Low cost of ownership

While durable components ensure reliable operation and long life, the highly efficient heat recovery and low fan power consumption, combined with the optimised control strategy, all contribute to cost-efficient operation and significant energy savings. The result is a very low total cost of ownership.

Benefits

- All-in-one air handling solutions
- Flexible installation possibilities
- Low total cost of ownership
- No chlorine odours
- Free cooling during the summer
- Up to 95% heat recovery in the winter
- Energy-efficient EC fan motors
- Corrosion-resistant components

Typical application areas

- Private pools
- Hotel pools
- Public pools
- Health resorts
- Leisure centres
- Water parks
- Rehabilitation centres



The DanX units are equipped with Air to air Plate Heat Exchangers produced by Heatex AB and Energy Recovery Industries Corp. S.r.L. who are participants of the Eurovent Certification programme.

*Check ongoing validity of certificate:
www.eurovent-certification.com*

User-friendly control system

All DanX solutions are supplied with a control package, which takes demand management to a new level. Based on years of experience and on-going development, the control strategy has been optimised specifically for Dantherm swimming pool units. With automatic monitoring and control of temperature, humidity and energy consumption, you are guaranteed a balanced and comfortable indoor climate – adapted to your specific requirements.

Electrical control and command

Your DanX unit is supplied ready wired and with all necessary sensors and safety devices installed. To make it as easy as possible to establish the electrical connection between the control panel and the DanX unit, the unit can be delivered with pre-mounted plug connections.

The secret behind the low operating costs is the control system which combines intuitive, hassle-free operation with extremely advanced control and programming options. Using the easy-to-read display you can easily check the current system status and adjust settings as preferred using the buttons. The controller also comes with a built-in communication capability, allowing it to be integrated into a Building Management System.

Depending on the configuration, Dantherm control systems are capable of communicating with most commonly used protocols like:

- MODBUS RTU
- MODBUS TCP/IP
- BACNET TCP/IP



Intuitive and user-friendly control panel.

Features

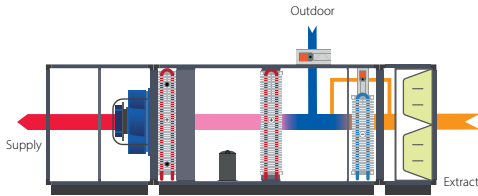
Monitor and adjust set points for:

- Humidity
- Room temperature
- Outdoor air volume
- Supply and return air volume (min./max.)
- View alarms on display and have them sent to your email
- Adjust daily programs so the system starts, stops and/or cools during the night at times defined by you

OPERATING PRINCIPLES (DAYTIME WINTER)

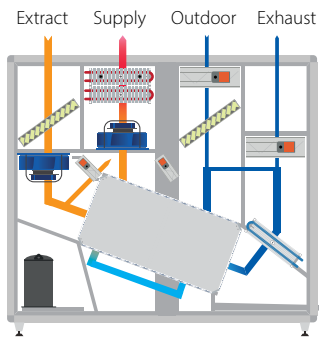


DanX AF



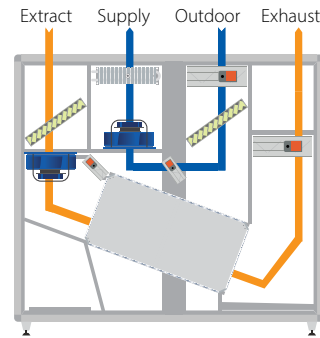
The AF is running as a recirculation system with up to 30% outdoor air mixed into the air stream (extract fan required to avoid over pressure in the pool hall). Dehumidification is done with the heat pump and a proportion of outdoor air. If the humidity set point is reached, the cooling circuit will be switched off again.

DanX HP



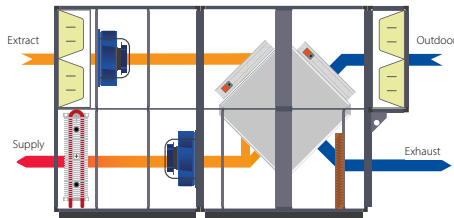
Partial recirculation air with heat recovery through the double cross-flow heat exchanger and heat pump. The HP uses the minimum of outdoor air (set point) required for hygienic reasons. To keep the pressure drop low, only a part of the air passes through the heat exchanger and evaporator. Dehumidification is done using the heat pump and outdoor air. If the dehumidification capacity is insufficient, the amount of outdoor air will be increased accordingly.

DanX XD



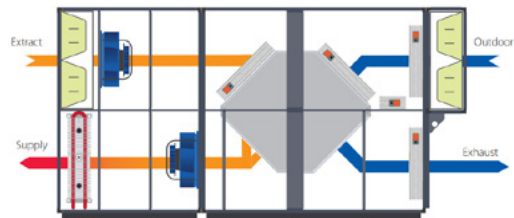
Partial recirculation air with heat recovery through the double cross-flow heat exchanger. Dehumidification is done with outdoor air. The XD uses the minimum of outdoor air (set point) required for hygienic reasons. To keep the pressure drop low, only the part of air which should be changed passes through the heat exchanger. If the dehumidification capacity is insufficient, the amount of outdoor air will be increased accordingly.

DanX XKS



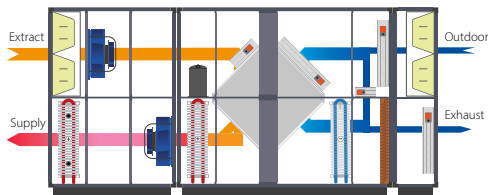
Partial recirculation air with heat recovery through the cross-flow heat exchanger. Dehumidification is done with outdoor air. The XKS uses the minimum of outdoor air (set point) required for hygienic reasons. To keep pressure drop low, only the part of air which should be changed passes through the heat exchanger. If the dehumidification capacity is insufficient, the amount of outdoor air will be increased accordingly.

DanX CF



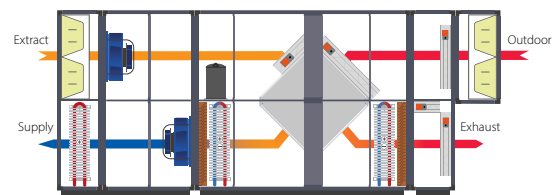
Partial recirculation air with heat recovery through the counter-flow heat exchanger. Dehumidification is done with outdoor air. The CF uses the minimum outdoor air (set point) required for hygienic reasons. To keep pressure drop low, only the part of air which should be changed passes through the heat exchanger. If the dehumidification capacity is insufficient, the amount of outdoor air will be increased accordingly.

DanX XWPS



Partial recirculation air with heat recovery through the cross-flow heat exchanger and heat pump. The XWPS uses the minimum outdoor air (set point) required for hygienic reasons. To keep pressure drop low, only a part of the air passes through the heat exchanger and evaporator. Dehumidification is done using the heat pump and outdoor air. If the dehumidification capacity is insufficient, the amount of outdoor air will be increased accordingly.

DanX XWPRS

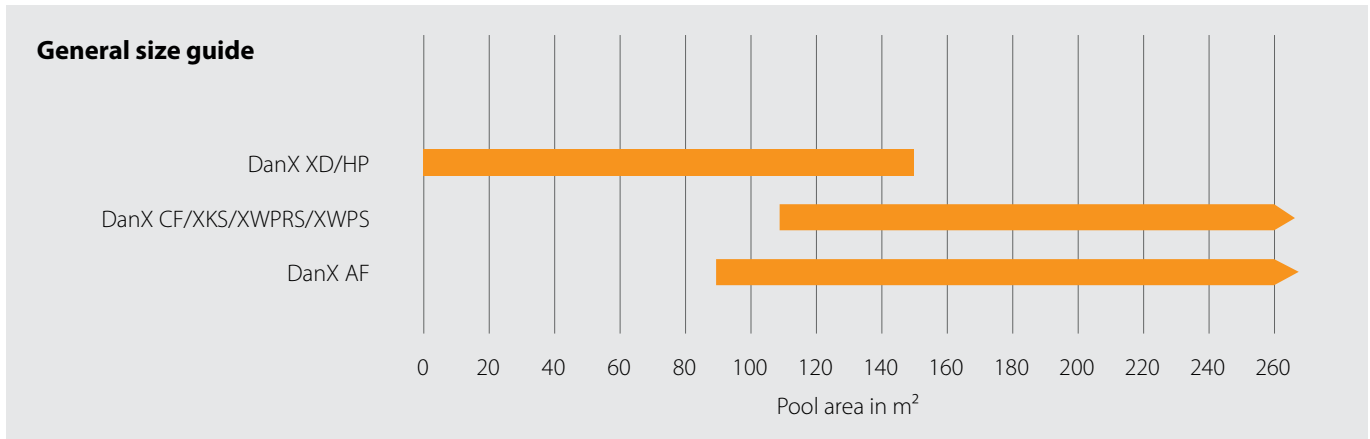


The XWPRS will run on 100 % proportion of outdoor air. The by-pass will usually be closed to pre-cool through the cross-flow heat exchanger. Active cooling is done through the heat pump in cooling mode. Dehumidification is handled through the outdoor air and heat pump.

SELECT THE RIGHT UNIT FOR YOUR POOL

Every setting is unique

Water evaporation in swimming pool halls cannot be avoided, but a carefully designed air handling solution can help control the relative humidity. On the basis of pool size, water temperature, air temperature, humidity and pool activity, Dantherm's DanX range can be designed to meet any requirement. Available with a one- or two-stage heat recovery system, optional heat pumps and a bespoke controls package, it is the ideal choice for energy- and cost-effective control of all swimming pool hall environments.



Performance overview

Specifications	HP/XD 1	HP/XD 2	HP/XD 3
Nominal air volume (m³/h)	1,000	1,750	2,750
Dehumidification ¹ (kg/h)	5/4	9/6	15/10
Dehumidification ² (kg/h)	7/7	11/11	18/18

Specifications	AF 3/6	AF/AFs 5/10	AF/AFs 7/14	AF/AFs 12/24
Nominal air volume (m³/h)	4,850	7,300/9,500	12,000/14,000	19,000/24,000
Dehumidification ¹ (kg/h)	30	47/59	76/90	120/148

Specifications	XWPS-XWPRS/ XKS 2/4	XWPS-XWPRS/ XKS 3/6	XWPS-XWPRS/ XKS 5/10	XWPS-XWPRS/ XKS 7/14	XWPS-XWPRS/ XKS 9/18	XWPS-XWPRS/ XKS 12/24	XWPS-XWPRS/ XKS 16/32
Nominal air volume (m³/h)	3,350	4,500	8,400	12,500	15,500	21,500	25,500
Dehumidification ¹ (kg/h)	18/12	26/16	45/30	65/44	81/55	122/76	137/90
Dehumidification ² (kg/h)	22/22	29/29	54/54	81/81	100/100	139/139	165/165

Specifications	CF 3/5	CF 4/7	CF 6/9	CF 8/12	CF 10/14	CF 12/17	CF 16/23	CF 19/28	CF 22/32
Nominal air volume (m³/h)	3,100	4,400	6,300	8,000	9,800	11,600	16,000	19,000	22,000
Dehumidification ¹ (kg/h)	11	16	22	28	35	41	57	67	78
Dehumidification ² (kg/h)	20	29	41	52	63	75	104	123	142

¹Pool hall condition 30°C/54% RH - 30% outdoor air @ 5°C/85% RH

²Max. in accordance to VDI 2089 at 30°C/54% RH pool hall condition.

DANX AF

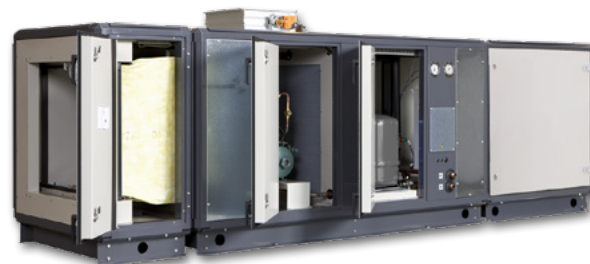
DanX AF

The DanX AF is a very effective heat pump dehumidification system, which perfectly controls the air humidity and indoor temperature while offering significant running cost reductions.

Ideally suited for swimming pools with limited activity, for instance hotel pools, the units have been designed for installation in narrow spaces. If required, it is possible to install the unit suspended under the ceiling of the pool room. Moreover, the DanX AF is also very suitable for dry storage and industrial process drying facilities.

Offering the possibility of adding up to 30% outdoor air, DanX AF is the right choice when the requirements for the volume of outdoor air are less stringent, and in geographical areas where the outdoor air is so wet that dehumidification is impossible with 100% outdoor air. In such cases, the air can be recirculated and only a smaller proportion of the air will be replaced with outdoor air.

For further energy optimisation, a water cooled condenser can be integrated into the heat pump. This way, excess heat can be transferred to the pool or the hot water supply for reuse, effectively reducing your overall energy consumption even further.



Specifications	Units	AF 3/6	AF 5/10	AF 5/10s	AF 7/14	AF 7/14s	AF 12/24	AF 12/24s
Dehumidification @ 28°C/60% RH	l/h	13	20	25	33	39	52	62
Operating temperature range	°C	22-36	22-36	22-36	22-36	22-36	22-36	22-36
Operating humidity	%	50-80	50-80	50-80	50-80	50-80	50-80	50-80
Air flow	m ³ /h	4,850	7,300	9,500	12,000	14,000	19,000	24,000
External duct pressure	Pa	300	300	300	300	300	300	300
Outdoor air	%	0-30	0-30	0-30	0-30	0-30	0-30	0-30
Power supply	V/Hz	400/3ph/50	400/3ph/50	400/3ph/50	400/3ph/50	400/3ph/50	400/3ph/50	400/3ph/50
Refrigerant		R407C	R407C	R407C	R407C	R407C	R407C	R407C
Refrigerant quantity/CO ₂	kg/tons	9/15.97	14/24.84	14/24.84	22/39.03	22/39.03	32/56.77	32/56.77

DANX HP & DANX XD

DanX HP

DanX HP is a compact air handling unit with a double cross-flow heat exchanger and a heat pump. It is ideal for small to medium indoor pool areas.

Combining a heat pump with the highly efficient double cross-flow heat exchanger results in very low operating costs and makes the solution optimal for areas characterised by low outdoor air temperatures. The integrated mixing technology ensures that no more outdoor air than absolutely necessary is applied in order to achieve a good indoor climate. An optional water-cooled condenser can be integrated to heat the pool water.



Specifications	Units	DANX 1 HP	DANX 2 HP	DANX 3 HP
Nominal air volume	m ³ /h	1,000	1,750	2,750
Max. air volume	m ³ /h	1,300	2,100	3,600
Max. external duct pressure*	Pa	350	350	350
Outdoor air volume	%	0-100	0-100	0-100
Dehumidification capacity recirculation**	kg/h	1.7	4.2	6.9
Dehumidification capacity VDI 2089**	kg/h	7	11	18

* at nominal air volume, ** at 30°C/54% indoor

DanX XD

The DanX XD air handling unit is fitted with a double cross-flow heat exchanger (2-step heat exchanger).

The compact and efficient solution has an integrated air mixing function which ensures that no more air than necessary is replaced. This way, the solution will generate a very high level of climatic comfort while running extremely efficient using a minimum of energy.



Specifications	Units	DANX 1 XD	DANX 2 XD	DANX 3 XD
Nominal air volume	m ³ /h	1,000	1,750	2,750
Max. air volume	m ³ /h	1,300	2,100	3,700
Max. external duct pressure*	Pa	350	350	350
Outdoor air volume	%	0-100	0-100	0-100
Dehumidification capacity VDI 2089**	kg/h	7	11	18

* at nominal air volume, ** at 30°C/54% indoor

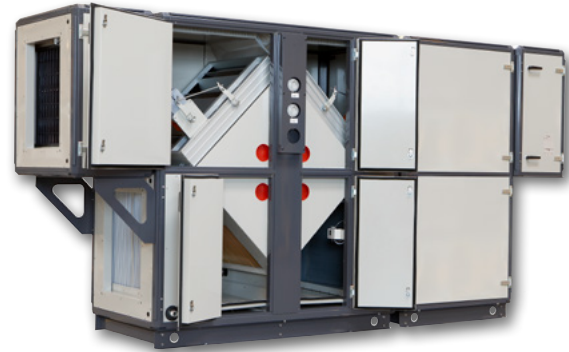
DANX XKS & DANX CF



DanX XKS

DanX XKS is an air handling unit with a very efficient cross-flow heat exchanger ideal for large swimming pools. The solution controls the air humidity and temperature in the pool area, and with a temperature efficiency of up to 80%, it reduces operating costs and energy consumption.

The built in mixing function ensures that only the volume of outdoor air needed to maintain a pleasant climate is added.



Specifications	Units	2/4 XKS	3/6 XKS	5/10 XKS	7/14 XKS	9/18 XKS	12/24 XKS	16/32 XKS
Nominal air volume	m ³ /h	3,350	4,500	8,400	12,500	15,500	21,500	25,500
Max. air volume	m ³ /h	4,500	6,000	10,000	14,000	20,000	26,000	32,000
Outdoor air volume	%	0-100	0-100	0-100	0-100	0-100	0-100	0-100
Dehumidification capacity VDI 2089*	kg/h	22	29	54	81	100	139	165

* at 30°C/54% indoor

DanX CF

Delivering exceptional indoor comfort using very little energy, the DanX CF heat recovery units with counter-flow heat exchanger are based on the latest technology allowing them to reach very high heat recovery rates at a very low pressure drop.

They also come in a variety of sizes and share many features with the DanX XKS.



Specifications	Units	DANX 3/5	DANX 4/7	DANX 6/9	DANX 8/12
Nominal air volume	m ³ /h	3,100	4,400	6,300	8,000
Max air volume	m ³ /h	4,500	6,500	9,000	11,500
Outdoor air volume	Pa	0-100%	0-100%	0-100%	0-100%
Dehumidification capacity VDI 2089*	kg/h	20	29	41	52

Specifications	Units	DANX 10/14	DANX 12/17	DANX 16/23	DANX 19/28	DANX 22/32
Nominal air volume	m ³ /h	9,800	11,600	16,000	19,000	22,000
Max air volume	m ³ /h	14,000	17,000	23,000	28,000	32,000
Outdoor air volume	Pa	0-100%	0-100%	0-100%	0-100%	0-100%
Dehumidification capacity VDI 2089*	kg/h	63	75	104	123	142

* at 30°C/54% indoor

DANX XWPS & DANX XWPRS

DanX XWPS

Designed for large swimming pool areas DanX XWPS, is an air handling unit fitted with a cross-flow heat exchanger with a built-in heat pump. With its temperature efficiency of up to 100%, the unit reduces operating costs and energy consumption.

The built-in mixing ensures that only the precise volume of outdoor air that is necessary for maintaining a pleasant indoor climate is added. To achieve even greater energy savings, a water-cooled condenser can be integrated in the heat pump. In this way, the excess heat can be utilised efficiently to warm the pool water or the utility water.



Specifications	Units	2/4 XWPS	3/6 XWPS	5/10 XWPS	7/14 XWPS	9/18 XWPS	12/24 XWPS	16/32 XWPS
Nominal air volume	m ³ /h	3,350	4,500	8,400	12,500	15,500	21,500	25,500
Max. air volume	m ³ /h	4,500	6,000	10,000	14,000	20,000	26,000	32,000
Outdoor air volume	%	0-100	0-100	0-100	0-100	0-100	0-100	0-100
Dehumidification capacity recirculation*	kg/h	9	16	24	31	40	64	71
Dehumidification capacity VDI 2089*	kg/h	22	29	54	81	100	139	165

* at 30°C/54% indoor

DanX XWPRS

DanX XWPRS is an air handling unit fitted with a cross-flow heat exchanger with a reversible heat pump. This means it delivers the same functions and benefits as the XWPS.

In addition, the reversible heat pump enables the unit to operate with active cooling during the summer period. It is especially suitable for therapy baths with a high heat load from the hot pool water or buildings with large glass facades.



Specifications	Units	2/4 XWPRS	3/6 XWPRS	5/10 XWPRS	7/14 XWPRS	9/18 XWPRS	12/24 XWPRS	16/32 XWPRS
Nominal air volume	m ³ /h	3,350	4,500	8,400	12,500	15,500	21,500	25,500
Max. air volume	m ³ /h	4,500	6,000	10,000	14,000	20,000	26,000	32,000
Outdoor air volume	%	0-100	0-100	0-100	0-100	0-100	0-100	0-100
Dehumidification capacity recirculation*	kg/h	9	16	24	31	40	64	81
Dehumidification capacity VDI 2089*	kg/h	22	29	54	81	100	139	165

* at 30°C/54% indoor