YORK®

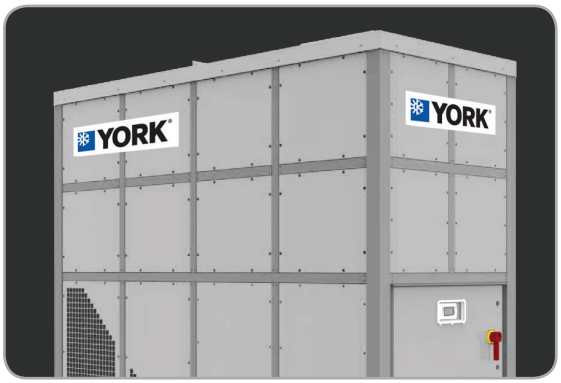
Adiabatic Cooling Air / Air Solutions for Data Centers

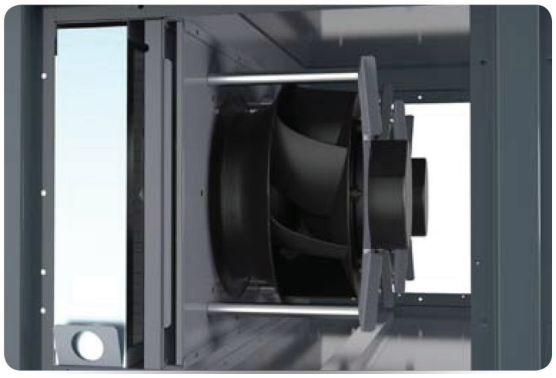
We're your guide through all phases of the data center lifecycle.

The power behind **your mission**

Johnson Controls

HDB Adiabatic Cooling Air/ Air Solutions for Data Centers





INDIRECT AIR/AIR FREE-COOLING

The indirect Free-Cooling is different from the direct one since:

- it does not create contamination of the air inside the server room with the outside air
- dust and pollutants don't enter into the server room and no additional filtration is required
- there is no increase of latent load.

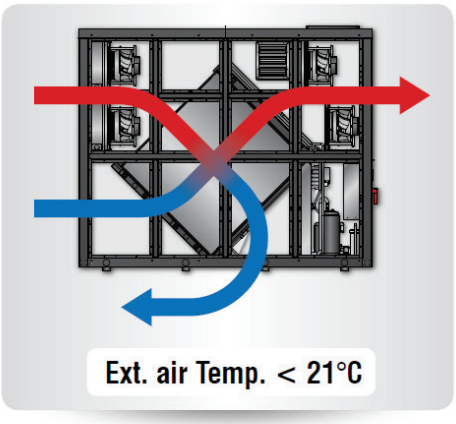
Consequently, there is a clear reduction of energy consumption.

EC PLUG FANS

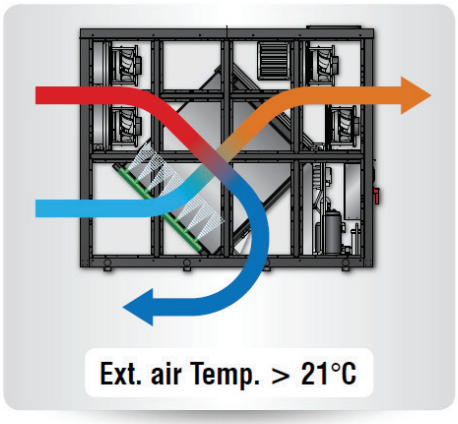
The EC type ventilation on both air flows allows:

- High efficiencies at partial loads
- reduction of noise emissions
- to follow even little variations of the thermal load

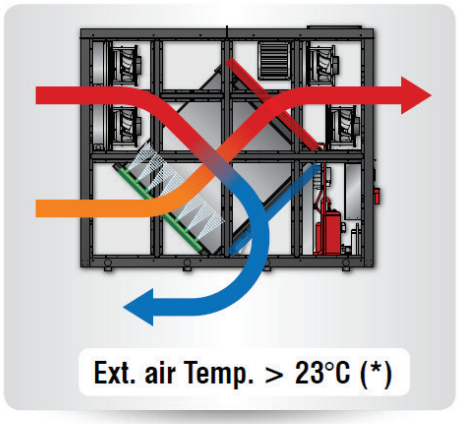
The fans are "hot-swappable" and their consumption is displayed real-time on the on-board display.



Free-Cooling



Adiabatic Cooling



Combination with Mechanical Cooling

CHILLED WATER OR DIRECT EXPANSION INTEGRATION

Whenever the external climatic conditions do not allow to cover the internal heat load only with the indirect Free-Cooling + Evaporative Cooling mode, an integration with mechanical cooling is needed. The option of a refrigerating circuit with modulating BLDC compressors for R410A, expansion valve with electronic control and finned evaporator with hydrophilic treatment. Alternatively, an additional chilled water coil can be connected to an external chiller.

(*) Wet bulb conditions for a 1 MW Data Center (N + 1 redundancy) in Amsterdam @ 36°C - 25%; outlet air T 24°C; Max outlet air T 26°C

The indirect Free-Cooling of DataBatic units can be extended to a greater number of hours per year and to more climatic zones thanks to the combination of the Evaporative Cooling system and of the air-to-air cross-flow heat exchanger. The decrease (and in some cases the cancellation) of the mechanical operation thus leads to a twofold benefit: the reduction of running costs (lower PUE levels) and the reduction of implementation costs thanks to lower installed electrical powers.

The HDB units can be equipped with the "refrigerating circuit option" and are fully factory assembled in a one-piece solution to facilitate the installation.

EVAPORATINVE COOLING ON THE INTAKE AIR STREAM

DataBatic units are equipped with the Evaporative Cooling technology, based on the use of nozzles which atomize water on the air stream flowing from outside. The water evaporates and cools the air thanks to the adiabatic effect. The air then flows through the cross-flow heat exchanger at a temperature close to the wet bulb temperature, extending Free-Cooling mode operating time. The system, finally, is of multistep type with respect to the air flow so as to optimize the saturation efficiency.

WATER SAVING FUNCTION AND LEGIONELLA-FREE SYSTEM

The logic of the pump control, which is modulating and of electronic type, allows both to optimize the air saturation and to reduce the WUE (Water Usage Effectiveness) level and energy consumptions.

The particular configuration of the hydraulic circuit and its control algorithms guarantee the needed replenishment of water in the system to avoid high concentrations of salts and prevent from stagnant water in the drain pan, with risk of legionella bacteria proliferation.

$$WUE = \frac{\text{Annual Water Usage}}{\text{IT Equipment Energy}} \; [l/kWh]$$

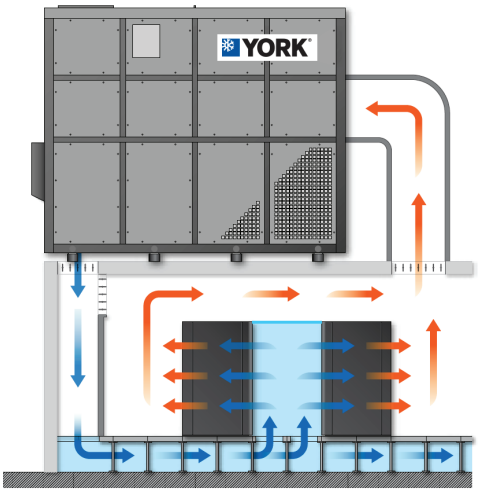
- Multiple units can be controlled in parallel on the same plant.
- Coss-flow high-efficiency heat exchanger coated with epoxy treatment for corrosion protection (Eurovent certified).
- Pressure management in the air distribution plenum (Δp Control).
- Side and front access to all components even with running unit to make maintenance easier and to avoid plant shutdowns.
- Frame developed and assembled in accordance with regulation UNI 1886.

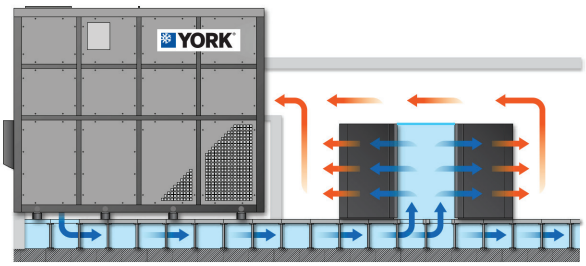
Upon request:

- Air renewal kit with modulating dampers (Fresh air kit).
- Ultrasonic Humidifier.
- Low outdoor air temperature kit (down to -40 ° C).

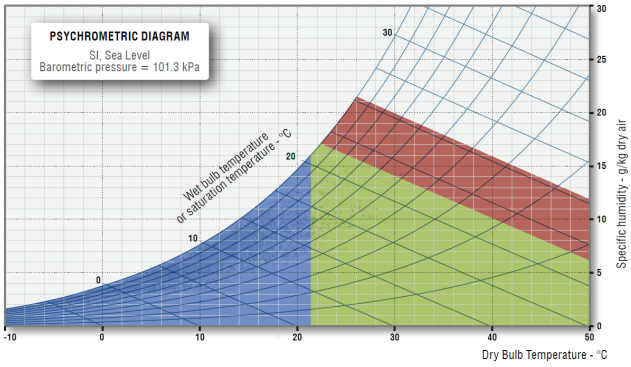
HDB Adiabatic Cooling Air/ Air Solutions for Data Centers

Designed for installation on the roof or on the side of the Data Center

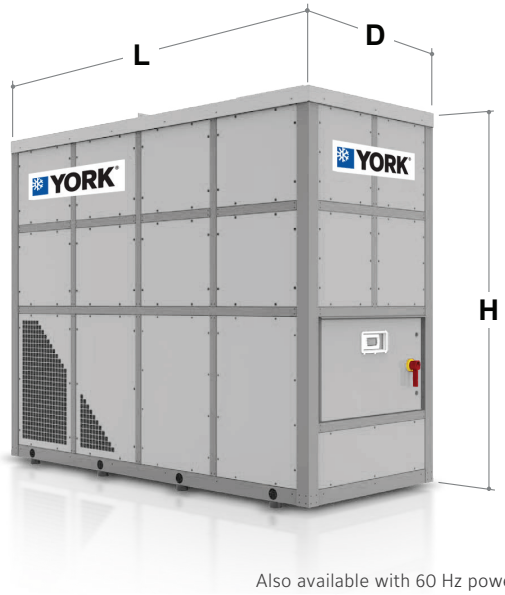




Use of the cooling system for a 1 MW Data Center (N + 1 redundancy) in Amsterdam @ 36°C - 25%; outlet air T 24°C; Max outlet air T 26°C



Mechanical Cooling + Adiabatic Cooling
Indirect Free-Cooling + Adiabatic Cooling
Indirect Free-Cooling



Also available with 60 Hz power supply

		HDB0060	HDB100	HDB0200	HDB0300
Frame	-	F1	F2	F3	F4
Dimesions [L x H x D]	mm	2750 x 2650 x 1180	4200 X 2650 X 2250	4700 x 3600 x 2250	4700 x 3600 x 3100
Capacity	kW	10 - 60	60 - 100	100 - 200	200 - 330
Airflow	m^3/h	up to 15.000	up to 27.000	up to 53.000	up to 82.500

For additional information, please visit **www.johnsoncontrols.com** or follow us **@johnsoncontrols** on Twitter.

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