Advantix systems

Makers of DuCool Dehumidification and Cooling

DuHybrid Series (DB) Large

DuHybrid Series (DB)

THE ULTIMATE IN GREEN AIR CONDITIONING USES THE OPTIMAL COMBINATION OF SOLAR AND GRID POWER

Utilization of renewable energy

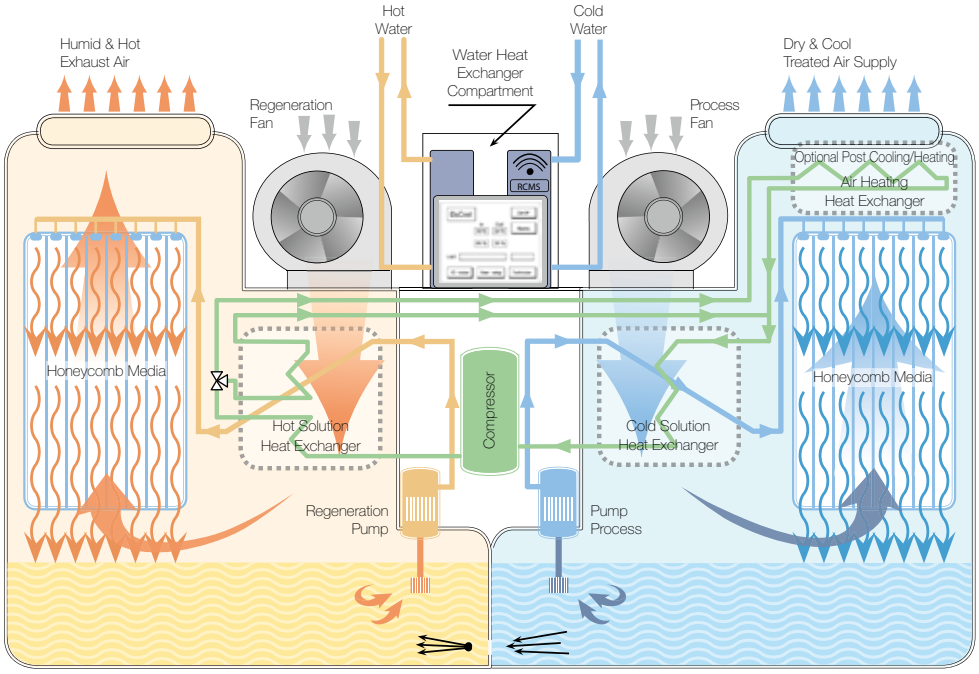
- Hybrid system provides continuous supply regardless of intermittency of solar (or other renewable) heat source
- Intelligent controls maximize the use of solar, while supplementing grid power only as necessary
- Optimized performance, Low-quality waste heat or solar thermal energy can easily be utilized as low as 54°C to power dehumidification
- Geothermal cooling can often be used to dramatically reduce or eliminate compressor load

Superior economics

- Maximizes energy efficiency by optimizing the use of renewable energy and electricity
- Tested COP of 12.4-25.6 reduces cooling energy required by up to 60%

Functional benefits

- More precise control of indoor environment through the ability to directly control humidity and temperature independently
- Greater comfort due to eliminating overcooling of outdoor air
- Improved indoor air quality (IAQ) through removal of airborne particulates and organisms
- Eliminates opportunities for mold formation by eliminating all points of condensation in the system



SchematicProcessDiagram

TechnicalSpecifications

DuHybrid (DB) Large

General Data

Unit Model	DB 3400/9
Air Flow	
Supply (Treated) Air	3,400 CFM (Max.) (1)
Regeneration Air	3,000 CFM
Hot Water	135°F to 203°F; Maximum flow 66 gpm
Cold Water / Glycol	50°F to 95°F; Maximum flow 66 gpm (2)
Minimal T between Cold & Hot water	45°F
Refrigerant	R-407C
Desiccant Solution LiCl (40% Concentration)	33 Gallons
Operation Temperature Range	From 14°F to 122°F
Operation Absolute Humidity Range	From 7 gr/lb to 210 gr/lb

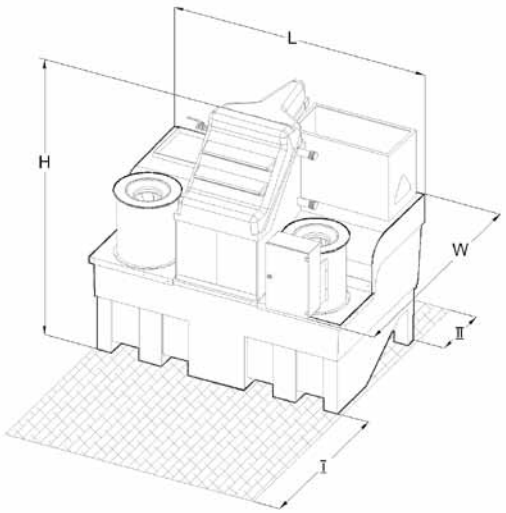
Electrical Data

Electrical System (3)		208-230V, 3 Ph, 60Hz	400-460V, 3 Ph, 50-60Hz
Line Current	Amp.	50.4	19.5
Breaker Size	Amp.	80.0	32.0

Physical Data

Weight	Lb
Net	1,520
Operating (including LiCl)	1,870
Dimensions	**Inch**
L	88
W	66
H	86

Clearances	Inch
I	40
II	20



Notes:

1) Unit performance varies due to voltage & frequency fluctuations. **Air Flow** can vary up to 15% depending on specific installation configuration. In cases that a **Booster Fan** is added, ensure that the air flow through the unit will not exceed the maximum air flow allowed (3,400 CFM).
2) At inlet temperatures below 50°F consult manufacturer for exact unit configuration.
3) Units are available in different voltages with 50 Hz.
4) COP ratings are calculated without the unit's process fan and without the external cold water and hot water supply pumps.
5) Deviation range for the above data (+/-) 5 %.
6) Specifications are subject to changes without prior notice.

Performance Data for the Different Operational Modes

Hybrid Mode (Renewable)

Simulating Solar Hot Water & Geothermal Cold Water Application

Data & Capacity (Simultaneous Hot & Cold Water + Electrical Operation) [2]

Tested at ambient conditions: 86°F; 70 % R.H.

Hot water at 176°F, 40 gpm flow; **Cold water** at 70°F, 66 gpm flow. Simulation of unit operating using solar or co-generation hot water. Cold water at 70°F that can be supplied from a geothermal cold water well in the south east region of the US from Georgia and south (Miami FL) or from a cooling tower from Georgia and north.		
Sensible Cooling	83,597 Btu/h	24.5 kW
Latent Cooling	155,253 Btu/h	45.5 kW
Total Cooling	238,850 Btu/h	70.0 kW
	20.0 TR	
Moisture Extraction	18 Gal/h	
Temperature Reduction	23.5°F	
Efficiency Rating [4]	8.2 COP	28 EER

Thermal Mode (Renewable)

Data & Capacity (Hot & Cold Water Operation Only) [2]

Tested at ambient conditions: 86°F; 70 % R.H.

Hot water at 185°F, 40 gpm flow; **Cold water** at 42.8°F, 66 gpm flow. Simulation of 100% Fresh air unit operating with chilled water from a chiller.		
Sensible Cooling	88,716 Btu/h	26.0 kW
Latent Cooling	184,255 Btu/h	54.0 kW
Total Cooling	272,971 Btu/h	80.0 kW
	22.8 TR	
Moisture Extraction	21.5 Gal/h	
Temperature Reduction	25°F	
Efficiency Rating [4]	22.85 COP	78 EER

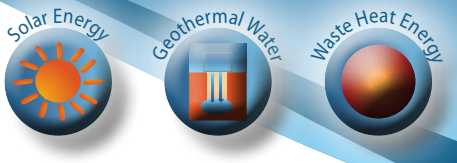
Hot water at 149°F, 40 gpm flow; **Cold water** at 62.6°F, 66 gpm flow Simulation of unit operating using solar hot water & geothermal cold water at 62°F applicable to US climates in Charlotte, North Carolina.		
Sensible Cooling	51,180 Btu/h	15.0 kW
Latent Cooling	138,868 Btu/h	40.7 kW
Total Cooling	190,048 Btu/h	55.7 kW
	15.9 TR	
Moisture Extraction	16 Gal/h	
Temperature Reduction	14.5°F	
Efficiency Rating [4]	16.0 COP	54.6 EER

Electrical Mode

Data & Capacity (Compressor operation only) [2]

Compressor Size	**9 HP**	
Sensible Cooling	58,006 Btu/h	17.0 kW
Latent Cooling	132,050 Btu/h	38.7 kW
Total Cooling	190,056 Btu/h	55.7 kW
	15.9 TR	
Moisture Extraction	15 Gal/h	
Temperature Reduction	16°F	
Efficiency Rating [4]	3.5 COP	12 EER

DuHybrid (DB)

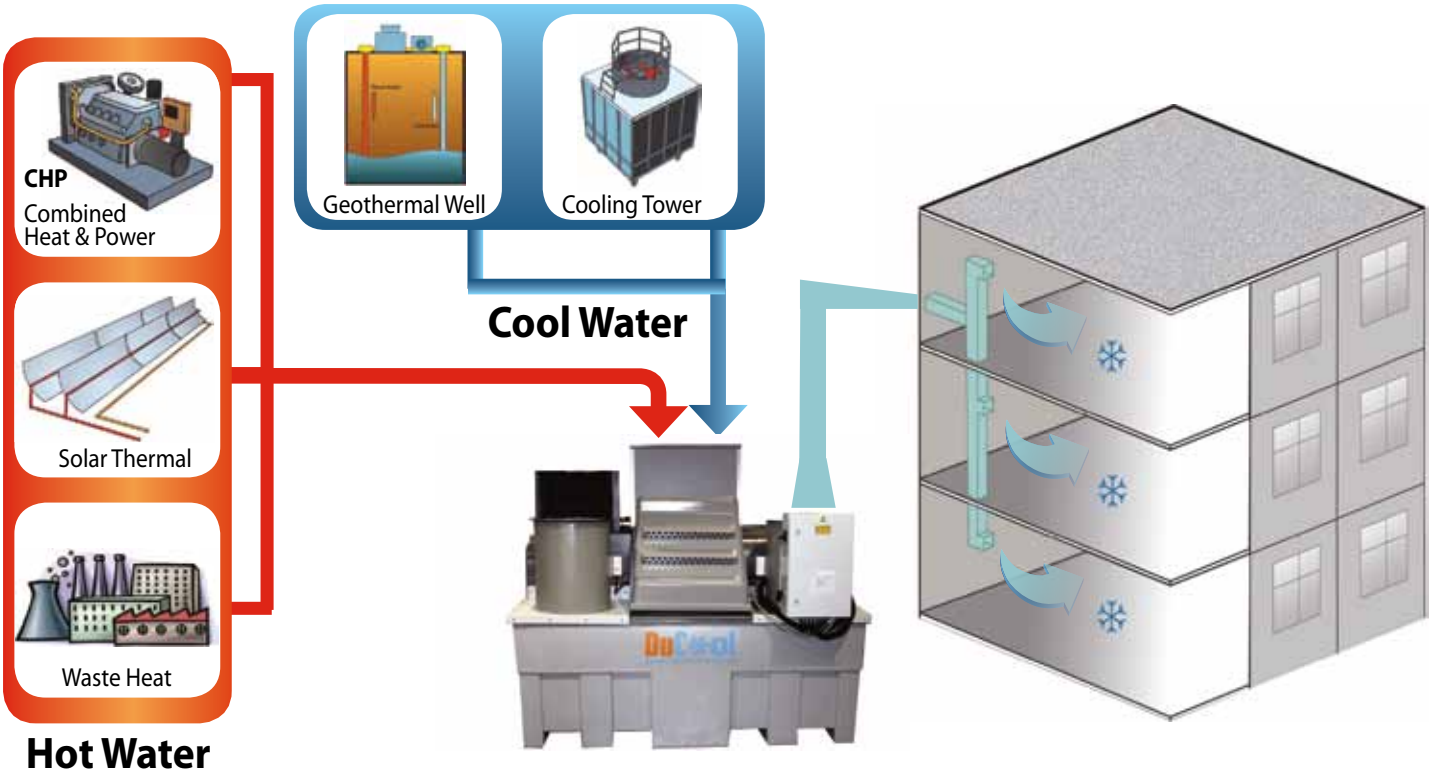


Hybrid Desiccant Air Conditioning System

Powered by Renewable Energy & Electricity

Air Conditioning ■ Dehumidification ■ Indoor Air Quality (IAQ)

- Maximizes energy efficiency by the combined usage of green energy and electricity
- Enables humidity and temperature independent control
- Improves Indoor Air Quality (IAQ)
  - ✔ Eliminates up to 91±5% of airborne microorganisms in the treated air
  - ✔ Removes 80±5% of all particles larger than five microns including allergens



Advantix systems
Makers of DuCool Dehumidification and Cooling

For further information: www.advantixsystems.com ■ sales@advantixsystems.com ■ Tel: 305.503.0446 ■ US Toll Free: 888.818.5171
20900 NE 30th Ave., Suite 715, Miami, FL 33180, USA