HCU Systems for Industrial Applications

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National Accounts Manager

March 7, 2011

Munters

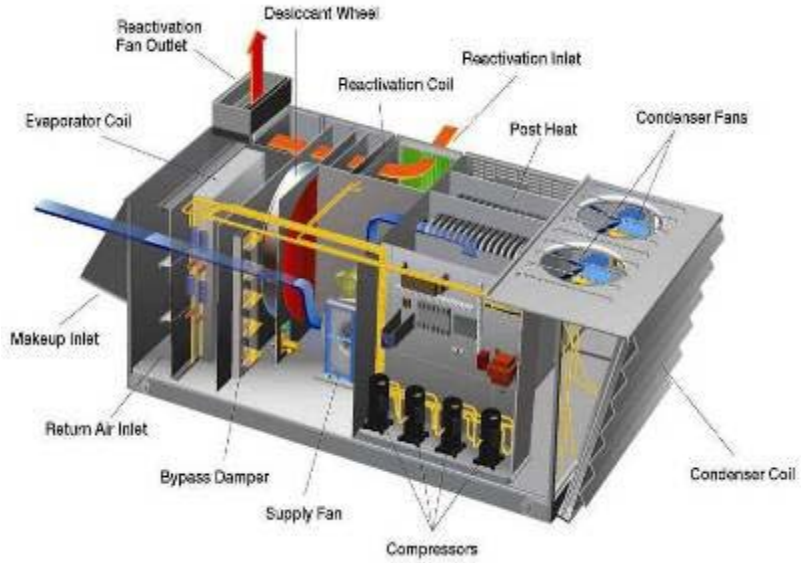
Origins of the HCU

The Humidity Control Unit (HCU)

Hybrid Desiccant DX System

Humidity Control Unit - DryCool HCU

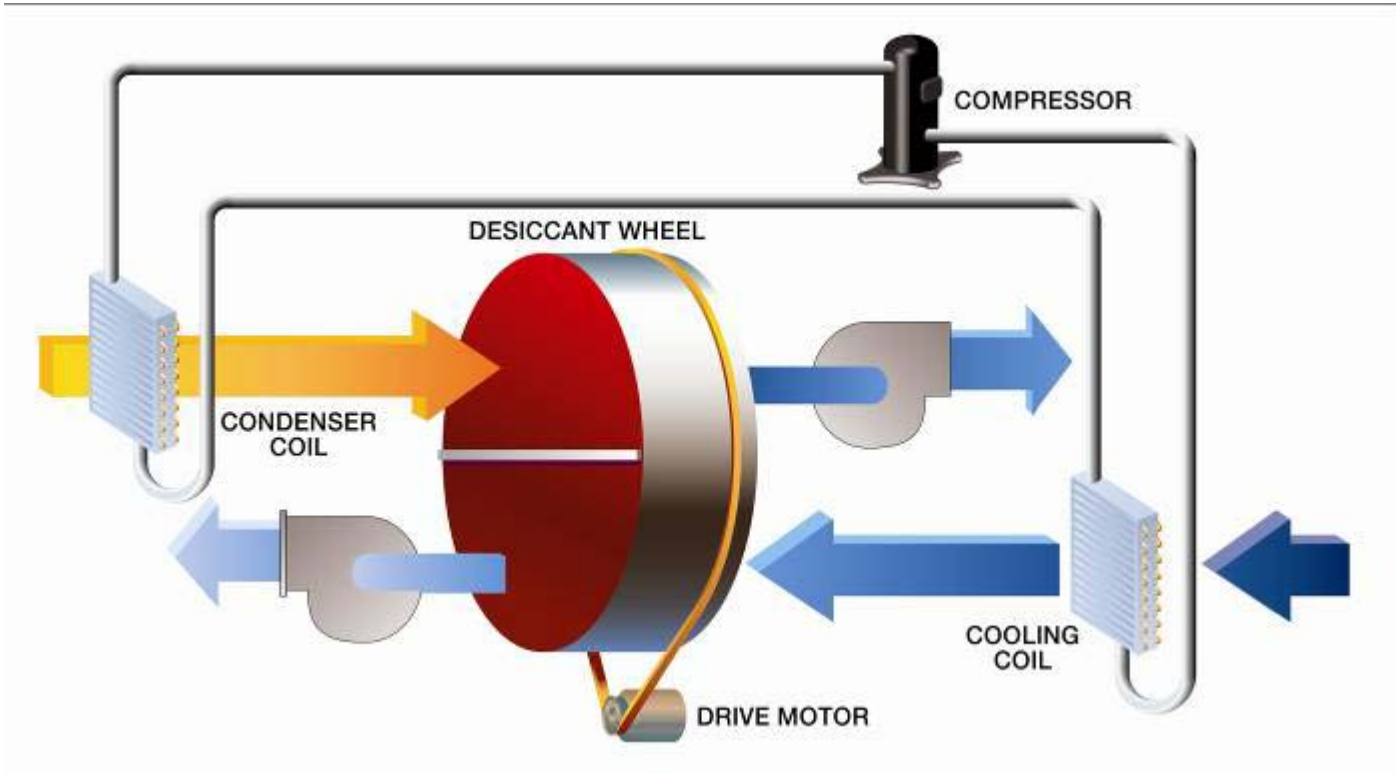
- Introduced as a commercial unit in 2001



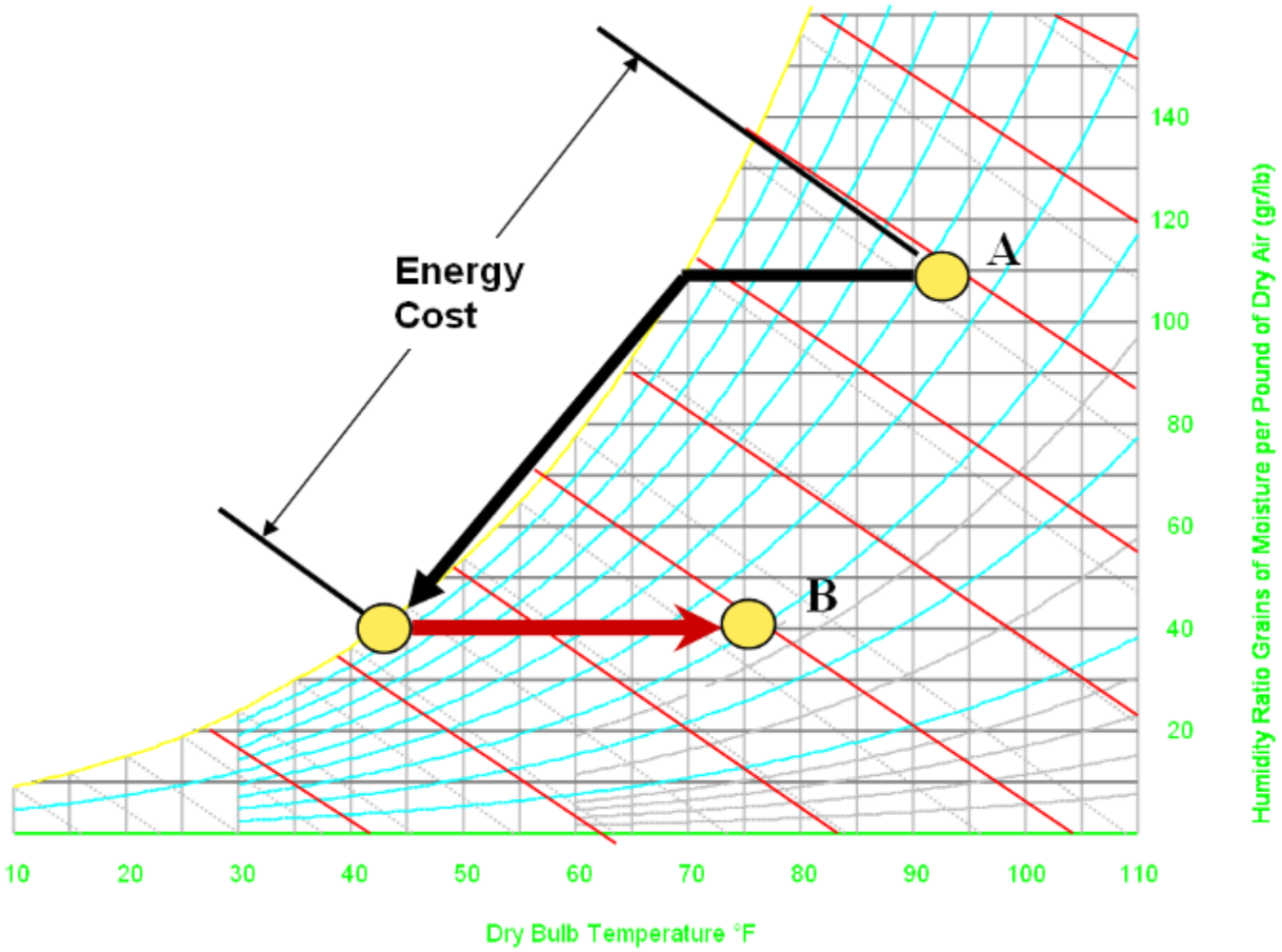
The HCU is protected under U.S. Patent 6,557,365 and other patents and patents pending

HCU Product Concept

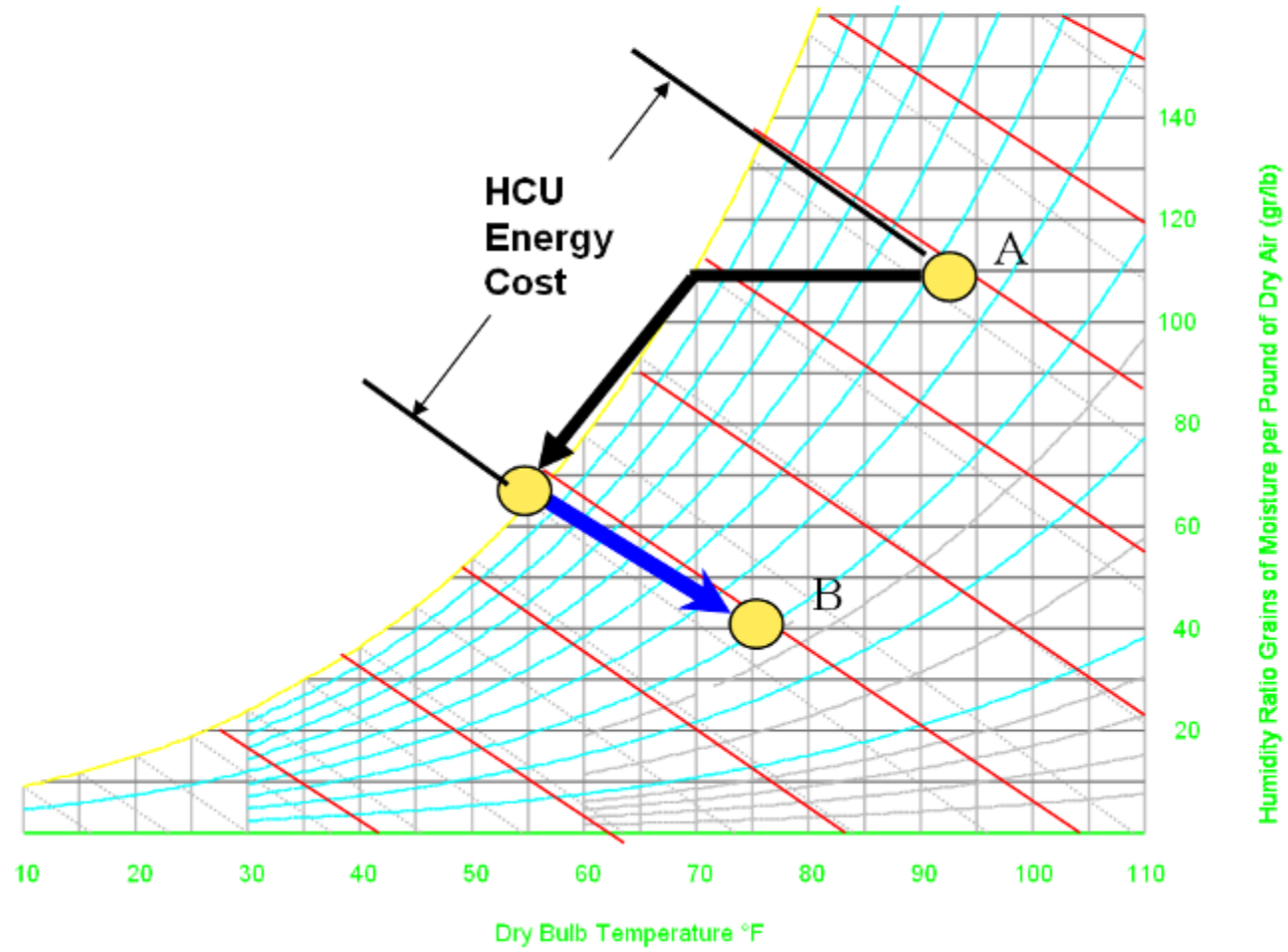
- **Combine the benefits of desiccant dehumidification with DX air conditioner for "*The Best of Both Worlds*" to treat makeup air**



Energy cycle of a conventional AHU used to cool, dehumidify and re-heat makeup air

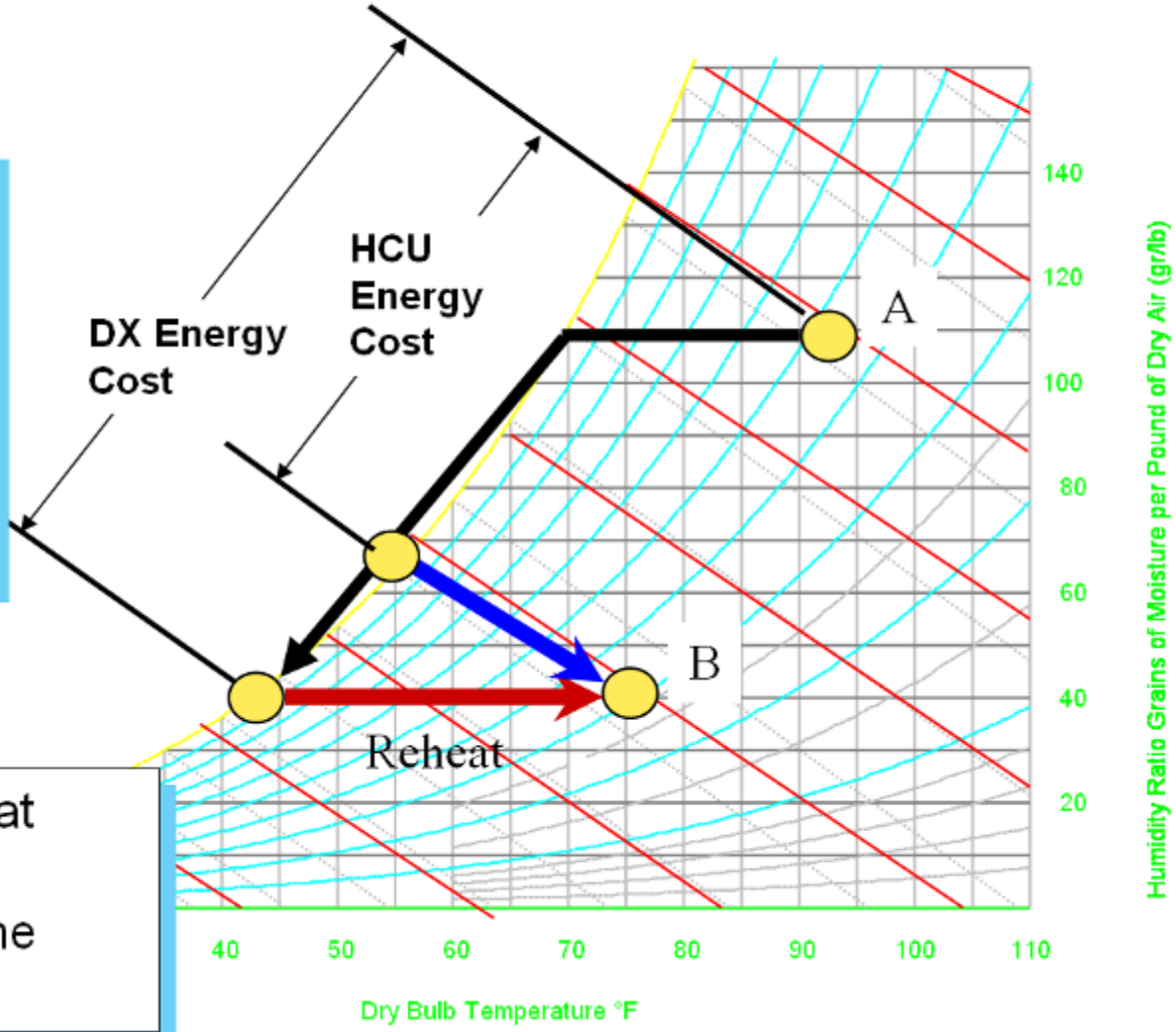


Energy cycle of an HCU is used to cool, dehumidify and re-heat make-up air



Comparison of DryCool HCU vs. Conventional AHU Used to Cool, Dehumidify and Reheat Makeup Air

HCU doesn't need to cool to as low a temperature, so it saves 30 to 40% energy cost vs. conventional AHU systems.



HCU provides 'free' re-heat energy due to the natural temperature rise across the desiccant wheel

HCU Summary

- Extremely efficient alternative to conventional AHU's for treating outside air
- Currently sold primarily in the commercial market:
  - Schools
  - Supermarkets
  - Box Stores (Target, etc.)
- Designed to maintain either the supply air DP or supply air temp
- Product airflow range: 2,400 to 16,000 SCFM
- Stand-alone design: all refrigeration is onboard
- High production volume so limited options are available

Now, How to Apply DryCool HCU in Industrial Markets…

HCU vs. Industrial Desiccant HCD/ICA

HCU is used when:

- Fixed LAT is not required
  - Mold Condensation, Water Treatment Plant
- Small fluctuation in room conditions are not detrimental
  - Surface Prep, Mold Condensation, Water Treatment Plant

HCD/ICA is used when:

- Systems are more complicated or require special accessories
  - Food, Pharma, Electronics
- There's a need for face & bypass control
- Space requires lower dewpoint (Dryer is better)
  - Ice Arenas, Battery
- Close Tolerance Control a Must
  - Pharma

What Industrial Apps are Suited for HCU's?
The Answer: Condensation Control

- Plastics – Mold Condensation Prevention
  - DH prevents mold sweating w-chilled molds
  - Typically need 40 to 50°F dewpoint
  - Improves bottle quality/yields
  - Lengthens mold life

- Water Treatment Plants (WTP) – Condensation Prevention
  - Eliminate rusting
  - Reduces painting requirements
  - Eliminates fungal growth

- Surface Prep/Blasting & Coating
  - Coating in any weather
  - No need to coat in sections
  - Greatly improves coating life

DryCool HCU – You Select Either RH or Temperature Priority

How do HCU's really work?

1. We measure space & ambient conditions and make decisions on how to stage compressors/cooling.
2. We measure space humidity and…
   - If Space RH < RH setpoint, but > "RH setpoint – Deadband" = Hold Current Compressors On Line
   - If Space RH >RH setpoint = Additional Compressor Activated
   - If Space RH< RH setpoint -Deadband = One Compressor is Cycled Off
3. We do not sell DryCool™ HCUc for applications with tight RH tolerances. We cannot do ± 5 F Dewpoint
4. HCUc Currently Does Not Possess Modulating Moisture Removal Capability

Water Treatment Plants - Why DH?

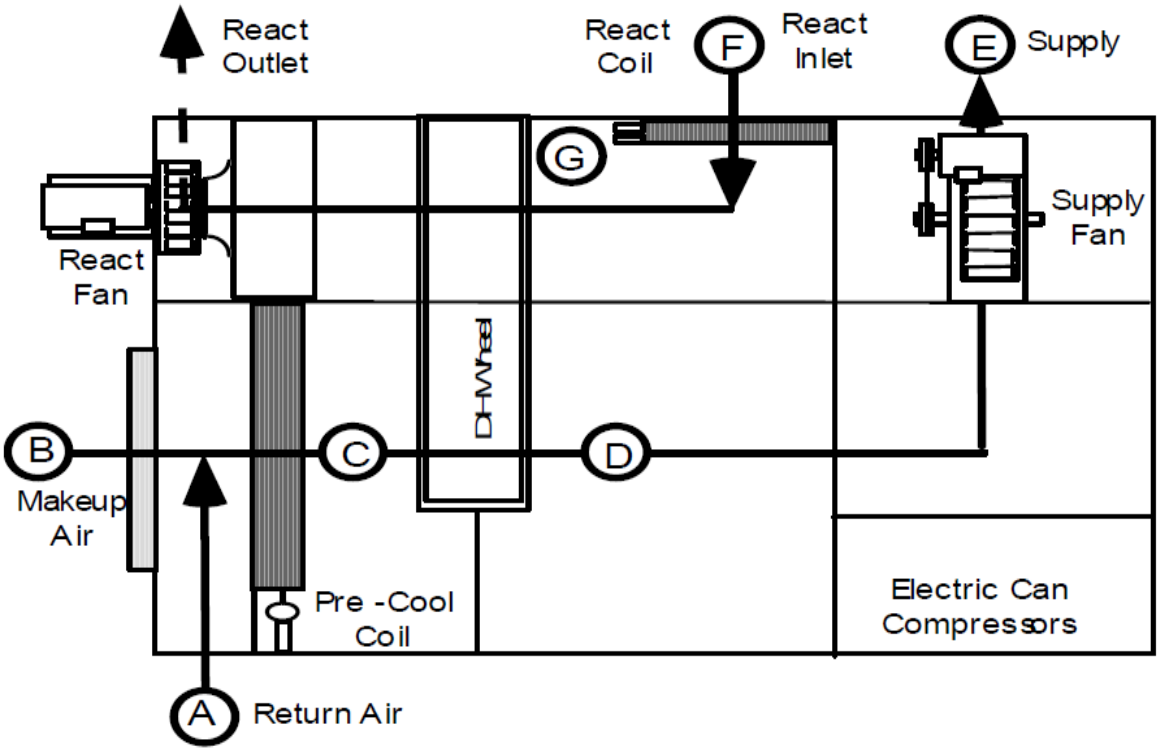
1. **Corrosion occurs on pipes and metal surfaces if the RH is too high (over 50% RH)**
2. **Condensation can happen if the Dewpoint is above the temperature of the cold surfaces**
3. **Must keep the DP below the coldest surface temperature**
4. **Ventilation air can be as high as 6 air changes per hour to prevent hazardous gas buildup**
5. **Dewpoint, not RH relevant for WTP's**

Water Treatment Plants

- Municipal projects can be tough to win!
- Contractors can squeeze you for low, low prices
- Two options remain:
  - Deep discount HCD Plus ⇨ OK, but commission can be low
  - **Sell on energy savings — Quote DryCool HCU**

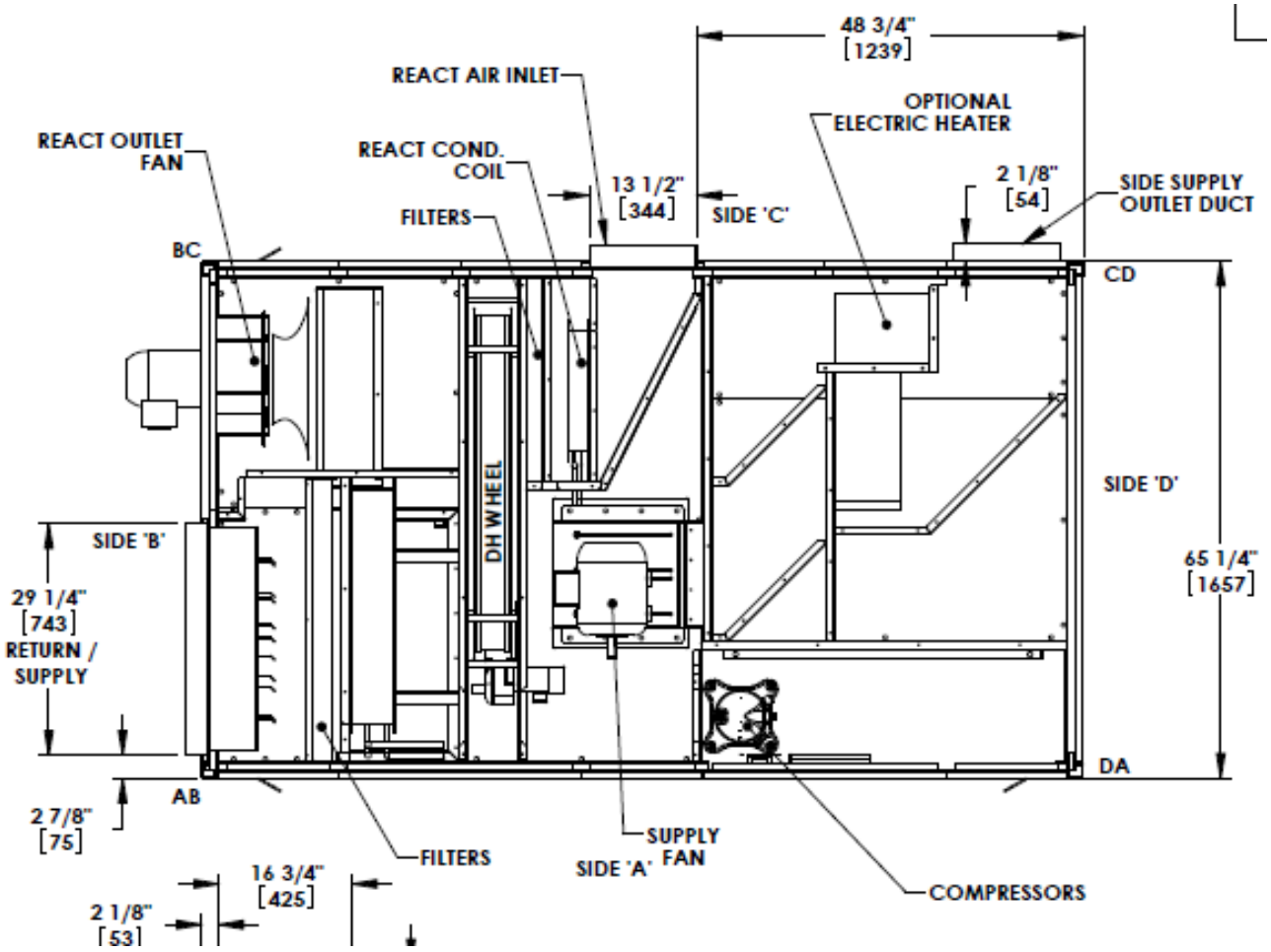
City of Woburn WTP- Horn Pond
Munters SO 20914181

- We supply 56°F, 29 gr/lb air with 80% makeup, 20% return air
- 50 lbs/hr water removal
- R410a
- Supply fan has 2.56 " TSP… Not much ESP. Try for 4.5" TSP



		A	B	C	D	E	F	G
SUMMER	SCFM	2725	675	3400	3400	3400	1250	1250
	DEGREES F	80	80	45	56	58	80	118
	GR / LB	36	119	42	29	29	119	119
WINTER	SCFM	-	675	-	-	-	-	-
	DEGREES F	-	20	-	-	-	-	-

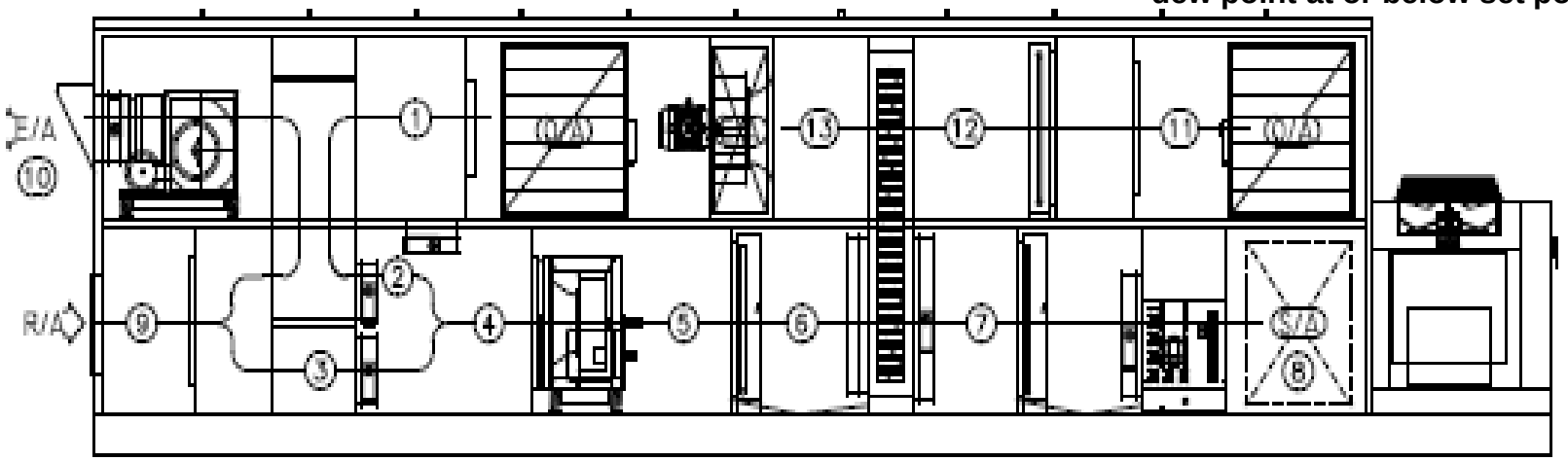
City of Woburn WTP- Horn Pond
HCUc-3040, Indoor DX, Remote Condenser



WTP #2 – HCU w-Plate X for Eagan, MN WTP

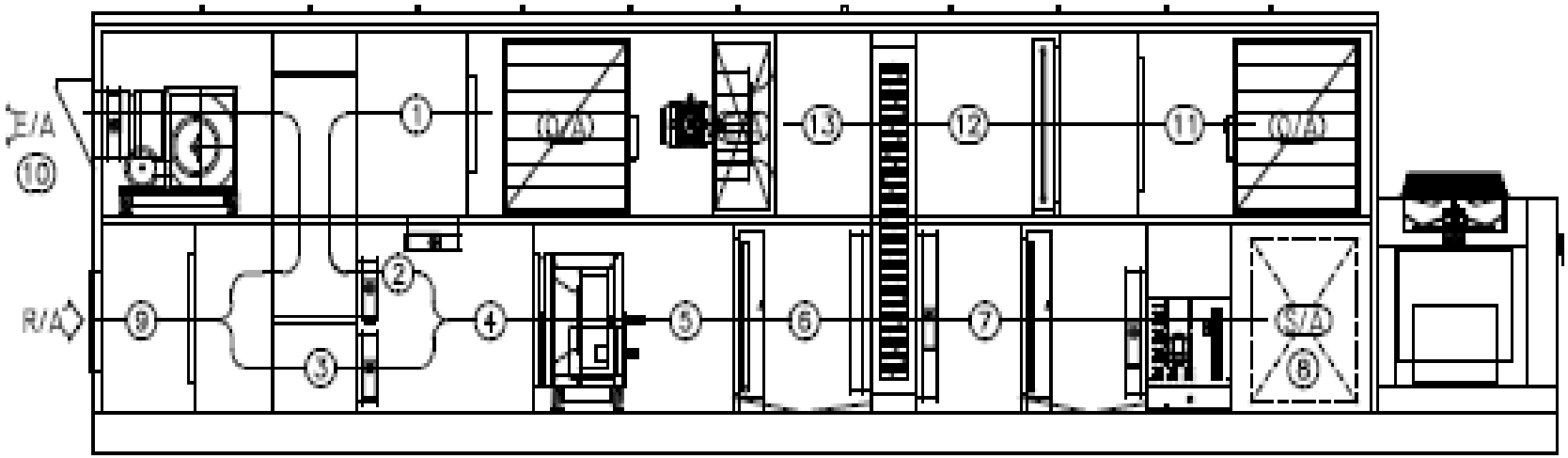
- Set Point Designation Factory Setting
- Unit/LCD Enable ON
- Space Temperature 68°F
- Space Dew Point 48°F
- Maximum Supply Temperature 80°F
- Minimum DX Coil Leaving Air Temperature 35°F
- Refrigeration System Head Pressure 350 PSIG

- **Supply VFD Speed 60 Hz**
- **Exhaust VFD Speed 60 Hz**
- **Reactivation VFD Speed 42 Hz**
- **Unit Control Overview**
  1) **Space Dew Point and Space Temperature Control**
  2) **The unit will operate to maintain the space air temperature at set point and the space air dew point at or below set point.**



Unit Type	Wringer Plus Desiccant		
Model Number	PV-W10P-WPD		
Location	Supply	Exhaust	Regeneration
Airflow (SCFM)	10,000	5,000	10,000
External Static Pressure (in WG)	1.0	1.0	N/A
Motor Horsepower (HP)	15	5	7.5

WTP – HCU w-Plate X for Eagan, MN



Operating Point	Summer			Winter		
	DB (°F)	W (gr/lb)	SCFM	DB (°F)	W (gr/lb)	SCFM
1 (O/A)	88.0	116.6	5,000	-20.0	1.8	5,000
2	75.9	116.6	5,000	43.7	1.8	5,000
3	70.0	53.7	5,000	65.0	53.8	5,000
4	73.0	84.8	10,000	54.4	27.8	10,000
5	76.0	84.8	10,000	54.4	27.8	10,000
6	59.1	68.0	10,000	54.4	27.8	10,000
7	77.3	44.6	10,000	54.4	27.8	10,000
8 (S/A)	65.8	44.6	10,000	65.0	27.8	10,000
9 (R/A)	70.0	53.7	10,000	65.0	53.8	10,000
10 (E/A)	82.1	53.7	5,000	23.9	18.1	5,000
11 (O/A)	88.0	116.6	10,000	-	-	-
12	115.0	116.6	10,000	-	-	-
13 (E/A)	97.0	140.0	10,000	-	-	-

1. **We sold this system for $177K**
2. **Justification was energy savings with HCU**

Munters Cargocaire

- Datasheet Available on Web DH -

Water Treatment Plants

Dehumidification Application

A Cargocaire desiccant dehumidifier and condensation controller provide a simple, reliable and cost effective way to prevent corrosion of pumps and valves due to condensation on cold surfaces.

When moisture in the air condenses on cold pipes, valves and pumps, more than nuisance problems occur. An environment is created that promotes corrosion – deterioration of paint, rusting, and electrical component faults. No less serious is the fostering of bacteria and mold growth.

Now Cargocaire offers a simple solution: state-of-the-art desiccant dehumidifiers to remove water vapor from the air before it can condense on cold surfaces.

These units are specifically designed for industrial applications. They give you the reliability you need, with controls that assure economical and automatic operation.

Why Dehumidify?

- **Lower plant operating and capital costs**

You can reduce the time and expense associated with annual painting and replacement of corroded parts. Especially the overtime costs of emergency repairs brought on by corrosion, such as sticking valves and pumps that seize unexpectedly. You can improve the life expectancy of major components of your system and reduce capital budgets.

- **Increase plant efficiency**

With corrosion of critical components eliminated, plant maintenance can be performed on a scheduled basis with more attention paid to failure preventive overhauls of equipment at lower cost straight time rather than emergency overtime.

- **Improve sanitation**

Condensed moisture supports mold, fungus and bacterial growth right where you can least afford it – in the plant that supplies the community with fresh, clean water essential to public health and welfare. In a way, the water treatment plant is the most important "food plant" in the community, and nobody wants to take a chance on bacterial contamination of such a vital and universal "food supply."

Plastics Mold Condensation - Why DH?

Photo Courtesy of Husky Injection Molding Systems Ltd.

- Condensation on the mold can happen if the dewpoint is above the temperature of the mold
- Colder molds allow faster cycle time and more output
- Splay marks on preforms or bottles result in lower yields
- Condensation can cause corrosion
- Dewpoint, not RH relevant for plastic mold application
- Systems are often 100% makeup air

Plastics Mold Condensation Prevention

- Traditional Selection → HCD Plus
- Energy Saving Choice → HCUc

Here is a real story: Plastipak 2009…

Plastipak - Victorville, CA
New Plant Options for Mold Condensation Control

Objectives:

1. Each system to deliver 5000 CFM to mold enclosures
2. Supply air to mold machines to be near 75 °F, 45° F dewpoint or dryer
3. Designs to incorporate best available energy savings features

HCD Plus Selection – Original Munters Solution

HCD+ Advantages

- Proven at Plastipak in the past
- Uses a fixed internal bypass for 55% of air
- By overdrying 45 % of the total air and blending with pre-cooled makeup air, the desiccant wheel remains small and reactivation energy is reduced vs. 100% thru the wheel
- Munters industrial quality components

Munters Corporation - Dehumidification Division

Release 4.3 rev 1
P/N 27535
Plus

Equipment Schedule for Dehumidification System

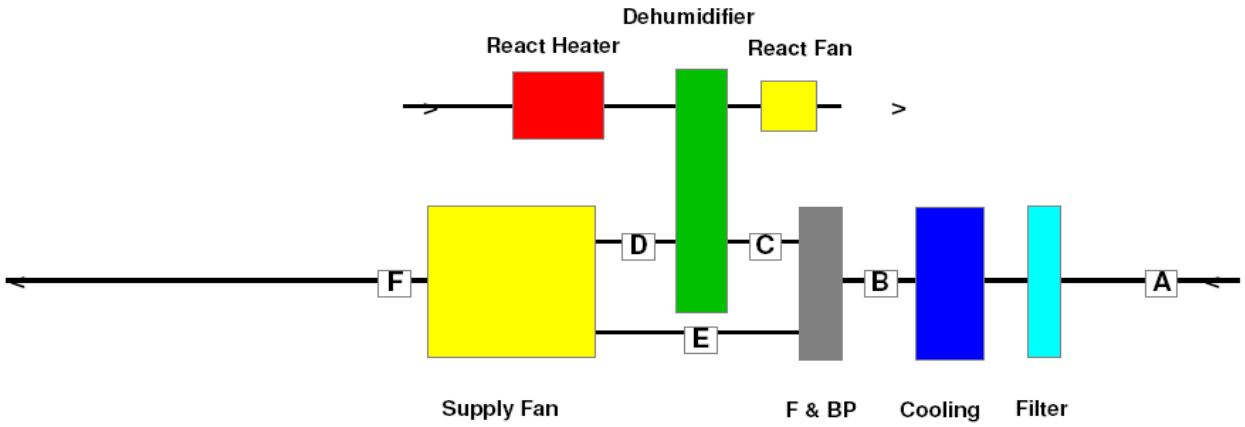
Prepared for : Plastipak Packaging
41605 Ann Arbor Rd.
Plymouth, MI 48170 USA

Quotation No : 20913666
Date : 06/03/2009

Contact : Vamsee Puvvala
Project : HCD-2250-DGA-SFCB

Prepared by : Rob Smith
Reference No : Victorville - Option 2A

System Schematic - Model No. HCD-2250-DGA-SFCB-1



System Capacities:	Total
Dehumidification Lbs/Hr	228
Dehumidifier Lbs/Hr	65
Cooling Coil Lbs/Hr	163
Cooling MBH	459

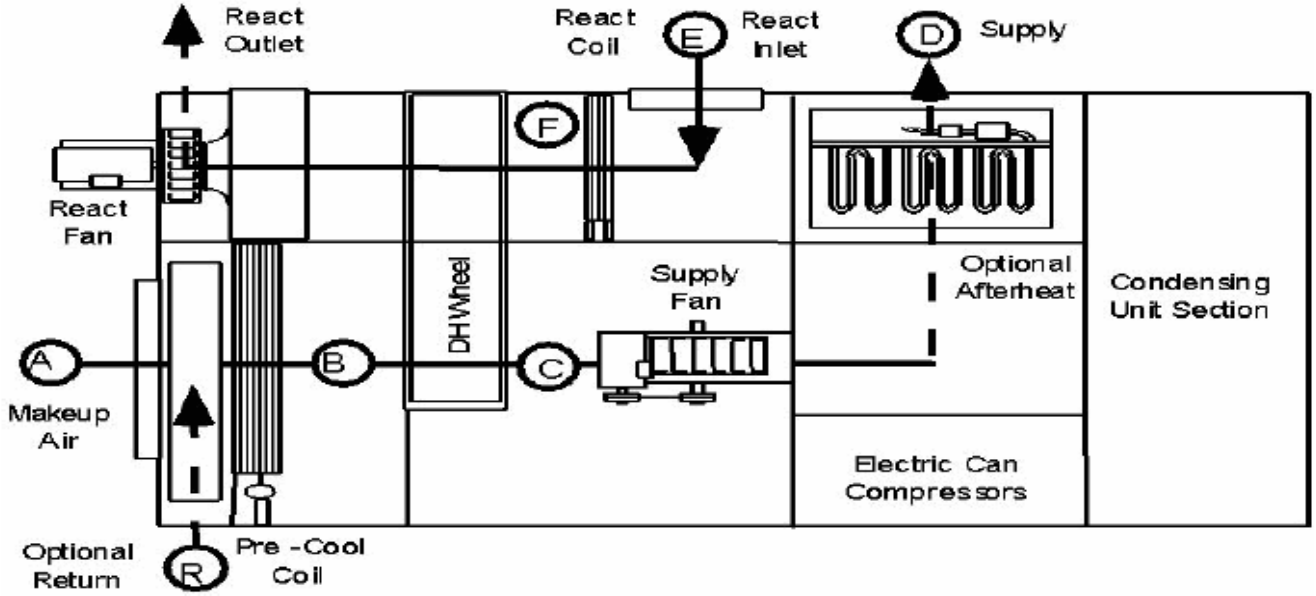
System Utilities	
Electric FLA @ 460 / 3 /60	14.9
Chilled Water GPM @ 10 ºF ΔT	92
Nat. Gas CFH @ 7-11 in. WC	130

State Points		A	B	C	D	E	F
Summer	Volume SCFM	5000	5000	2250	2250	2750	5000
	Temperature F	101	50	50	96	50	73
	Moisture Gr/Lb	103	51.8	51.8	6.9	51.8	32

PERFORMANCE

Model: HCUc6025BAD-EBT0000-CN0S00AAA0
Unit Tag: HCUc-1
Project Name: Plastipak
Quote Number: MDPT09082
Site Altitude: (ft): 2,874 ft.

Victorville: 5000 CFM HCUc-6025
31° F DP, EER= 20.1, Moist. Removal = 166 lbs/hr, 100% DH with 80 ° F,80 gr/lb inlet



Run# 1 DESIGN		R	A	B	C	D	E	F
	SCFM	5000	0	5000	5000	5000	4325	4325
SUMMER	DB °F	80	98	46	66	68	98	117
	WB °F	65.2	70.9	46	48.4	49.2	70.9	75.8
	GR/LB	80	83	52	28	28	83	83
	LB/HR = 166		Leaving DP (°F) = 31.2		kW = 28.1		EER = 15.9	
WINTER		R	A	B	C	D		
	DB °F		20					

NOTES: DH Mode 100% Load

HCUc-6025 vs. HCD-2250-DFG for Plastipak-Victorville Comparison

	HCD-2250 system @ 5000 CFM,80 F, 52.6 gr/lb Inlet	HCU-6025@ 5000 CFM, 80 F, 52.6 gr/lb Inlet	HCU Benefit
Total Energy	14.9 amps + 155 MBH Cooling + 130 CFH gas= 104 KW	64.2 amps = 51 KW	50% less Potential Energy
Supply Air Dewpoint	35.5 F	35 to 40 F	Same, but equal in off-peak conditions (31 F DP @ 85F, 50 gr EAT
CFM Supply	5000	5000	Same, HCU-6000 can go up to 6000 CFM
Moisture Removal	52 lbs/hr	61 lbs/hr	HCU is Better with no Blend or bypass!
Supply Air Temp	91 to 97 F	72 to 75 F	HCU's provide space neutral air, HCD have a 30 to 40 F temp rise

HCU vs. HCD : Mold Condensation Energy Analysis…HCD-2250 vs. HCUc-6025

	Total Operating Cost	Tons per Year	Therms per Year	kW per Year
HCD-2250-DFG	$ 14,260	38,417	3,411	70,935
HCUc-6025 w/full cooling & controls	$ 9,490	33,136	-	68,393
Amount Saved per Year with HCUc	**$ (4,770)**	(5,281)	(3,411)	(2,542)
% Saved	**-50%**	-16%	100%	-4%

Equipment Costs… Very close due to HCD Piping, Controls, & Wiring

HCD-2250-DGA-w-Fixed Bypass	$37,053	HCUc-6025 –Water Cooled	$49,605
Condensation Controller	$1,380	Condenser Water Piping	$1,500
Controls, Wiring, Piping CW	$12,500	Startup	$ 2,781
Startup	$ 2,781		
Total Cost	**$53,714**	**Total Cost**	**$53,886**

With Similar installed costs, the HCU is the clear winner with energy savings of 50% expected using Victorville, CA BIN data

Why Plastics Mfgs. Needs Munters HCU Systems

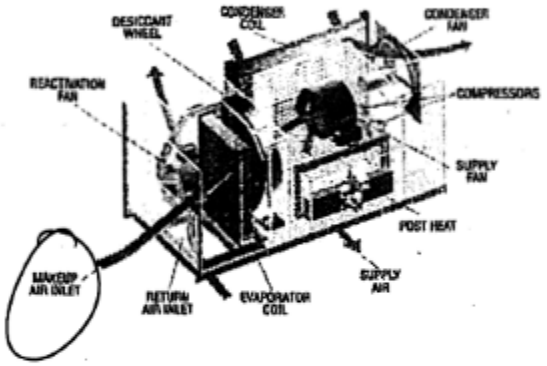
- Can equal standard desiccant units for mold condensation prevention applications
- Energy Savings vs. Industrial Desiccant units at 50to 62% when total KW for desiccant & cooling is compared
- Up to 50% lower amperage than traditional DX cooling Dehumidification
- 45°F Dewpoint or dryer for almost all applications ; Down to 31F DP on off-peak days
- Lowest Installed Cost as all piping, cooling, controls are included
- No need for reheat or post-cooling with space neutral air
- Cost efficient operation using recycled waste heat from an integral condensing unit
- Lower BTUH/Pound of Water removed than ALL heat-cool competitors
- Patented by Munters

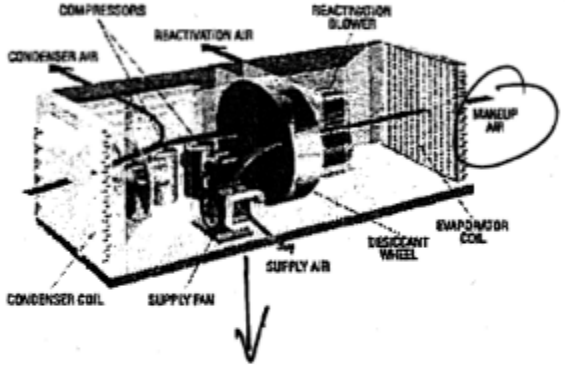
Plastics/HCU Success

Munters

Munters HCU Performance Sheet

Sidel Project for Pepsi Bottling : DryCool HCUb-2000 - Supply to mold at 74 F, 53 gr/lb., 49 F Dewpoint (Shipped in 2008)
Total Power : 460v/3//60/ 22 amps





- Sidel Plastics has bought over 14 of our HCU Systems -

Model: HCUb-20084-MRBN-00000-10000S **Altitude 0 ft.** **Unit Tag: HCU-2**

Summer Entering Air					Summer Leaving Air							Reactivation Air	
Makeup	Return	Temp	Moisture	Part	Temp	Moisture				CPM*	Removed	Temp	Moisture
SCFM	SCFM	°F	GR/LB	Load	°F	GR/LB	Wet Bulb	%RH	Dew Point	°F	LB/HR	°F	GR/LB
2000	2000	79	117	No	74	52	59	41	49	58	84	95	100

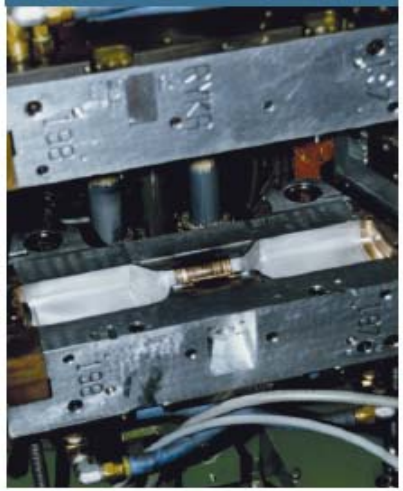
* CPM is the leaving temperature in Cooling Priority Mode

Winter Entering Air					Winter Leaving Air							Reactivation Air	
Makeup	Return	Temp	Moisture	Part	Temp	Moisture				CPM*	Removed	Temp	Moisture
SCFM	SCFM	°F	GR/LB	Load	°F	GR/LB	Wet Bulb	%RH	Dew Point	°F	LB/HR	°F	GR/LB
2000	2000	70	N/A	N/A	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

* CPM is the leaving temperature in Cooling Priority Mode

- Datasheet Available on Web DH -

Humidity Control for Plastic Injection Molding



Plastic Mold Operations

Surrounding a chilled mold with dry air prevents the sweating and part damage that occurs during the spring, summer and fall.

In many plastic injection molding operations, the mold coolant temperature must be very cold to obtain optimum results.

This rapid cooling of the mold means that water vapor in the surrounding air will condense on the mold surfaces, just as happens on cool glass in the summertime. Condensed water means problems for the mold, because it will begin to corrode. It also means problems for the part, which will have watermarks and cracks.

One option is to raise the coolant temperature to avoid condensation. But that means slower cycle times, and in many cases, less than optimum material properties due to slow resin cooling.

The most economical and highest quality solution to mold sweat problems is a Munters dehumidification system. It prevents sweat problems regardless of the temperature of the mold cooling system.

Why Dehumidify?

☑ Faster Cycle Times

The lower the coolant temperature, the faster parts will cool. Some customers report a 40% production increase from the same machines, simply by lowering the coolant temperature. Dry air from the Munters dehumidifier insures there wil be no condensation on the colder mold.

☑ Improved Part Properties

Rapid part cooling without condensation can improve the clarity and crystalline structure of PET parts. Thermal shock cracks that result from resin contacting water droplets will no longer be a problem.

BENEFITS

- Faster Cycle Times
- Improved Part Properties
- Reduced Mold Maintenance
- No Rust on Guide Pins
- Better Part Surfaces
- Winter Production Rates all Summer Long

Surface Prep/ Blasting & Coatings

Flexible ducting is utilised to efficiently distribute the dried air within the tank.

During repair the ship hull is covered by plastic foil to maintain a controlled climate. Dehumidifiers blow dry air into the covering, ensuring minimum corrosion between blasting away the old paint and applying the new.

Surface Prep/Blasting & Coatings

- Traditional Selection → HCD Plus
- Energy Saving Choice → HCUc
- Goal: To keep the dewpoint below the coldest surface so the the coating contractor can hold the blast & keep white metal
- No more MCS, so go for it!!

MCS (Polygon) runs over 100 HCUs for Rental Apps, Many for Blasting & Coating

Hybrid HCU-3000

Hybrid HCU-6000

Hybrid Desiccant Dehumidifiers									
Model	Air Flow	Length Inches	Width Inches	Height Inches	Weight Lb.	Power Required Full Load Amps Electric Reactivation Volt/3 phase/ 60 hz	Certifications	Dry Air Connections	Recommended Generator kW (kVA)
HCU-3000	2,400 SCFM-3,400 SCFM	114	58	60	2,500	32FLA @ 460V	ETL Listed	18"	36 (45)
HCU-6000	4,000 SCFM-6,000 SCFM	126	84	75	5,200	78FLA @ 460V	ETL Listed	2-18" Returns 1-18" Supply	66 (82)

HCU dehumidifiers utilizes a packaged refrigeration system in conjunction with an active titanium silica gel desiccant wheel. The HCU operates cost-effectively because all of the energy required for the regeneration of the desiccant wheel is recycled from the condenser waste heat. The system is integrally designed and controlled for superior performance in even the highest humidity load conditions.

DryCool DuraCase

- Designed for transport with all replaceable components accessible and built in supply air duct ports
- HCU at 8,000 CFM in a 20’ container
- List price is $100,000

APPLICATIONS

- Shipyards
- Blasting & Coating
- Rental
- Shipboard DH

DuraCase – Benefit Summary

- Extremely efficient alternative to conventional AHU's for drying outside air
- Designed to maintain either the supply air DP or supply air temp
- Product airflow range: 8,800 SCFM
- Stand-alone design: All refrigeration is onboard
- Rugged & stackable
- Uses less fuel/KW than ANY cool-reheat AHU

Greetings from RECIFE Brazil

MUNTERS JULY 16 2009 USA

44 USA

In May, our new DryCool™ DuraCase was started up at the shipyard in Recife, Brazil. Tubes of flexible ductwork were positioned to provide treated air to two areas in the ship block: hydro-blasting and coating operations. The unit was able to treat external air entering at the condition of 91°F, 135.4 gr/lb and deliver at 73°F, 55.3 gr/lb. These conditions proved beneficial not only for the quick drying effect, but also for the workers' comfort and increased visibility in the work area. Due to the success of this test unit, the shipyard has placed an order for five additional DryCool™ DuraCase units.

P.S. Countries with large ship building industries include South Korea, Australia, Japan, China, Germany, Turkey, Poland and Croatia.

Munters Rules for HCU- Industrial Apps

- **Industrial Application Limitations:**
- (Limitations below apply to DryCool HCU products in it's current offering as manufactured out of the Munters TX facility)
- The DryCool HCU can not be applied to an application that requires tight and specific moisture levels. For example, HCU can not be used to control a space at 50 F DP +/- 5 F DP. Unit does not posses modulating moisture removal capabilities.
- The DryCool HCU can not be applied to an application that has an internal moisture load that requires dehumidification year round. Even with the use of Return Air, if the outside ambient air used for reactivation drops below 45 F DB the unit will stop dehumidification. (rule of thumb, if the moisture load is still present in the fall/spring and winter, the DryCool HCU product will not work.

Limitations of the DryCool HCU in Industrial Applications:

Mechanical Limitations:

The limitations below apply to DryCool HCU products in their current offering as manufactured out of Munters TX

1. Product is not capable of supplying year round outlet moisture conditions below 45 F DP.
2. Product is not capable of running when the ambient air used for reactivation drops below 45 F DB (due to head pressure issues.
3. External Static Pressure (E.S.P.) requirements above 1.5”
4. Filter requirements above 30% needed

Part 2… HCUi

Humidity Control Unit - HCUi

Industrial version of the HCU

Hybrid Desiccant CW/DX System

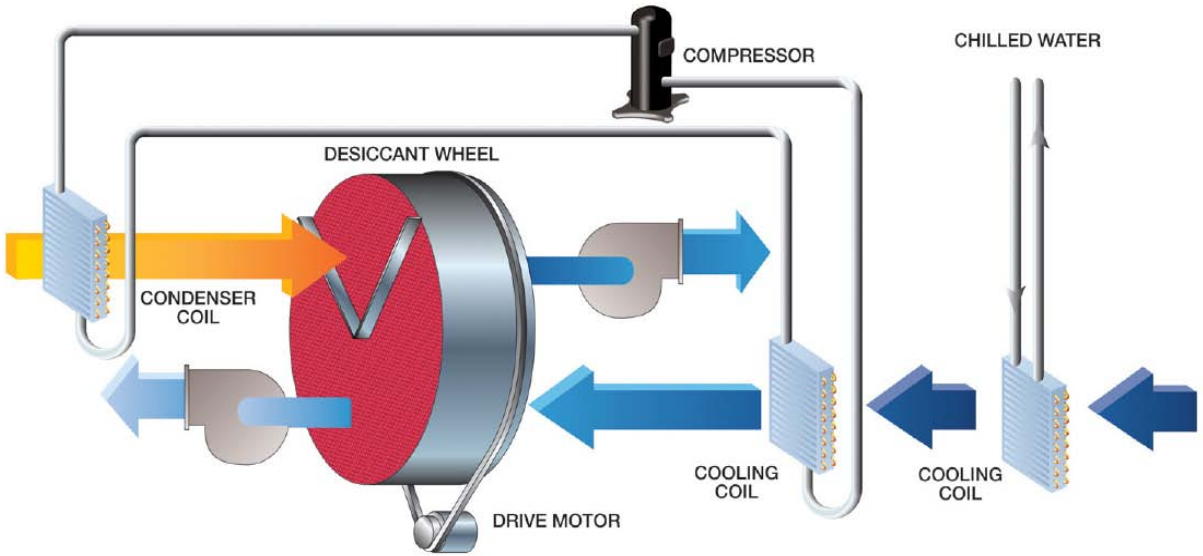
Current Industrial DOAS Market

- DOAS systems mostly sold by Commercial AHU mfg… JCI-York, Trane, Semco, Aaon, etc.
- Quality is mostly commercial HVAC
- Cool – Reheat rules the day if first cost is the main criteria
- Dual wheel DOAS is Gaining In Popularity
  - Enthalpy Wheel ⟶ CW coil ⟶ Sensible Wheel
- Munters HCUi can save more energy than dual wheel
- HCUi Sizing: 1000 CFM to 80,000 CFM
- Systems can be heavily customized
- Munters is capable of adding many options Engineers demand.
- “Other” HCUi’s are possible.. GTR, Oasis, etc.

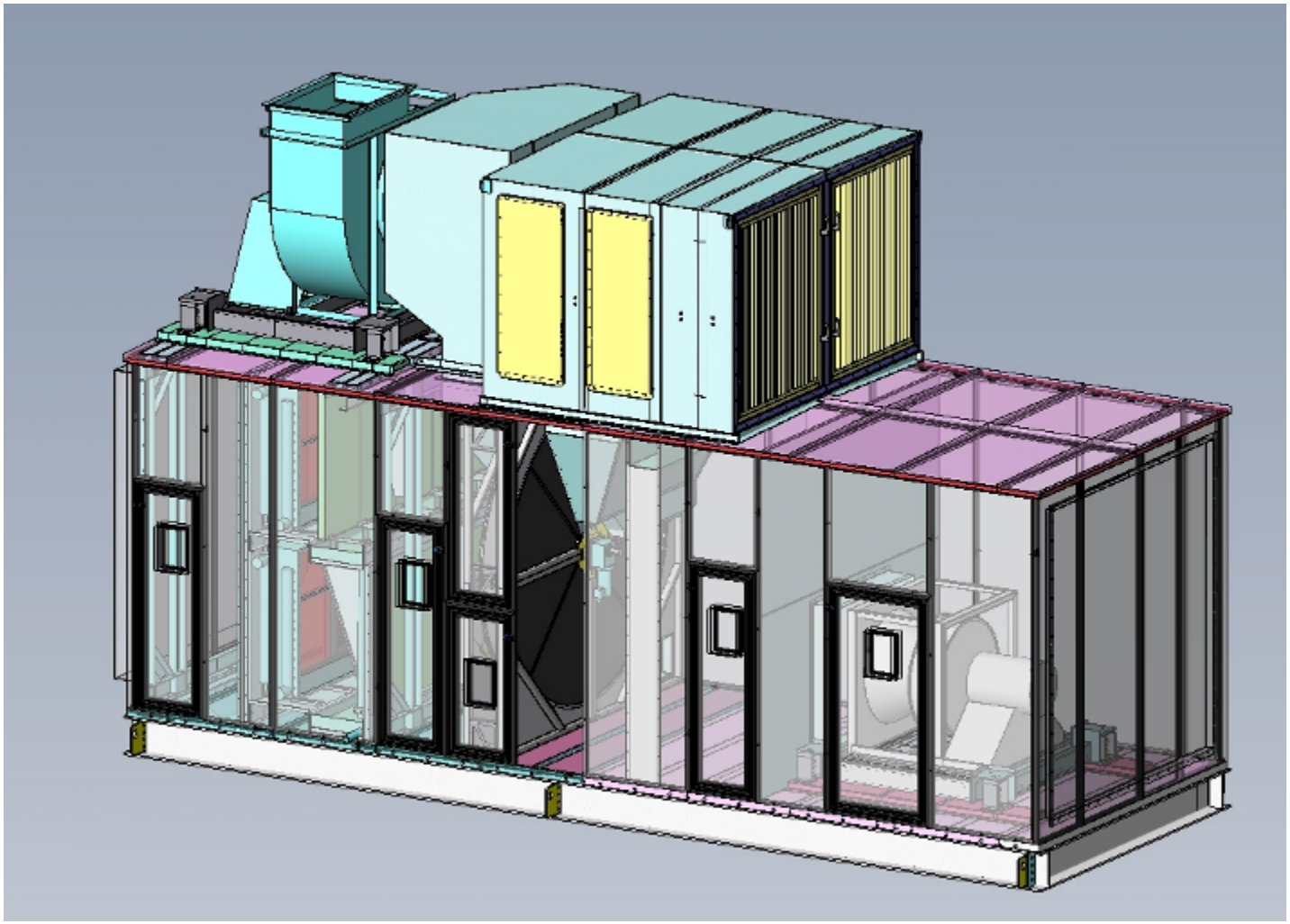
HCUi Operation

How It Works:

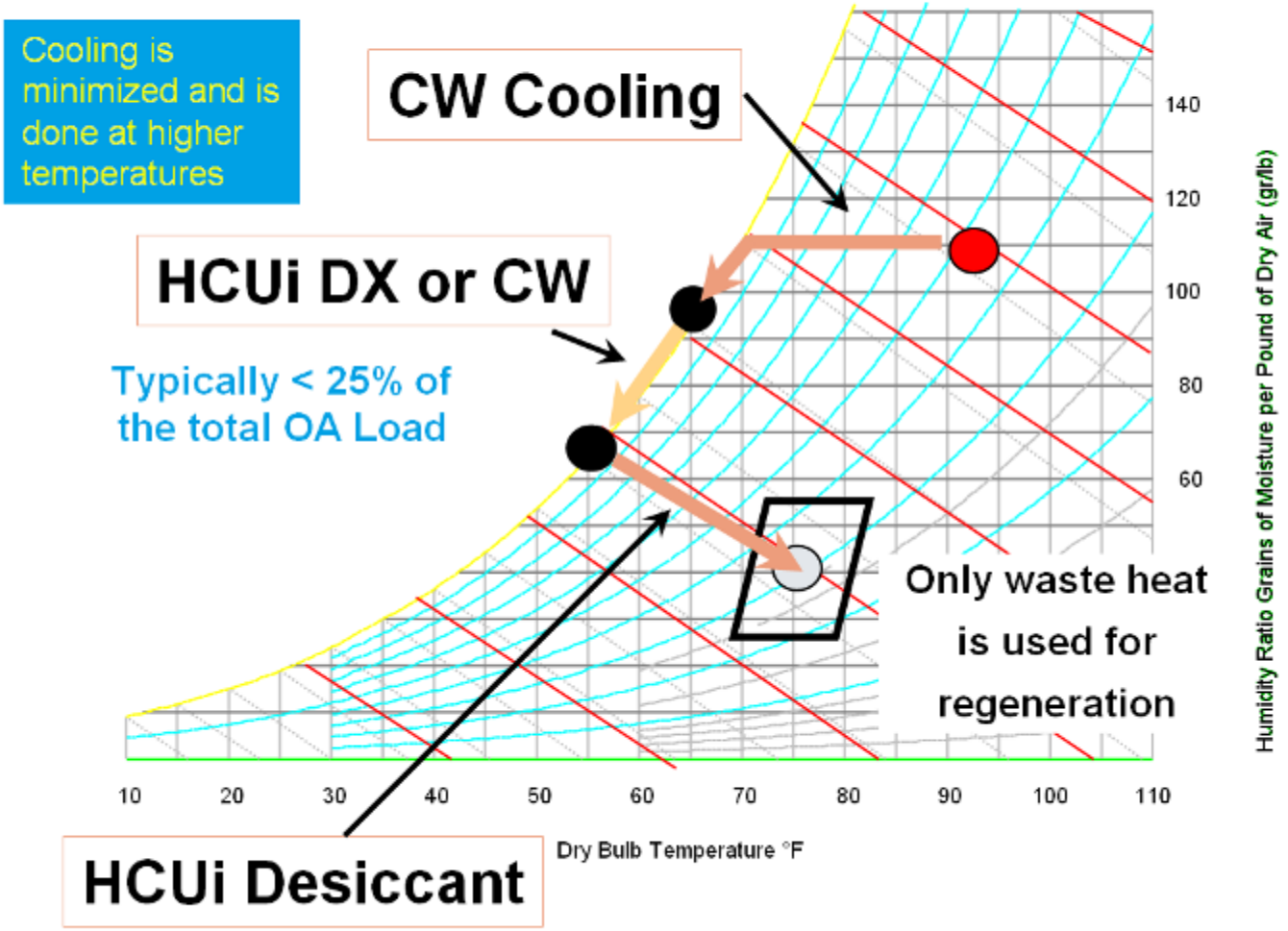
- **Initial Cooling done by 50F+ Chilled Water**
- **DX or CW Cools into the high 50's**
- **Desiccant wheel dries to the desired set point / Dew Point**
- **Condenser heat from (a) air cooled condenser, (b) chiller condenser water, or (c) waste heat from cogen is used to regenerate special desiccant wheel**
- **Natural reheat to or near "space neutral" condition**



HCUi Drawing: Texas Inst.- Manila

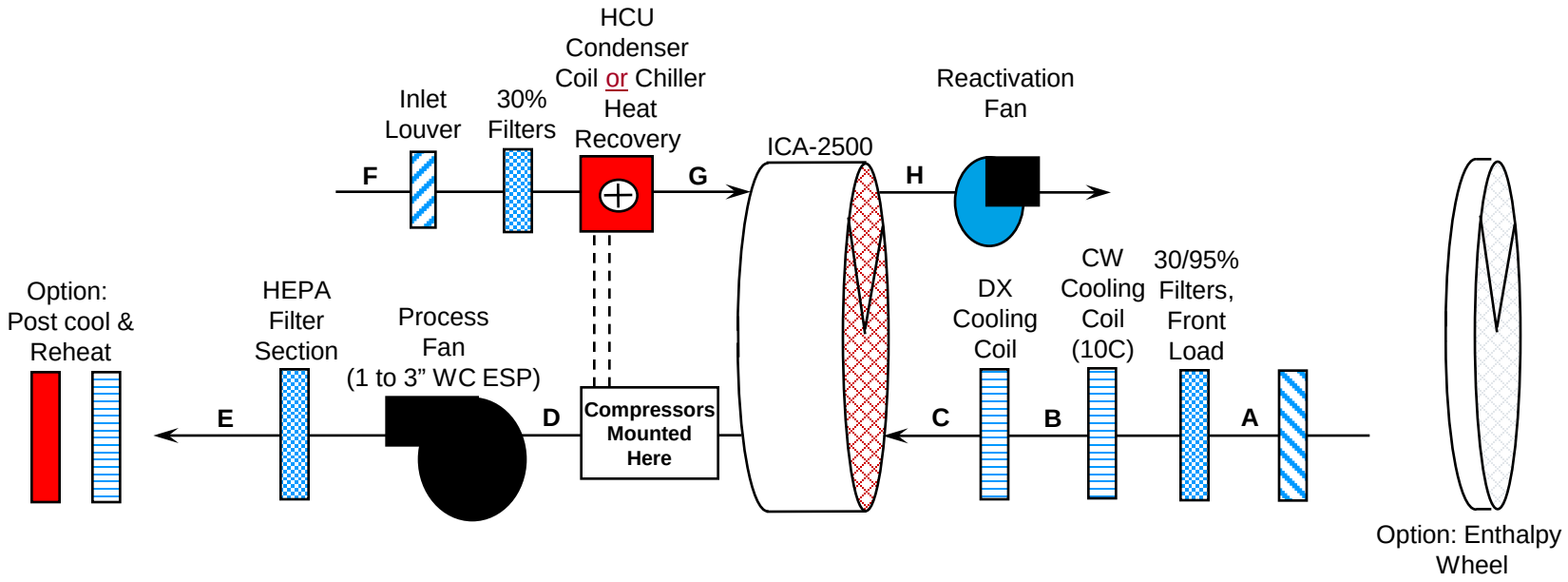


HCUi Secret:
We always save Enthalpy…5 to 10 degrees



Reheat is effectively eliminated through natural temperature rise of desiccant dehumidification (conversion of latent to sensible heat)

Typical HCUi Design



	A	B	C	D	E	F	G	H
Airflow - SCFM	**27,070**	**27,070**	**27,070**	**27,070**	**27,070**	**14,715**	**14,715**	**14,715**
Temp (F)	**95.0**	**59.0**	**53.0**	**67.0**	**71.0**	**95.0**	**138.0**	**113.0**
Moisture (gr/lb)	**170.0**	**74.0**	**59.0**	**44.0**	**44.0**	**170.0**	**170.0**	**198.0**

If Your Consulting Engineer "Hates"and Will Not Allow Compressors on His Roof or In His Mechanical Room, Don't Quit!!..

Suggest He Provide Chiller Heat Recovery for Making Low Temp HW Reactivation Like This…

Chiller Heat Recovery for React Heat

Heat Recovery Chillers

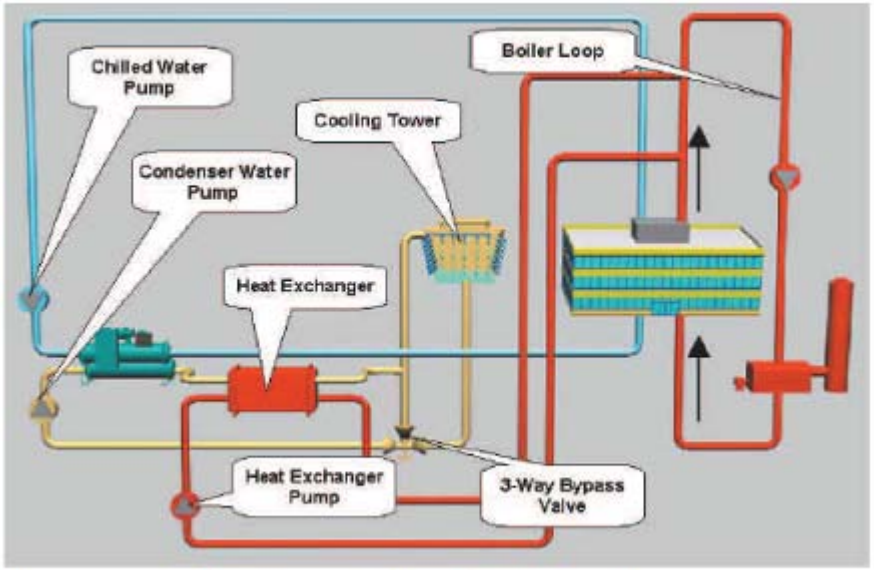


Figure 1 - Single Condenser Heat Recovery Chiller

Heat Recovery from a chiller condenser = 105°F to 110°F Hot Water

Templifiers

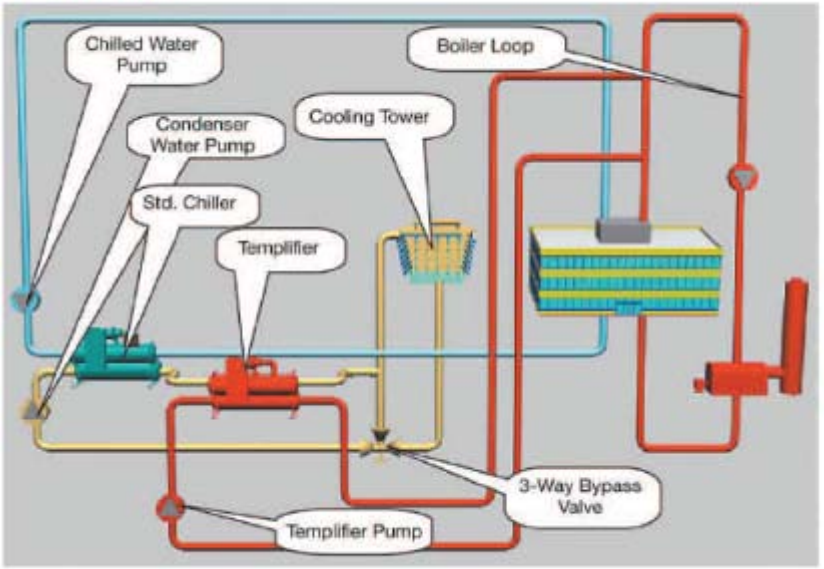


Figure 3 - Templifier Application

Heat Recovery from a chiller with a Templifier pump = 140°F to 160°F Hot Water

HCUi Benefits Summary

- Supply DP's from 35°F to 55°F (30 gr/lb to 64 gr/lb)
- With ICA platform, we easily add post-cooling, heating and humidification as needed to offer complete control of process outlet conditions all year long
- Product airflow range: 16,500 to 40,500 SCFM
- Up to 3:1 turn down for active space pressurization, CO_2, etc. control
- Hybrid design: Onboard refrigeration, chilled water cooling and desiccant working together
- ICA construction: We can customize system options to meet the requirements of your industrial customers
- Earns LEED points to meet overall project goals
- Low temperature water (glycol chiller) is not needed for low dew points
- DX runs at high evap. pressures providing high COP's
- Reheat not needed when DH is active

HCUi System Sizing

Outdoor Mounted, R410A refrigerant, Copeland scroll compressors, double wall construction. Base model (process inlet to outlet): inlet louvers, inlet filters, CW/DX coil, HCR desiccant wheel, HCUi compressors, process fan

- Model HCU-2000-060
  - **16,500 scfm max airflow**
  - **Base HCUi dimensions = 312”L x 89”W x 169”H**
- Model HCU-2200-070
  - **21,500 scfm max volume**
  - **Base HCUi dimensions = 324”L x 101”W x 193”H**
- Model HCU-2500-080
  - **27,000 scfm max airflow**
  - **Base HCUi dimensions = 324”L x 113”W x 204”H**
- Model HCU-3000-100
  - **40,500 scfm max volume**
  - **Base HCUi dimensions = 348”L x 125”W x 240”H**

HCU – Value Propositions for Consulting Engineers & End Users

#1 “You can specify many types of DH Systems that will achieve a 45°F Dewpoint, but only Munters HCU can provide the enthalpy savings unmatched by other Custom Air Handlers”

2 “Munters Hybrid Desiccant Technology, proven in over $100 million of humidity control systems in America, is the most energy efficient AHU option you have”

#3 “If you need LEED points, energy savings, and an assurance that you can prevent mold condensation/pipe gallery condensation/surface prep dewpoint control, you have to buy Munters HCU”

Why HCU?

Alternative to Conventional AHU Technology

Large Volume 100% Outside Air Applications

Significant Energy Savings

Reduced Central Chiller Size

LEED Points for GREEN Building Construction

Integrates Easily with BMS for Space Control

BOTTOM LINE: SAVES MONEY!

Get Out and Sell

Thank You !!!