

West Tennessee Regional Forensic Center – Interior Modifications
637 Poplar Avenue
Memphis, TN
SBC Project No. 400/000-01-2005-08

Desiccant DX Air Handler Unit Specifications

PART 1 GENERAL

1.01 SUBMITTALS

A. Submittal Package

- 1) Manufacturer shall provide a maximum of 3 copies or 1 digital copy (e-mail) of clearly legible project specific documents containing only information specific to the application for approval by the Owners Representative prior to final design and manufacture. As a minimum, the submittal package shall include the following: (Note: Generic/standard drawings and or forms are not acceptable.):
- 2) Project specific drawings defined as documents containing only information specific to this application.
- 3) Dimensioned views of the equipment with clearance and service access areas required for all system components clearly defined, including:
 - a. Plan view
 - b. Side elevation
 - c. System weight as proposed including all unit-mounted and remote-mounted components required to meet these specifications.
- 4) Electrical schematic wiring drawing including:
 - a. Utility requirements
 - b. Identification of items requiring field connection
- 5) Other drawings as required:
 - a. Gas piping schematic
 - b. Chilled water piping schematic
 - c. Refrigeration piping schematic with component list
 - d. Steam piping schematic
 - e. System flow diagram

B. Operating & Maintenance manual

- 1) Manufacturer shall provide a maximum of 3 copies and 1 CD of the operating and maintenance manual for the proposed equipment. As a minimum, the manual shall contain:
 - a. Installation guidelines
 - b. Start-up checklist
 - c. Troubleshooting guide
 - d. Sequence of operations
 - e. Required maintenance activities and their recommended frequency
 - f. A list of recommended spare parts
 - g. 24-hour, 7-day service assistance telephone number
 - h. Material Safety Data Sheet for the desiccant wheel
 - i. Manufacturer's data for major components

1.03 SAFETY AGENCY LISTED & CERTIFICATION

- A. Main control panel enclosure to be manufactured and labeled as UL 508A guidelines.
- B. All coils to be manufactured in accordance with ARI standards

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site.
- B. Accept products on site in factory-fabricated protective containers, with factory-installed

shipping skids. Inspect for damage.

1.05 STANDARD WARRANTY

- A. The manufacturer shall provide a warranty during the first year of operation (twelve months from date of shipment). The warranty shall consist of repair or replacement of defective parts only, labor not included. The warranty does not apply to maintenance items such as but not limited to filters, belts, and seals.
- B. If any defects appear under this warranty, the manufacturer will be notified, and the manufacturer shall provide appropriate replacement parts only at no cost to the owner.
- C. The manufacturer shall warrant its desiccant wheel to maintain the specified adsorption capacity for a period of two years commencing from the date of shipment.

1.06 EQUIPMENT SUPPORT

- A. The manufacturer shall provide support for the equipment for a minimum period of 5 years following shipment of the equipment. This support shall, as a minimum, consist of:
 - 1) The manufacturer shall provide spare parts required for the proposed equipment for the full term of the 5-year support period, regardless of whether the equipment remains in current production.
 - 2) The manufacturer shall ensure that qualified factory service technicians are available to assist the owner 24 hours a day, 7 days a week.

PART 2: PRODUCTS

2.01 MANUFACTURER

- A. Acceptable Manufacturers shall be:
 - 1) Munters Drycool
 - 2) Bry-Air (VFB-12-G-4000-DXP)
 - 3) Or approved equal
- B. The basis of design shall be Munters Drycool HCU-6000
- C. The unit shall meet the following performance requirements.

Mark	Supply Air- CFM	EXT. S.P.W.G	Fan HP	Volts/ Phases	Unit MCA	DX Cooling Coil				Desiccant Wheel				Unit Leaving Conditions			
						Refrigerant	ENT. Air Temp		Sensible BTU/HR	Total BTU/HR	Ent. Air Temp		LVG. Air Temp		LVG. Air Temp		
							db F	wb F			db F	wb F	db F	wb F	db F	wb F	GR/LB
OAU-1	4,000	1.0"	7.5	460/3	68.2	R-410A	96.2	77.6	92,008	300,800	54	54	75	56.2	76	56.8	43

- 1)
- 2) Provide unit with capable of being mounted on a concrete pad, condensate trap to drain (gapped), insulated casing for outdoor operation, non-corrosive drain pan, MERV 8 pre-filters and MERV 13 post-filters, motorized damper on inlet and tool-less access panels.
- 3) Unit shall operate via onboard controls and be able to be started/stopped upon integration with the facility BAS.
- 4) Design humidity day shall have the following conditions: EAT = 84.8dbF/78.1wbF, unit LAT = 73dbF/56.7wbF, GR/LB = 43, Sensible Cap = 55,600 BTU/HR, Total Cap = 313,020 BTU/HR
- 5) Desiccant Wheel shall be molecular sieve 4A style.

D.

2.08 EQUIPMENT

- A. Provide complete factory assembled and tested unit(s) of sizes, arrangements, capacities, and performance as per schedules and specifications.
- B. Unit Construction

The unit casing shall be constructed of 1/8" aluminum line welded and sealed as a single unified structure. Structures depending on screws for casing construction are not acceptable.

 - 1) All air handling structures shall be insulated as required to minimize exterior sweating and heat transfer. Interior surfaces shall be covered with a rigid foil faced thermal insulation held in place by an adhesive applied to the entire securing area. Insulating material shall have a minimum thermal rating of at least R-6.5 per inch thickness determined by ASTM C518 and a water absorption rating of not more

than 0.3% by ASTM Test Method C 209, and shall have an operating range of -100°F to 250°F. Manufacturer shall provide double wall construction to prevent exposed insulation in the process air stream.

2) All major components such as coils, filters, blowers, etc., provided on the system shall be easily accessible without disassembling plenums or distributing ductwork. Access panels shall be provided, constructed and insulated with the same material as the dehumidification system. All access panels shall be equipped with complete, compressible, resilient, foamed elastomer gaskets with a fastening system that assures the air and vapor tight integrity of the dehumidification system. Access panels for filter replacement shall hinged and have quick release fasteners that eliminate the need to remove hardware. All other access panels shall have secure fasteners. All access panels shall be labeled.

3) Connections for ductwork shall be provided with slip joint or flanged connections.

4) All exterior surfaces shall be degreased and cleaned prior to finishing, primed with an industrial primer, followed by a continuous coat of high quality U.V. resistant exterior paint. All hard to reach pieces shall be painted prior to assembly to assure proper coating.

5) The dehumidifier shall be capable of continuous operation outdoors. All access panels shall be vapor tight, as shall all joints between casing and electrical conduits and between the system casing and any components mounted in separate enclosures.

6) The system shall include access panels for inspection and for any maintenance required by the operating and maintenance manual. These panels shall be fastened by secure rust resistant hardware. The system shall be airtight to the extent of not leaking more than 1% of the rated flow when the casing is under 5" WC of negative pressure. Panels without gaskets shall not be acceptable.

2.09 DESICCANT DEHUMIDIFIER

A. The desiccant wheel media shall be a monolithic, extended-surface contact medium, fabricated entirely of inert, inorganic binders and glass fibers formed into narrow passages in the direction of airflow. The wheel shall be bacteriostatic and non-toxic. It shall also meet the following requirements:

1) The glass fibers which form the support matrix shall be made from uniform continuous strands larger than five microns in diameter which are non-respirable and shall not be considered a possible health risk by the International Agency for Research on Cancer (IARC)

2) The wheel shall be tested according to ASTM E84-90 (Standard Test Method for Surface Burning of Building Materials) and shall achieve the following results:

a. Flame spread index = 0

b. Smoke developed index = 10

3) The desiccant shall be evenly impregnated throughout the structure for predictable, consistent performance and for maximum wheel life.

4) The desiccant impregnated into the contact medium shall be silica gel. The desiccant wheel shall be a fabricated extended surface contact media with a multitude of small passages parallel to the airflow. The rotary structure shall be a monolithic composite consisting of inert silicates with microscopic pores designed to remove water in a vapor phase. The desiccant shall be hydro thermally stabilized silica gel.

a. Desiccant wheel shall be 100 to 400 mm deep in direction of air flow as per schedule.

B. Air Seals

The process and reactivation air streams shall be separated by air seals and internal partitions so that the humid reactivation air does not mix with the dry process air. The proposed equipment shall meet the following minimum requirements:

1) The dehumidifier shall have full-face seals on both the process air entering and the process air leaving sides of the wheel. These shall seal the entire perimeter of both

air streams as they enter and leave the wheel. Partial seals shall not be acceptable. The seals shall be silicone or viton, with a low-friction, abrasiveresistant design to extend seal life and reduce the force needed to turn the desiccant wheel. Seals shall be easily inspected and removable without the use of any tools.

C. Airflow Gauges

To set and verify the specified air flow rates through the unit, the casing shall be equipped with differential pressure gauges which measure and display the pressure drop across the desiccant wheel. The dial of the gauges shall be scaled to display the correct air volume in the middle of the dial.

D. Service Access Panels

Provide labeled and gasketed access panels at all areas requiring routine service and at internal control component locations.