

CASE STUDY HOSPITAL EMERGENCY DEPARTMENT



MARCRRAFT
CUSTOM HVAC SYSTEMS

MARCRRAFT TRU-CUSTOM HVAC SYSTEMS DELIVERS A PLUG-N-PLAY ROOFTOP MECHANICAL ROOM AHU IN RECORD TIME

APPLICATION:..... Hospital

LOCATION:..... Illinois

CUSTOM HVAC SYSTEM SIZE:..... 20,400 CFM

WHY MARCRRAFT TRU-CUSTOM?

The Hospital needed a replacement HVAC system for their existing packaged air handler serving the waiting area of an operational emergency department. Due to limited mechanical space available indoors, a custom HVAC System was needed to meet the requirements for the hospital. Temporary heating, cooling, and ventilation was provided while the HVAC system was down.

The mechanical engineer required a system that had a service vestibule to locate chilled and hot water piping, variable frequency drives, temperature controls, single point power connection, and a steam generating humidifier. The system also had to be light weight to keep building structural steel modification to a minimum. A packaged HVAC air handler could not meet these requirements, and MarCraft Custom HVAC Systems delivered.

Since a temporary HVAC System was currently conditioning the hospital, MarCraft needed to meet a logistics deadline for getting equipment on site and on time.

MARCRRAFT TOTAL SOLUTION

MarCraft Custom HVAC Systems designed an all aluminum construction air handler for weight savings because the equipment would be lifted/ mounted to the roof and the structural steel on building was a concern.

Final system components included: 4" thick double wall housing with foam insulation; Return fan; mixing box; pre-filter; hot water coil; humidifier; chilled water coil; UVC lights; dual supply fans; final filter; vestibule electrical unit heater; exterior

and interior lighting; exterior convenience electrical outlets; stair and platform.

The HVAC needed to meet the tight shipping deadline, and needed to be sectionalized for logistic purposes. The equipment arrived on time at the jobsite and was delivered in four sections and lifted/set-up on the same day. Assembly of the equipment at the jobsite was completed within a short two-week timeframe for installation, utility connections, start-up and commissioning.

RESULTS

The client was extremely satisfied with the aluminum construction for weight savings, components, and materials used to meet their custom requirements. Most importantly, the logistics coordination was a key factor delivering the equipment on time and budget, as the MarCraft Custom HVAC Systems exceeded expectations.



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CASE STUDY

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MARcraft TRUCUSTOM HVAC SYSTEM INCLUDED:

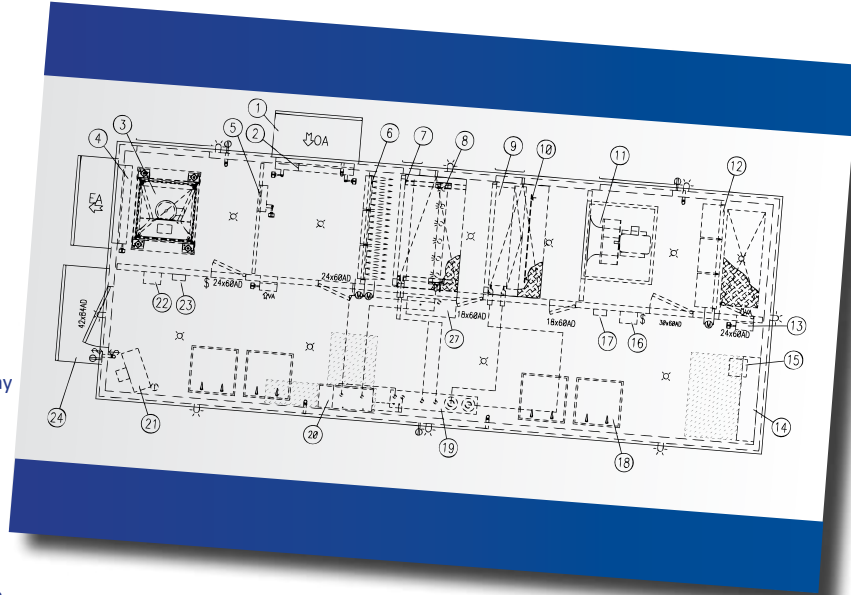
CONSTRUCTION

- Total CFM is 20,400, min. OA 7140 CFM, return air 17,200 CFM
- All aluminum construction. Exterior was painted with special color requested by customer.
- Interior designed as washdown capable.
- 4" Thick walls/roof w/ fiberglass insulation.
- Aluminum base with polyurethane foam insulation.
- Unit weight and foot-print was of major concern on project because of space & structural limitations of building roof. RTU was designed in four sections.

SERVICES

- Electrical and pneumatic component integrity testing including hi-pot electrical circuit testing.
- Fan assembly testing and balancing
- Coil leak test
- Piping leak test – this is a leak verification test before shipping to verify system integrity. Test will be competed on-site by others after shipping and re-assembly.
- Unit casing air leakage & deflection testing (optional)
- Air flow testing (optional)

1. OA Intake Hood
2. Min/Max OA Damper
3. Return Fan Assembly
4. EA Damper with Discharge Hood
5. RA Damper
6. Combination Filter Bank
7. Humidifier Dispersion Grid
8. Chilled Water Coil Bank
9. UVC Light Bank
10. UVC Light Bank
11. Supply Fan Assembly
12. Final Filter Bank
13. Vestibule Ventilation Damper
14. Control Panel
15. Electrical Chase
16. Variable Frequency Drive
17. UVC Panel & Piezoring Transducer Display
18. Curb Space Floor Hatch
19. Pipe Chase
20. Steam Generator
21. Electric Unit Heater
22. Variable Frequency Drive
23. Piezoring Transducer Display
24. Entrance Door Rain Hood
25. Roof Curb
26. Water Piping Spool Piece
27. Humidifier Condensate Drain Pipe Chase



The general arrangement shows the many custom features of the MarCraft Custom HVAC System for the Hospital.

COMPONENTS

- Cooling coils utilizing 20% propylene glycol/water mixture, 0.035" thick copper tubes, 0.016" AL fins, 304 SS casing, connections red brass w/ grooved victaulic fitting, aluminum drain sunken drain pan with SS expanded metal walk-on grating, aluminum slide racks included.
- Hot water heating coils, 0.035" thick copper tubes, 0.016" AL fins, connections red brass w/ MPT fitting, aluminum slide racks
- Supply fan array with two direct drive stackable cube type 12 air foil blade plenum fans suitable for use with VFD. Includes piezo rings for air flow measuring capability, grounding rings, TEFC motors & inlet screens. Fans are self isolated. Cube type fans provide ease of installation in fan array configuration and also provide superior sound control.
- Return Fan Assembly – Vertically mounted plenum fan – 12 air foil blades, protective enclosure, piezo rings for air flow measuring capability, Grounding rings, & TEFC motor. Includes structural aluminum vibration isolation base with seismic type 2" deflection isolators.
- Dispersion grid type humidifier with steam generator supplied by others for installation by MarCraft. Includes sunken aluminum drain pan with SS expanded metal walk-on grating.
- Service vestibule with unit heater w/ circulation dampers & modulating actuators, access doors included in floor for access to roof curb.
- UVC Lighting downstream of cooling coils, wired in conduit to J-Box in Service vestibule
- Convenience circuit – single point 120V that provides vapor-tight incandescent light fixtures with compact fluorescent bulbs, GFI protected receptacles, and light switches, NEMA-1 J-Box for 120V connection by others.
- Fan motors wired Flex/EMT conduit to non-fused safety disconnects and VFDs w/ bypass.
- All other components wired in EMT conduit to fused disconnects.
- Power distribution panel w/ indication and control circuit, 460/3/60 connection provided by others.
- Unit controls, control panels, and associated components provided by others for installation by MarCraft. Unit actuators provided and installed by MarCraft.
- Factory piping for humidifier and coils provided and installed by MarCraft. Piping insulation provided by others on-site after piping verification testing after shipping and reassembly.
- Service platform w/ rails and steps for ease of access to service vestibule. Ships fully welded in single piece for installation on roof by others.



Marcraft Custom HVAC Systems are Manufactured in the USA



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