Guide Specifications for Chilled Water Air Handling Unit with Electronically Commutated fan

1. Component Specifications

1.1 Casing/Cabinet Construction

A. The frame work shall be made from natural anodized extruded aluminum channel together by 3D injection molded Nylon corner pieces
B. The casing panel shall be attached to the frame through a self-locking mechanism represented by a wedge and frame, exerting pressure evenly onto the panel and seal/gasket attached to the frame and hence a better air tight cabinet construction
C. The unit wall shall be Double Skin Polyurethane foam (PU) insulation panel (25mm or 50mm with density 40kg/m3) with 0.5mm high strength pre-painted steel as external skin and 0.5mm galvanized steel (GI) as internal skin
D. Access door or service panel shall be supplied with a hinged access door with latch or with removable panel with handles and panel block. Door shall swing outward for unit sections under negative pressure.
E. For the best minimization of heat lost through AHU, thermal break aluminum profile shall be used
F. The complete unit shall be mounted on a fabricated GI base frame, height of 100mm for ease of shipment and handling.
G. Unit shall come with factory fitted control box.

1.2 Fan System

A. The fan system shall be of direct-drive single inlet EC fan design, with backward curved aluminum made impellers with radial diffusers, mounted on a Greentech EC external rotor motor with integrated control electronics
B. The FCU shall operate with limits of maximum water side pressure of 1.6Mpa and minimum entering water temperature of 3˚C (cooling). It shall be supplied with operating voltage limit of ±10% volts and operating frequency limit of ±2Hz.
C. Motor impeller shall be statically and dynamically balanced on two planes to balancing grade G 6.3 in accordance with DIN ISO 1940.
D. The Greentech EC external rotor motor surpass efficiency class IE4, magnets with no rare earths, maintenance-free ball bearings with long-term lubrication of at least 40,000 hours of operation.
E. Control wire starter with junction box for the fan must be factory wired

F. Comes with soft start, integrated current limitation, extended voltage input, 3~380V-480V, 50/60Hz. Fan can be used with all standard power supply networks with unaltered air performance
G. All fans come with integrated electronics and low noise commutation logic, coupled to RS485/MODBUS RTU without the need for shielded cables, for high level interface to BMS for control and power consumption data extraction
H. Fans shall also be modular in type, and be able to work in fan grid/array configuration

1.3 Cooling and Heating coil sections

A. Coil shall be installed such that unit encloses headers and return bend. Drain and vent connections shall be provided exterior to unit casing. Coil connections should be sealed with rubber grommets to minimize air leakage and condensation inside panel assembly. Coils shall be removable through side and/or top panels of unit without the need to remove and disassemble the entire section from the unit
B. Capacity, water pressure drop and selection procedure shall be designed in accordance with ARI Standard 410
C. Standard aluminum fins are maximum 12FPI (fin per inch). Fins can be coated by Heresite or Hydrophilic fin material as a corrosion protective layer
D. Standard coil frame shall be 1.5mm thick galvanized steel (GI) or stainless steel (SSTL) is optional
E. Standard working pressure of the coil is 250 PSIG (17bar). Higher working pressure of 300PSIG (20bar).
F. Water coils:
    a. Fooling coils can be used when the face velocity does not exceed 2.5m/s. For higher face velocity, a moisture eliminator is required to prevent condensate water carry over
    b. The coil is available in 1,2,3,4,5,6,8,10 and 12 rows
    c. Header and collar is constructed of steel with copper material as the option. Its size is either 42 or 76mm. Piping connection is only one sided, either left or right, viewing from return air side.
G. The connection for steel header is by Male Pitch Threaded (MPT) Joint. Copper header connection shall be by non-brazing or fire-free method.
H. Refrigerant coils:
    a. For a direct expansion system, the coil is available in 2,3,4,5 and 6 rows. TXV valve is optional item. Header is only available in copper materials, Pipe connection is by brazing joint.

1.4 Filters

A. Disposable and washable panel filters shall be installed in 2'' holding frames
B. DriPak® 2000 bag filters shall be installed in 1'' holding frames, filter media is 21'' deep with 80-85% and 90-95% dust spot efficiency
C. VariCel® II Cartridge shall be installed in 4'' holding frames where filter media is 4'' deep
D. BioCel® I- Cartridge type arrangement with holding frames 1''
E. All primary and secondary filters shall be installed in Aluminum sliding rails the arrangement designed to minimize air bypass
F. AstroCel® I- shall be installed in 24''x24'' holding frames.
G. Flat filer only shall be installed at external side of unit for easy access
H. Manometer or pressure gauge shall be provided upon request of customer over filter bank to give a visual indication of filter clean and dirty status