Air Handling Units & Heat Recovery
NRG 7, 8 & 9

1.1. General

A. Provide a heat recovery air handling unit to meet the performance and configuration as indicated in the schedule and detail drawings. The heat recovery air handling unit shall be tested to BS848 Part 1 and shall be of the Ecovent NRG type as manufactured by VES Andover Ltd a company accredited with BS EN ISO 9001:2008.

1.2. Unit Construction

A. The unit shall be provided pre-assembled comprising of a rigidly constructed 50mm tubular aluminium case, double skinned galvanised sheet steel panels, supply & extract centrifugal backward curved fans with direct drive motors, supply and extract G4 pleated panel filters, plastic plate heat exchanger incorporating drain pan and face & bypass damper & built-in electric or water heater battery.

B. The unit shall be constructed to BS EN1886 standard & fully BSRIA tested for compliance to deflection rating class D1, leakage class L3 & thermal transmittance classes of T5 & TB1. Testing certificates shall be available on request.

C. The unit shall be supplied in 2 sections for transport as indicated in the schedule & detail drawings. The unit shall be pre-drilled & gusseted for sectional re-assembly on-site by others as indicated in the detail drawings and O&M documentation.

D. The unit shall be available in plantroom or weatherproof construction as indicated in the schedule and detail drawings. Weatherproof units shall have a sloped lid supplied fitted as standard.

E. The unit shall be available in stacked or flat orientation as indicated in the schedule & detail drawings.

F. The units shall be supplied with access & handing as indicated in the schedule & detail drawings.

G. The unit shall have rectangular duct spigots complete with 30mm mez flanges as indicated in the schedule and detail drawings.

H. The unit casework shall incorporate high quality leak resistant EPDM memory retaining clip-on gaskets on service & access panels.

I. The case panels shall be filled with inert mineral wool infill as standard. The panels shall be available with optional plasterboard infill as indicated in the schedule & detail drawings.

J. The units shall have access to the side as indicated in the schedule & detail drawings.

K. The unit shall be supplied as standard with a 100mm pressed steel channel base for floor or support steel mounting. The channel base shall be finished to match the unit casework.

L. Plantroom unit casework shall be supplied naturally finished in high quality galvanised steel as standard. Optional powder coat colour as indicated in the schedule.

M. Weatherproof units shall be supplied powdercoated signal grey RAL7004 as standard. Colour according to schedule.

N. The unit shall be designed to be secured to a suitable support platform, ensuring the use of correct fixings for the application and taking into account individual unit weight as indicated in the schedule and detail drawings.

1.3. Fans

A. The unit shall be supplied with welded steel high efficiency centrifugal backward curved fans without scroll, vertically mounted on a fan & motor frame fully AV & flexible connection isolated from the unit casework.

B. The impellers shall be statically and dynamically balanced to G 2.5 / G 6.3 according to ISO1940 part 1.

C. The fan impellers shall be mated with aerodynamic bell inlet eyes for high efficiency and low noise generation.

D. The fan impellers are supplied as standard epoxy coated blue to RAL5002.

1.4. Motors

A. The motor shall be heavy-duty ball bearing type suitable for inverter speed control and supplied at the specified voltage & phase as indicated in the schedule and detail drawings.

B. Motors shall be direct drive & mounted within the airstream.

C. The motors shall be to insulation class F, IP44 environmental protection rating & shall be supplied with thermal protection cut-out as standard.

1.5. Plate Heat Exchanger

A. The unit shall be supplied with a full PVC plate heat exchanger with a minimum efficiency of 50%

B. The plate heat exchanger shall incorporate a 100% recycled exchange matrix and heavy gauge PVC framework as standard.

C. The plate heat exchanger matrix shall be aerodynamically designed, with built-in spacers ensuring a constant plate separation.

D. The plate heat exchanger shall be available with optional virgin plastic exchange matrix for corrosive environments as indicated in the schedule.

E. The unit shall be fitted with a heat exchanger bypass duct, incorporating a face & bypass damper to allow free summer cooling.

F. The face & bypass damper shall be fitted with a 230V open/close damper actuator as standard. The face & bypass damper shall be designed for use with optional 230V or 24V open/close or modulating motors as supplied by VES Andover Ltd.

1.6. Drain Pan

A. The unit shall include a built-in condensate drain pan as standard.

B. The drain pan shall be situated on the extract air off side of the Heat Exchanger as standard.

C. The drain pan discharge shall be handed as indicated in the schedule & detail drawings.

D. The drain pan discharge connection shall be 15mm plain PVC stub type.

E. The drain pan shall be manufactured in galvanised sheet steel & finished in natural uncoated finish as standard.

1.7. Filtration

A. The filters shall be 98mm pleated filter media as standard, with rigid wax treated cardboard moisture resistant frame.

B. Filters shall be to BS EN 779 Classification Grade G4 as standard, grade as indicated in the schedule and detail drawings.

1.8. Heater Battery

A. The unit shall be available with hot water or electric element heating as indicated in the schedule and detail drawings.

B. The hot water heater battery shall be of copper tube, aluminium fin block construction, with galvanised sheet steel casework. The flow & return pipe connections shall be handed as indicated in the schedule and detail drawings.

C. The hot water heater battery shall be available with alternative fin coatings by special order, as indicated in the schedule.

D. The electric heater battery shall be suitable for single or three phase supply with thyristor or stepped control as indicated in the schedule and detail drawings.

E. The electric heater battery shall consist of an element array sized to suit the steps and phases as indicated in the schedule and detail drawings. The elements shall consist of a tubular incolloy shroud containing compressed magnesium oxide powder packed around a Nickel Chromium resistance wire. The element array shall be evenly spread across the open area of the duct.

F. Where multiple elements are required to achieve the steps and phases as indicated in the schedule, elements shall be linked by copper busbar or terminated with electrical connectors.

G. The electric heater battery shall be fitted as standard with a 130°C non-adjustable thermal safety cutout, with manual reset.

H. All electric heaters shall be 1500V flash tested, and resistance tested for correct component assembly. Test certificates shall be available on request.

1.9. Operation Environment

A. The unit shall be designed to operate in ambient temperatures from -20°C up to 40°C, and can run continuously at up to 80% humidity level.

B. The fan & motor support frames shall be available with optional epoxy powder coated finish suitable for coastal or corrosive environments as indicated in the schedule & detail drawings.

C. The casework shall be available with internal epoxy powder coating suitable for coastal or corrosive environments as indicated in the schedule & detail drawings.

2.0. Controls

A. The unit shall be fitted as standard with externally mounted inverters. The inverters shall be pre-wired to the fan motors using plug connectors.

B. The unit shall be available with optional fitted or remote mounted CPC control panel as manufactured by VES Andover Ltd. to suit electric or hot water heating.

C. Fitted controls shall be positioned as indicated in the schedule & detail drawings.

D. Controls shall be supplied with internally mounted circuit breakers, run, trip & panel live indication & lockable door isolation switch.

E. Control panels shall have individual circuit breakers for Supply, Extract, Control & Electric Heater Battery where indicated in the schedule & detail drawings.

F. Fitted controls shall be supplied with a supply air duct sensor & 10m of cable, to be fitted on-site by others as indicated in the schedule.

G. Fitted controls shall be supplied with a wired touch screen remote controller.

H. Fitted controls shall be fully pre-wired to internal components. Hot water controls shall be pre wired to optional four port valve & optional frost stat supplied by VES Andover Ltd as indicated in the schedule.

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