Scott Springfield Mfg. Inc.



EDMONTON SOUTH CLINIC is western and northern Canada's leading hospital. Located on the University of Alberta campus, the Edmonton South Clinic includes over 90 clinics for assessment, diagnosis and treatment of complex diseases.

[**BELOW**] The enormous air handler makes the mechanical room look cramped. The bottom section is made of nine pieces and the top is three pieces. This stacked unit is nearly 20 feet tall.

Edmonton South Clinic

Edmonton South Clinic highlights a core competency of Scott Springfield Mfg. Inc. – robust, large custom air handlers for health care application that are specifically designed to overcome harsh application environments. The units are designed to accommodate winter design conditions of -40°F while delivering the precision comfort necessary for a health care application: temperature control, humidity control, high filtration levels and heat recovery.

SPECIFICATIONS

Number of stacked custom units: 5

Capacity:	154,362 CFM (per air handler)
Dimensions:	35 ft. (wide) 74 ft. (long) 235 in. (high)
Weight :	170,000 lbs. (per air handler)

Serviceability and reliability are built into the unit with features such as seam welded aluminum tread plate floors, water dams, wash-down walls, floor drains, motor removal rails and lights.



[**ABOVE**] Air blenders are needed in harsh climates to reduce the potential for air stratification and localized freezing.

EDMONTON SOUTH CLINIC



Design considerations

Edmonton's harsh winter design conditions impose special demands on air handlers. Air blenders are needed to mix the very cold OA with the moderate RA. Heat wheels minimize the costs of ventilation using the extremely frigid winter air. Insulated Tamco[™] series 9000 dampers are placed on OA and EA dampers to reduce heat loss from these surfaces. Coils are rated for glycol application. Finally, humidifiers are necessary because Edmonton's winter air is extremely dry. [**ABOVE**] Scott Springfield provided five stacked custom air handlers. Each identical unit had a base footprint of approximately 3,500 square feet, and operated at over 155,000 cubic feet per minute.

[**BELOW**] Shutters isolate fans that are not running. This picture shows the center fan blocked so air cannot flow backwards through the fan if it is not running.

Scott Springfield's air handler was also built to specifications normal to hospital application. All insulation in the attenuators and behind the perforated liner sections of the blowers was encased in Glascloth fabric to contain fibrous particles. Fully welded aluminum tread plate offers solid footing to the service staff. The water dam prevents water from soaking into the wall insulation. Water drains take the loose water out of the air handler so it does no damage.



Engineering considerations

Units this large impose their own demands on the unit design. For many custom air handling manufacturers, a heavier style construction must be offered to meet the weight and operating pressure of these units. Scott Springfield's standard air handler was all that was needed to operate at nearly 10 inches static pressure and withstand stacking stresses imposed by a 35 foot wide top level.

FUNCTIONS: Each of the five identical air handlers on this project had a base footprint of approximately 3,500 square feet - almost double the size of an average Canadian house. Functionally, the unit included pre-heat coils, cooling coils, carbon filtration and humidification. Enthalpy based heat wheels with bypass for freeze protection were also installed to further reduce the energy cost of ventilation.

UNIT SIZE: The bottom portion of the air handler is 884 inches long, 136 inches tall and 420 inches wide. The top section is 99 inches tall. The air handler was built in twelve pieces in order to meet limitations imposed by trucking and crane lifting constraints. The largest split in the unit was 148 inches wide. The unit contains both vertical splits across the air tunnel path as well as horizontal splits between the upper and lower air tunnels. Scott Springfield's unique structural angle split frame design adds considerable strength to the unit so it can easily withstand the weight of the return/exhaust air sections that are stacked on top.

FAN/MOTORS: Motors on these five air handlers are so large that motor removal rails are needed to facilitate service work on the fan motor. The 200 HP TEFC supply fan motors each weigh over 2,500 pounds. The 60 HP TEFC return fan motors each weigh over 900 pounds. Concrete filled inertia isolation bases contain the vibration of the large fans operating at these high pressures. If one fan fails, it can be isolated from the others so the remaining fans handle the load. All fans included motor removal rails, concrete inertia bases, belt guards, fan inlet screens and air flow measuring stations with digital readout.

HEAT RECOVERY: The heat wheels were too tall to ship installed in the air handler. They were shipped in sections and these sections were placed in the air handler as part of the installation work.

WATER MANAGEMENT: The units were equipped with wash down walls, fully welded aluminum checker plate floors with water dam and drains – all normal construction requests for service oriented facilities staff at leading hospitals.

WIRING: SSM supplied actuators for each damper within the air handlers. Each air handler required the mounting and wiring of 28 actuators. To bridge wiring at split locations, SSM coiled and labeled all wires' split the conduit, and provided collars for a quick and clean installation once on site.

CONTROLS: Airflow measurement for each individual fan was achieved by wiring the fan piezometer ring to a digital pressure transducer and displayed though a Reliable[™] HMI display. The system was configured so that the CFM of each fan can be output to the hospital BMS for constant monitoring of the CFM provided by each AHU.

Summary

Scott Springfield Mfg. Inc. has vast experience in meeting the needs of the health care market. Built in features such as water dams, fully welded floors, drains and wash down walls and motor removal rails are popular with operating staff in health care applications. The robust construction of Scott Springfield custom units easily met the challenge of this application to stack enormous loads on the lower section. The application demands of harsh environments, whether extreme heat or cold or industrial hazards are routine core applications for Scott Springfield. Other products manufactured by Scott Springfield Mfg. Inc. include custom gas-fired heating systems, heat recovery units, custom packaged air conditioning systems and a wide variety of control systems specific to your application.

FOR MORE INFORMATION, contact the Sales and Marketing Department at Scott Springfield Mfg. Inc.



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