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AIR HANDLING UNITS WITH
PLATE HEAT EXCHANGERS

**SOUTHAMPTON
INDUSTRIAL**

PLATE HEAT EXCHANGERS

Southampton Industrial's custom air handling units have the option of including air-to-air plate heat exchangers as a simple and effective means of energy recovery.

Our air-to-air heat recovery equipment incorporates the most efficient cross-flow plate heat exchangers available. Typical exchangers can achieve efficiencies varying between 65-75%, however our Hoval plate exchangers offer configurations that can achieve a sensible effectiveness of up to 80%. All plate exchangers used in Southampton Industrial air handlers are fully AHRI or Eurovent certified to ensure reliable savings data and equipment performance.

Plate heat exchangers transfer sensible energy from the exhaust air stream to the supply air stream providing fresh tempered outdoor air to the building. This utilization of heat from the exhaust air stream can permit a reduction in capacity of the heating and cooling equipment in an HVAC system. Plate heat exchangers are ideally suited to applications which require zero cross-contamination of the supply air stream.

As with all Southampton Industrial air handlers, designs incorporating plate heat exchangers are available with a wide variety of capacities, configurations and custom options.

PLATE HEAT EXCHANGER ADVANTAGES

- High heat recovery effectiveness
- Low initial investment
- No moving parts - no noise, wear or repairs
- No power source required
- Separated air streams provides zero cross-contamination
- 3 available series and a range of configuration options provide solutions for almost every application
- Proven consistently high quality construction
- Recirculation bypass option eliminates the need for a mixed air section
- Certified hygiene conformity (ideally suited to hospital applications)

MATERIALS TO SUIT THE APPLICATION

Three series are available to suit a wide variety of applications:

- **Series V (standard construction)**
With the exchanger package of aluminium and the casing of aluminium extrusions and galvanized sheet steel
- **Series G (corrosion-protected)**
With coated exchanger package and casing
- **Series T (high temperature)**
With a special sealing agent resistant to temperatures up to 392 °F (200 °C)

RELIABLE DATA AND EQUIPMENT

Hoval S design plate exchangers are fully AHRI certified and bear the AHRI certification seal. The F and P series exchangers are fully Eurovent certified. The selection software is based on the AHRI tested results and allows for easy and quick selection of the optimum S design plate heat exchanger.

Additionally, every air handler manufactured by Southampton Industrial conforms to the standards of our ISO 9001:2015 certified quality management system and is individually subjected to our rigorous factory acceptance testing prior to shipment.



PLATE HEAT EXCHANGER APPLICATIONS

Plate heat exchangers are important elements in saving energy in commercial applications such as hotels, hospitals, sports complexes, office buildings, seminar rooms and swimming pools. Industrial applications can also benefit from this form of energy recovery including applications involving drying processes, paint spray booths, as well as petroleum and chemical plants. They can be installed in air handling units, ductwork systems and in process technologies.

RELIABILITY IN OPERATION

Hoval plate heat exchangers have no moving parts and therefore require no external power connections. As a result there are no additional operating costs and 100% reliability can be expected. In addition, no moving parts results in completely silent operation.

Plate heat exchangers have very low service requirements. Many years of operation in numerous applications has proven that Hoval plate heat exchangers are extraordinarily resistant to dirt build-up resulting in minimal maintenance requirements.

NO CROSS-CONTAMINATION

In plate heat exchangers warm exhaust air and cool fresh air (separated by thin plates) pass each other in a cross-flow pattern. The air streams are completely isolated so cross-contamination cannot occur. This makes the transmission of dirt, odors, moisture, bacteria, etc. impossible. Heat is transmitted from the exhaust air to the fresh air purely by conduction; the warm exhaust air is cooled and the fresh outdoor air is heated without mixing. All Hoval plate exchangers are AHRI certified to have 0% cross-contamination for up to a 3" pressure differential.

PERFORMANCE CONTROL

Plate heat exchangers operate as a temperature moderators between two air streams. The direction of the heat transmission is of no consequence, i.e. depending on the temperature difference between the exhaust and fresh air, either heat recovery or cool recovery takes place. Therefore performance control of a plate heat exchanger is not necessary when the exhaust air temperature is identical to the desired room temperature. In most cases, the outside air is either heated or cooled through the plate heat exchanger in the direction of the set temperature.

In many cases, however, heat gains are present in the ventilated space (people, machinery, lighting, solar, process equipment), which increases the room temperature, so that the exhaust air temperature is higher than the set temperature. In this case, at full performance of the heat exchanger, if a temperature increase is experienced which cannot be tolerated then the performance of the heat exchanger must be controlled.

With a plate heat exchanger performance control through changes to the mass flow ratio is simply and economically accomplished with a bypass. All Southampton Industrial plate heat exchangers can be supplied with an integral bypass. Exchanger and bypass width are selected in such a way that the pressure drop is equal through each. Whether a bypass is fitted on the side or in the middle depends on the local conditions and on the width of the exchanger. The arrangement of additional air handler components after the bypass, i.e. heater, moisture eliminator, etc., must take into consideration the fact that the velocity profile could be less uniform.

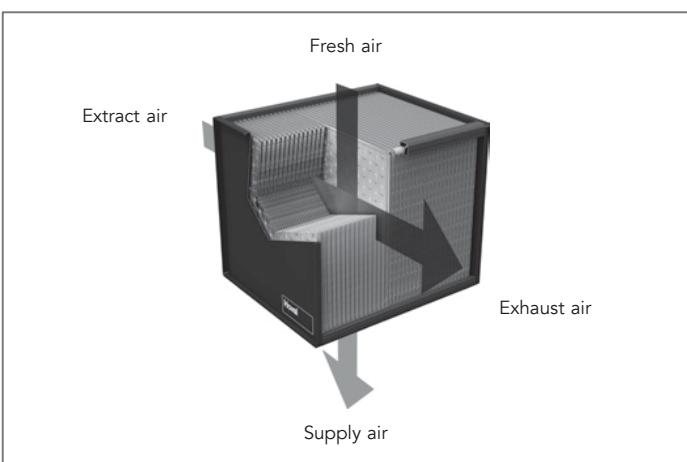
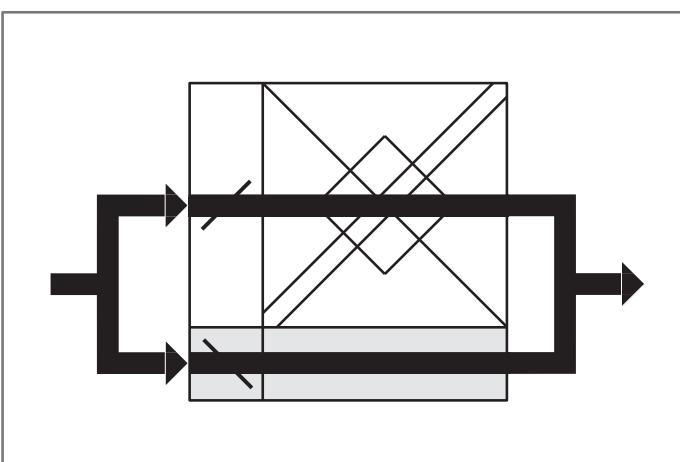
BYPASS IN THE FRESH AIR:

Depending on damper position, between 0% and 100% of the fresh air passes through the bypass in this arrangement. The exhaust air always flows through the heat exchanger and is cooled according to the fresh air flow rate. With this configuration, cooling of the exhaust air and thus freezing can be avoided.

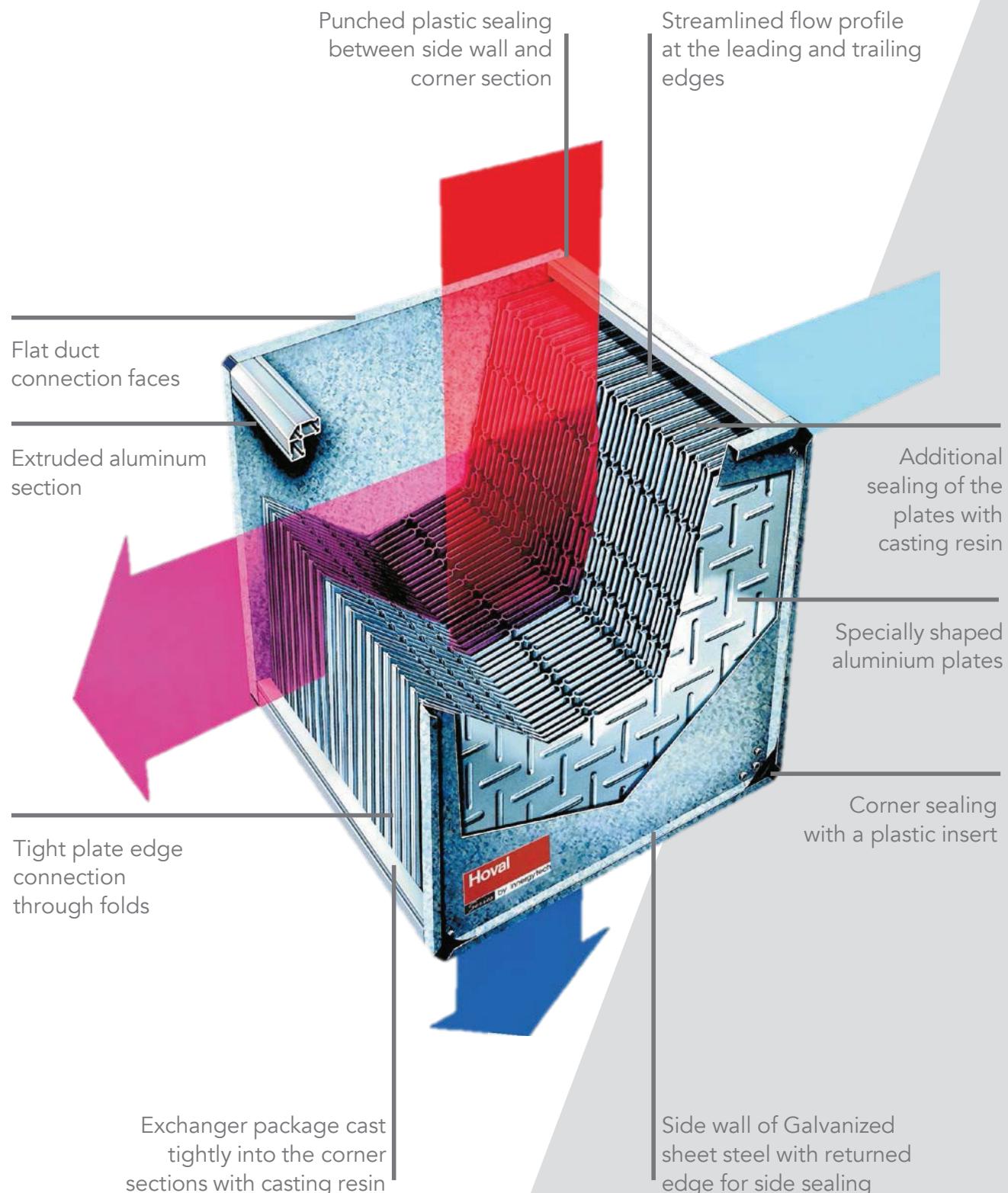
BYPASS IN THE EXHAUST AIR:

In this arrangement between 0% and 100% of the extract air passes through the bypass. The fresh air always passes through the plate heat exchanger. This configuration is recommended when the exhaust air is very dirty, since during summer operation the exhaust air will not pass through the plate heat exchanger thereby minimizing cleaning requirements.

Ex: The bypass is the most common method to control performance.

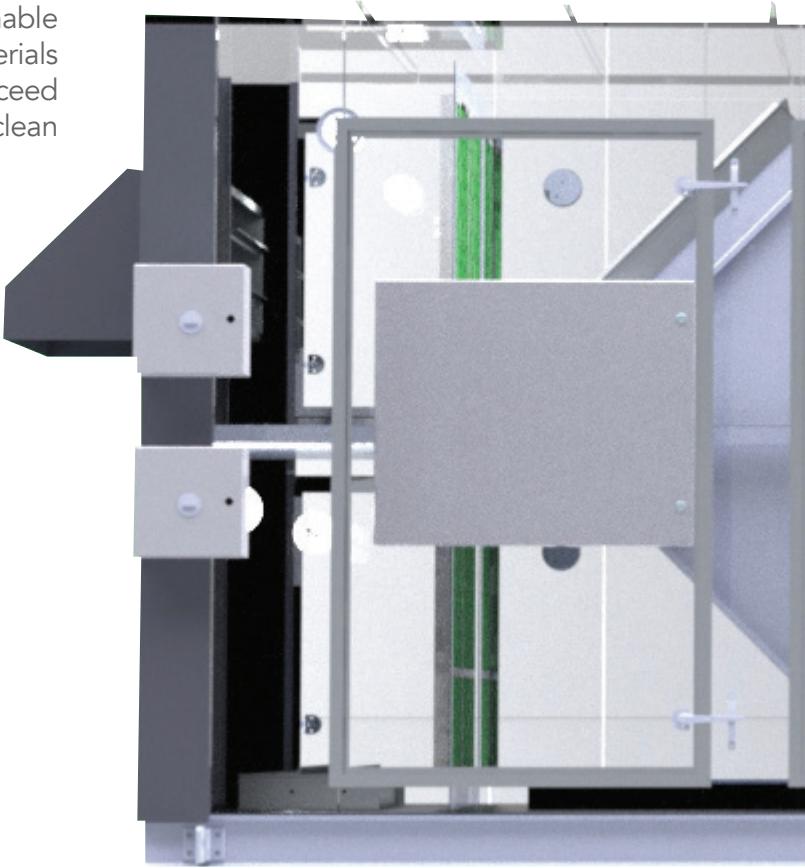


CUT-AWAY VIEW OF S DESIGN



FEATURES & OPTIONS

Southampton Industrial air handlers equipped with plate heat exchangers are fully customizable from the programmable controls to fan selection and beyond. Highly specific materials and design features can be requested to meet or exceed specifications for applications such as food processing, clean rooms, industrial sites and water treatment plants.



CONSTRUCTION OPTIONS

- 1 to 4 inch casing thicknesses
- Indoor or outdoor construction
- Horizontal or vertical arrangements
- Solid liners and wash down provisions
- 16 or 18 gauge construction
- Welded structural steel base
- Galvannealed, galvanized, aluminum or stainless steel casing
- Insulated/low leakage dampers
- Certified for classified areas or general purpose applications

ADDITIONAL FEATURES

- Advanced filtration options (chemical, HEPA, UV)
- Return air or 100% makeup air configuration
- Mixing box and relief air options
- Chilled water or DX cooling
- Fan options include airfoil, plenum, forward curved and fan arrays
- Variable air flow options
- ODP, TEFC, IEEE 841 and EC motors
- Remote or unit mounted controls
- Custom alarms, monitoring and communication
- Communication protocols include BACnet, LonTalk, ModBus, DeviceNet, ControlNet and Ethernet
- Programmable controllers from all major manufacturers including Allen Bradley, Distech, Schneider, GE and Siemens
- Additional custom options and configurations available by contacting the factory
- As an alternate to plate exchangers, energy recovery of up to 95% effectiveness can be achieved using Southampton EnergyCore™



THE SOUTHAMPTON ADVANTAGE

Air handlers from Southampton Industrial can be combined with control panels from our ETL certified manufacturing facility to provide complete HVAC equipment/automation systems.

Every complete system is hard wired and subjected to rigorous factory acceptance testing before shipping.

The key benefit is a system from a single source that covers all project requirements without the uncertainty or duplication of scope that occurs when multiple trades are involved.

The end result is a trouble-free HVAC system that integrates seamlessly at the job site and a greatly simplified project management experience.

**CERTIFIED
ISO 9001:2015**

