

SOUTHAMPTON INDUSTRIAL

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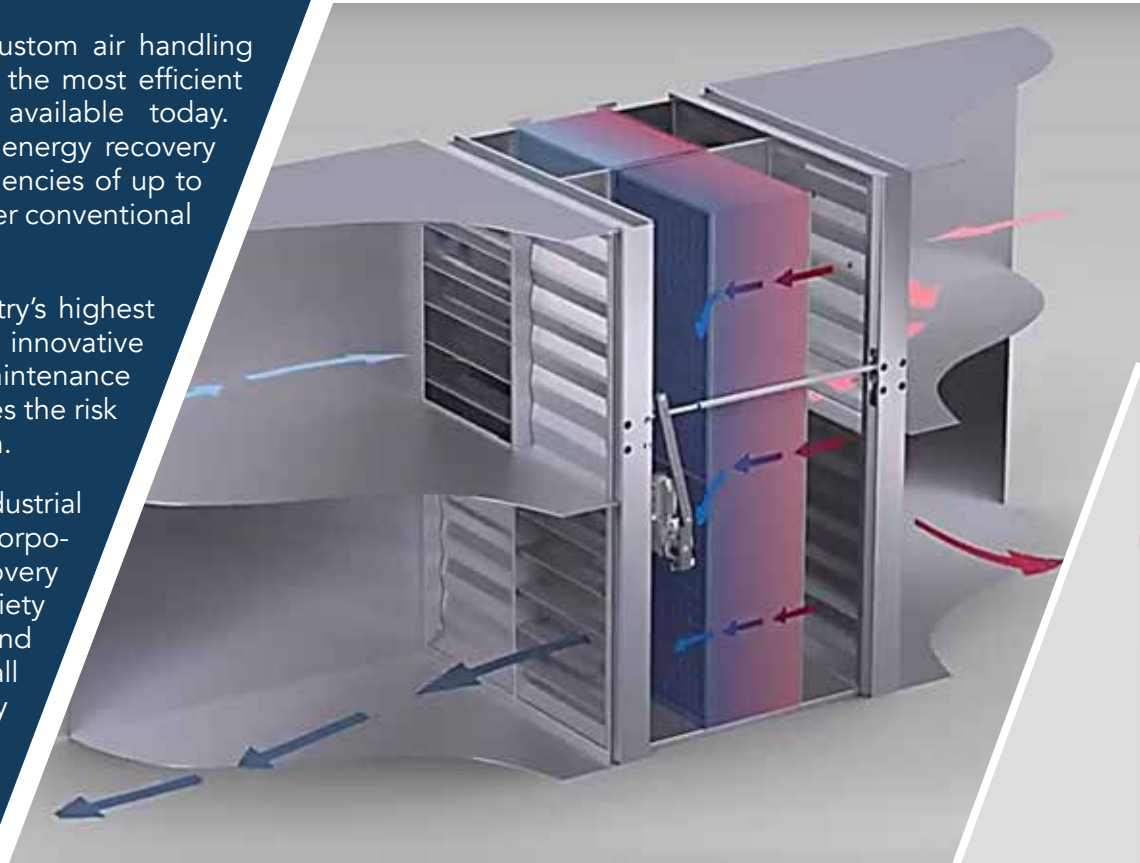
SOUTHAMPTON
ENERGYCORE

ENERGYCORE OVERVIEW

Southampton Industrial's line of custom air handling units have the option of including the most efficient HVAC energy recovery system available today. Southampton EnergyCore™ is an energy recovery system that achieves certified efficiencies of up to 95% - a significant improvement over conventional energy recovery technologies.

In addition to providing the industry's highest efficiency rating, EnergyCore's innovative design results in reduced maintenance requirements and virtually eliminates the risk of freezing and cross contamination.

And as with all Southampton Industrial custom air handlers, designs incorporating EnergyCore™ energy recovery systems are available with a variety of additional components and options resulting in a complete all in one HVAC and energy recovery solution.



DESIGN ADVANTAGES

- The most efficient HVAC energy recovery system available today
- Can be incorporated into full featured custom air handlers with heating & cooling options
- No "air hammering" as encountered with separated core systems
- Minimal risk of frost accumulation
- Immediate recovery of stored energy
- Self-cleaning
- Desiccant option for latent energy recovery in summer
- Nearly silent operation with added sound attenuation benefits
- Minimal cross-contamination
- Lighter designs than separated core systems
- Excellent performance with VAV systems
- Operating range of - 40°F to 250°F
- Available in over/under or side by side configurations

THE CENTRALIZED DUAL CORE SYSTEM

EnergyCore's dual core design is key to its industry leading performance. Unlike conventional wheel designs, there are no motors or rotating disks to cause noise, vibration and wear. The system consists of two independent banks of stationary aluminum core heat exchangers and dampers in one central location.

While exhaust air charges one of the cores with heat, the second core (previously charged) dispenses its heat into the supply air stream. After a preset cycle time, the dampers change position and the supply and exhaust air streams switch the core they flow through. The newly charged core now has the supply air stream directed through it and the heat depleted core begins being recharged by the exhaust air stream. It is this perpetual cycle of alternating flows through the cores that allows for the high temperature gradient in the heat exchangers and as a result, the extremely high efficiencies achieved.



CENTRALIZED vs. SEPARATED CORE DESIGNS

An important advantage of EnergyCore's design is its centrally located cores, which uses dedicated plenums for the supply and exhaust air streams. The key benefits of dedicated plenums are minimal cross contamination and smooth, continuous airflow in one direction.

This differs significantly from systems where the cores are located in separate locations. In this arrangement, the supply and exhaust air must be continually reversed in a common plenum. This reversing effect can result in excessive noise and vibration due to "air hammering", or the sudden halting of the air streams as the dampers close and airflow is reversed. Another drawback to this arrangement is the requirement for the internal volume of exhaust air to be discharged into the supply air stream each time the cores are alternated. As a result, where an EnergyCore™ system may experience a minimal 3% cross contamination, separated core systems can expect many multiples of this amount.

PRODUCT UTILIZATION

As with most energy recovery systems the greatest benefits can be achieved at installations in cooler climates. The highest energy recoveries can be realized at installations in zones 5, 6, 7 and 8 (below).

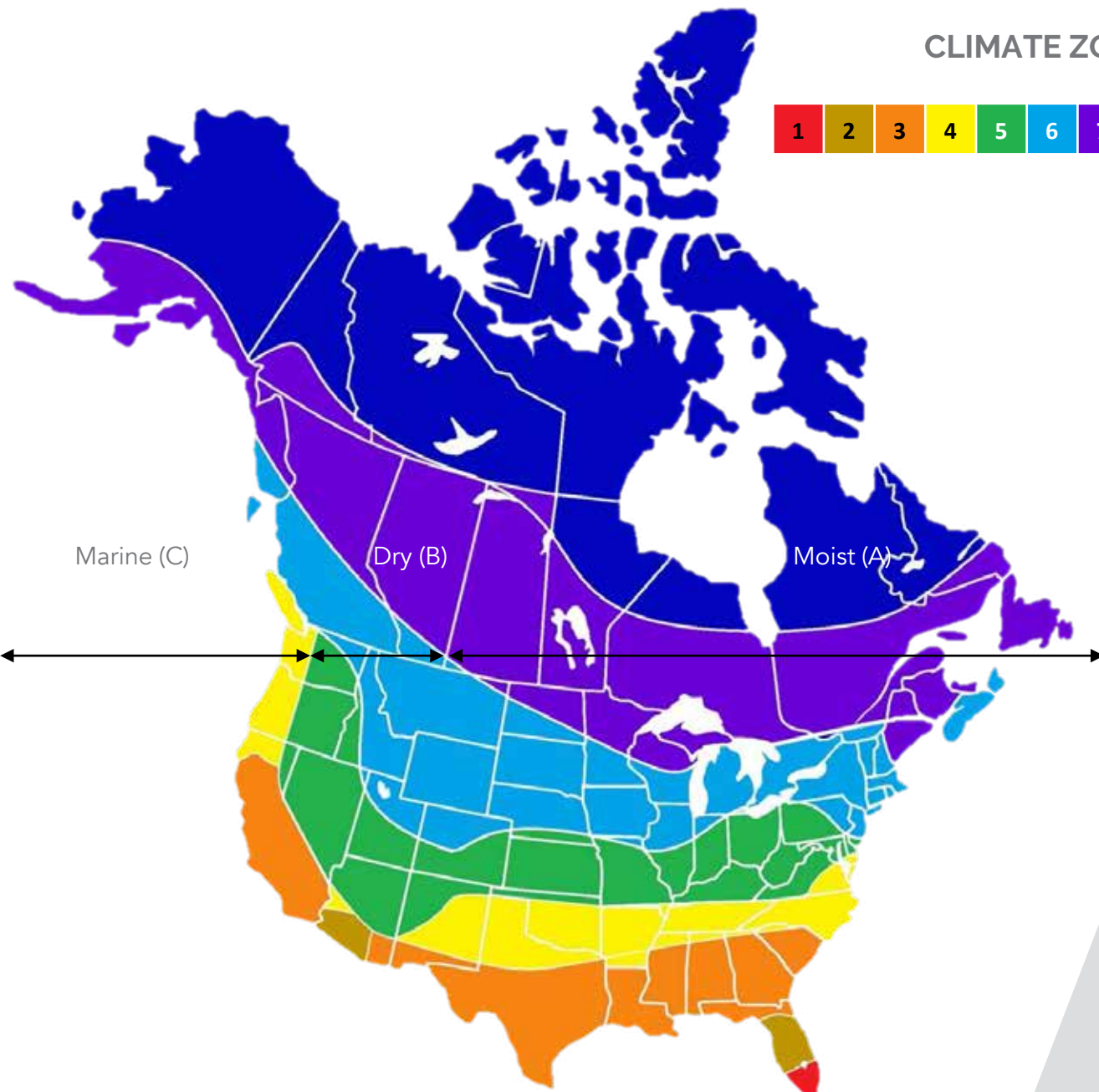
The EnergyCore™ system requires little if any freeze protection. The alternating air streams flow through each core completing a full cycle every 20 to 100 seconds. This continuous, adjustable cycle of reheating each core prevents the accumulation of frost on both heat exchanger surfaces.

This reversing cycle has the added benefit of providing a self-cleaning effect where particulate is continuously removed from the core's highly polished aluminum surfaces.

95%

EFFICIENCY

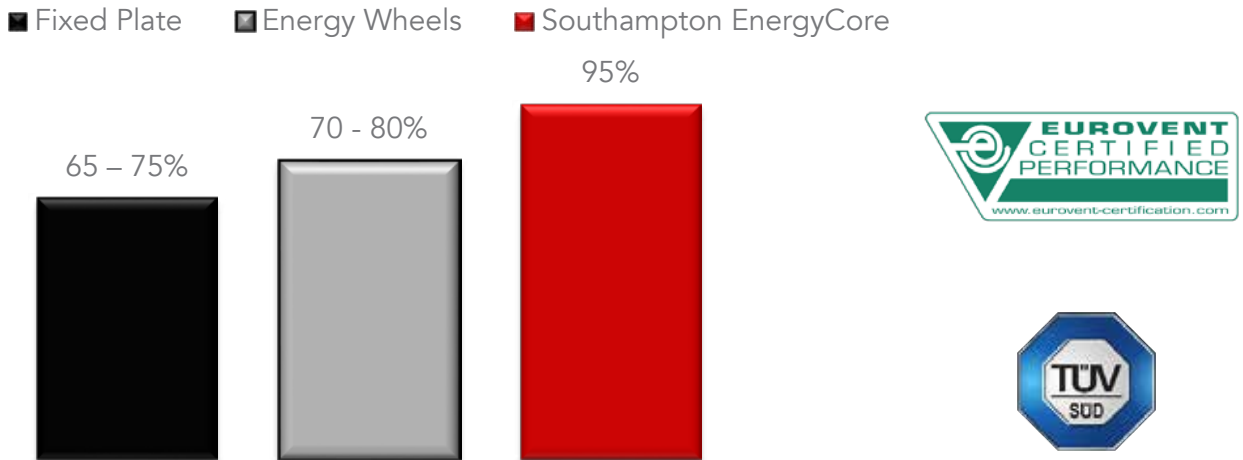
CLIMATE ZONE:



SYSTEM EFFICIENCY

The EnergyCore™ system provides the most efficient means of HVAC energy recovery available, providing up to 85% latent and 95% sensible efficiencies. It is the only dual core system available with certified performance data.

Performance data has been independently verified and certified by Eurovent® to the AHRI 1060 standard. Additionally, the calculation of the energy savings data of EnergyCore™ systems is independently certified by TÜV®.



SOUTHAMPTON ENERGYCORE vs. OTHER ENERGY RECOVERY OPTIONS

PHYSICAL DATA

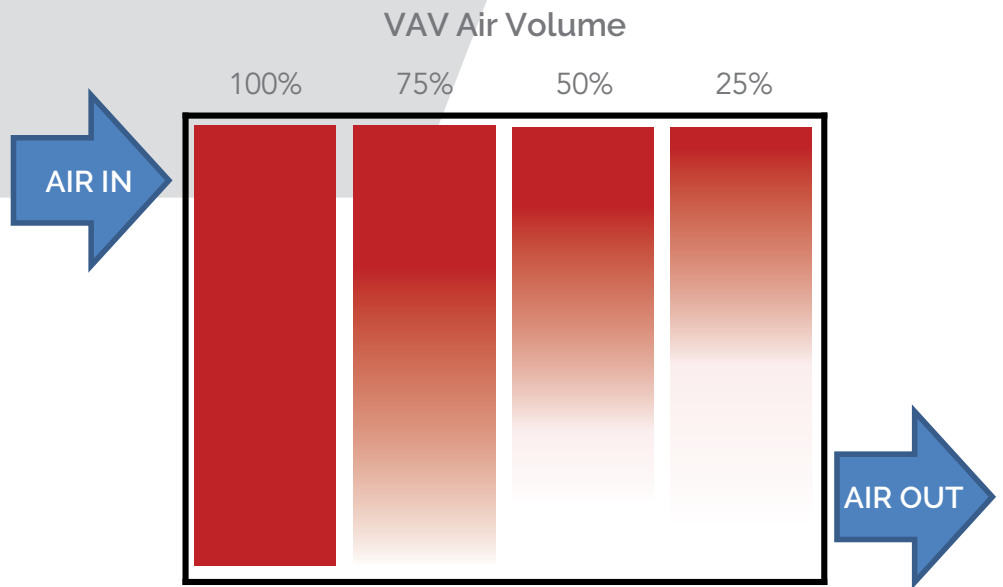
The centralized dual core design of the EnergyCore™ system is available in a wide variety of weights and dimensions. Systems are designed to meet the performance required on each project while accommodating space constraints and equipment serviceability requirements. Southampton Industrial takes the same detailed, fully custom approach to designing air handlers equipped with EnergyCore™ as we do with all of our custom air handlers.

CORE DEPTH			AIRFLOW
16"	20"	24"	5000 CFM – 40,000 CFM / per module

VAV OPERATION

Variable Air Volume (VAV) systems are designed to vary the air volume supplied to a space in response to actual demand. This variation in pressure and airflow can cause problems with stratification and reduced efficiency with many other types of energy recovery systems. Various methods have been employed to avoid these issues, including slowing the energy transfer rate by blocking part of the exchanger surface area.

Energycore's crossover core design prevents these conditions from occurring and is actually self-regulating at reduced airflows. At 100% airflow, the pressure drop across the EnergyCore™ system causes the air stream to disperse and flow evenly through the entire surface of the core, utilizing 100% of its capacity. As the VAV system reduces the airflow, the reduced air volume flows more easily through the entering end of the core and does not traverse uniformly to the opposite end, utilizing only part of the core.



Simultaneously, the reverse airflow enters the core at the same end on the opposite side with the same effect, and the energy transfer rate through only a portion of the core is almost exactly as when at full airflow. In many cases the system actually becomes slightly more efficient at reduced airflow than at 100% capacity.

In contrast, conventional energy recovery technologies are not able to maintain their performance at reduced airflows and commonly utilize dampers to block off part of the energy transfer media during VAV operation.

CFM	VAV Volume %	Outside Air Temp./Hum.	Supply Air Temp./Hum.	Return Air Temp./Hum.	Exhaust Air Temp./Hum.	Temp Effic. %	Humid Effic. %	Energy Recovery BTUH
10,000	100%	-20°F/75%	65.5°F/55.7%	72°F/50%	-13.5°F/99.0%	92.9%	88.2%	1,258,651
8,500	85%	-20°F/75%	67°F/53.0%	72°F/50%	-15°F/99.0%	94.6%	88.5%	1,085,683
7,000	70%	-20°F/75%	68.1°F/51.2%	72°F/50%	-16.1°F/99.0%	95.8%	88.7%	903,150
5,500	55%	-20°F/75%	68.7°F/50.2%	72°F/50%	-16.7°F/99.0%	96.4%	88.9%	713,647
4,000	40%	-20°F/75%	68.9°F/49.9%	72°F/50%	-16.9°F/99.0%	96.6%	88.9%	519,714
2,500	25%	-20°F/75%	68.5°F/50.5%	72°F/50%	-16.5°F/99.0%	96.2%	88.8%	323,865

Table 1: EnergyCore™ performance of a 10,000 CFM system operating down to 25% capacity

ENERGYCORE ADVANTAGES

- The most efficient HVAC energy recovery system available
- The only dual core system with certified performance data
- Can be incorporated into custom air handlers eliminating the need for a separate energy recovery unit
- Centralized core design virtually eliminates the “air hammering” and cross contamination experienced in separated core systems
- Programmable controllers from all major manufacturers including Allen Bradley, Distech, Schneider, GE and Siemens
- Air handlers with EnergyCore™ can be combined with Southampton control panels to provide complete HVAC/automation systems
- Factory integration testing of combined HVAC and automation systems provides seamless operation at job sites
- Low airflow operation without the use of restrictive devices or specialized controls
- Desiccant option provides latent energy recovery in summer months
- Low maintenance requirements
- Nearly silent operation



**CERTIFIED
ISO 9001:2015**

