RECOVERAIRE™ by Desert Aire

LOW SOURCE CAPTURE ENERGY RECOVERY SYSTEM

LOW SOURCE CAPTURE SYSTEM

Introduction

Chlorinating swimming pool water is an effective, long-standing method to disinfect the pool. Unfortunately, the byproducts from this disinfection process are chemicals that are harmful to humans and need to be exhausted from the building. This situation creates the need for low source capture exhaust solutions.

The solution: Low source capture exhaust energy recovery

A low source capture exhaust system pulls air from the surface of the pool which contains the heavier than air, disinfection byproducts and exhausts the contaminated air from the building. This best practice in pool design results in a healthier environment for the patrons of the pool.

The air exhausted by a low source capture exhaust system is warm. The energy in the exhaust air represents an opportunity for energy recovery. That energy can be used to help heat pool water. The water in pools is always evaporating thus cooling the water temperature. In addition, this requires water to be added to the pool. This make-up water needs to be heated. Reclaiming the heat from the exhaust air is an operational benefit in reducing the cost of heating the pool and make-up water. RecoverAire™ is the solution to this energy recovery.

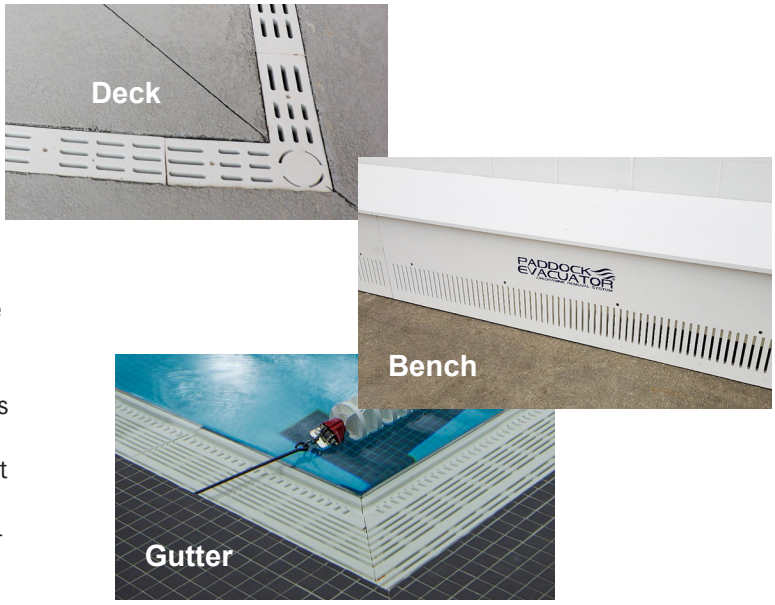

Figure 1 - Low source capture exhaust types

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One of the additional challenges of low source capture exhaust systems is maintaining a consistent negative pressure in the pool room during both occupied and unoccupied hours. The control of the low source capture exhaust system needs to coordinate with other exhaust air streams if present, and the amount of ventilation air being introduced to the room.

Low source capture exhaust systems can come in different forms. The air can be captured in a venting system located in the pool's gutter. It can be a venting system incorporated in the deck next to the pool. In a small pool it could be something as simple as an exhaust opening located in a wall near the floor. In addition, Desert Aire can provide a bench Evacuator®, an effective solution in retrofit applications where no low source capture system previously existed.

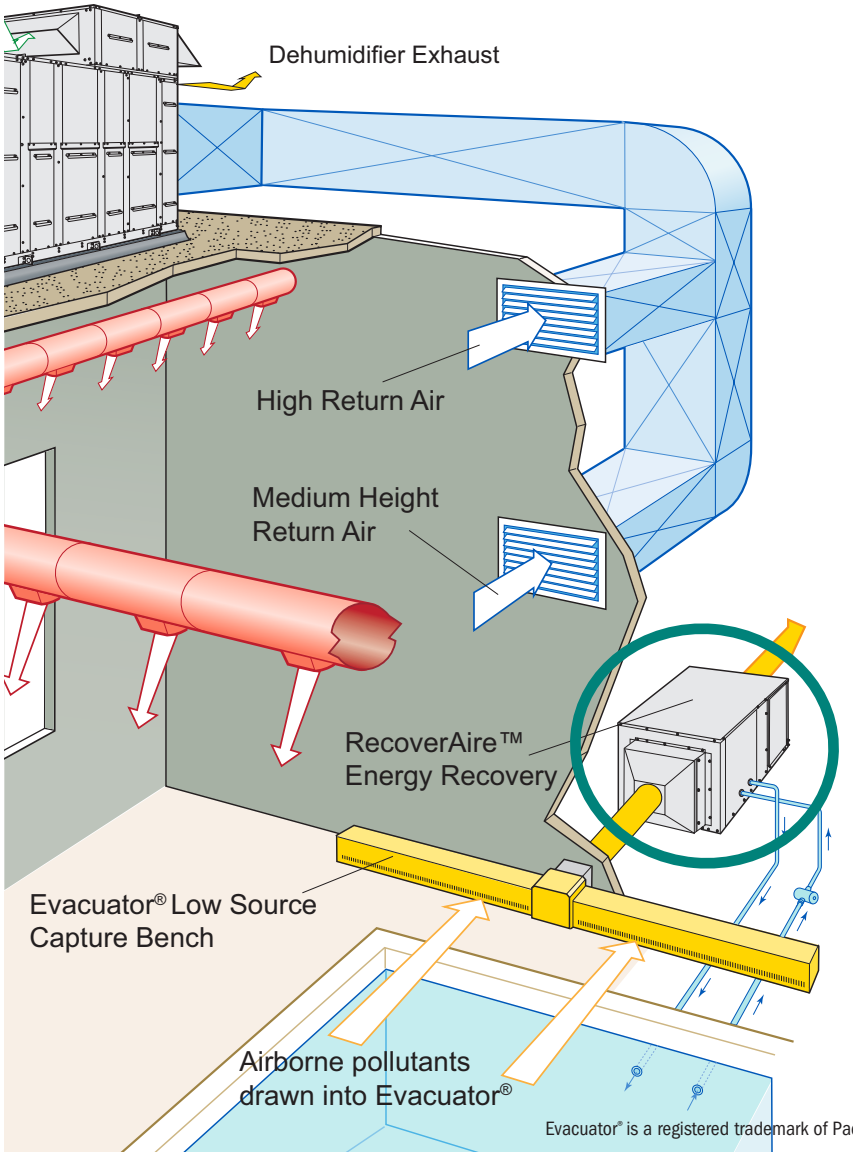

Figure 2 - RecoverAire™ energy recovery and Evacuator® low source capture bench are part of a total solution.

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Figure 3 - Evacuator® bench low source capture exhaust is available in 8-foot sections.

RecoverAire™ Benefits

• Removes the harmful byproducts of the disinfection process of pool chlorination (Nitrogen trichloride, Cyanogen chloride, Trihalomethane, Hydrogen cyanide)
• Recovers energy from the exhaust air to warm pool water resulting in energy and money savings
• Flexible application to work with bench evacuation systems (available from Desert Aire), pool gutter venting and deck venting systems
• When installed with a Desert Aire SelectAire™ or SelectAire Plus™ natatorium unit, the RecoverAire™ unit operation is coordinated to balance ventilation air and all exhaust air flows to maintain room negative pressure.
• Ensure proper IAQ and building pressurization
• A high Coefficient of Performance (COP) heat pump system recovering a substantial amount of the heat lost from exhausted air
• The recovered energy results in a payback that is generally between 2 and 5 years depending on local utility rates.
• Using an EC fan motor to control the volume of low source capture exhaust air, RecoverAire™ can interface with other brands of pool dehumidifiers. The control in the RecoverAire™ unit accepts a signal to modulate the exhaust volume.
• RecoverAire™ has an onboard display that provides a direct readout of the exhaust air volume CFM.
• Built for the pool environment, RecoverAire™ has rugged construction using plastic impeller, galvanneal panels with powder coat paint and ElectroFin® coated coil to provide long equipment life.

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Figure 4 - Internal view of RecoverAire™ system

The RecoverAire™ system has a patent pending refrigeration design that optimizes the amount of energy recovery by controlling the evaporator air volume based on refrigeration superheat levels. The combination of the unique refrigeration circuit and the electrical commutated (EC) fan provides excellent energy recovery performance with significant Coefficients of Performance (COP) values. This makes RecoverAire™ a unique exhaust air system for the aquatics industry.

RecoverAire™ Low Source Capture Exhaust Energy Recovery System Data for Models ER02 - ER12

Pool Size Range (sq. ft.)	500-3,300	800-3,250	1,000-3,750	1,000-3,750	1,900-5,500	2,000-5,500	2,500-6,750	3,400-7,200
Model	ER02	ER03	ER04	ER05	ER06	ER08	ER10	ER12
Minimum CFM	550	800	1100	1400	1900	2080	2500	3400
Maximum CFM	3190	3390	3770	3770	5550	5550	6870	7230
Dimensions L x H x W (inches)	37.3 x 59.3 x 30.9	37.3 x 59.3 x 30.9	48.3 x 59.3 x 30.9	48.3 x 59.3 x 30.9	50.3 x 72.3 x 39.9	50.3 x 72.3 x 39.9	56.2 x 77.2 x 58.9	56.2 x 77.2 x 58.9
Weight in lbs	390	490	580	610	750	800	980	980
Nominal Tons	2	3	4	5	6	8	10	12
EC Fan KW (208-230/460V)	1.6 / 2.4				2.2 / 3.6		2.1 / 3.0	
Unit COP*	4.3	4.7	4.7	5.1	4.7	4.9	5.1	5.1
Maximum Recovery (BTUH)*	32,760	51,171	73,218	88,013	112,363	122,800	161,056	204,505

* Room conditions of 82°F and 60% RH

Optimizing Solutions Through Superior Dehumidification Technology

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