



Pool Room Air Flow is Critical!!!

In spite of how critical air flow is to a pool room environment, decades of our experience have repeatedly shown that proper air flow can safely be considered the leading problem for indoor pools. Without proper air turnover and a controlled balance of temperature and humidity, the effects are extensive and destructive. We cannot overemphasize how critical the air delivery system is to your pool room.

Great Heart - Bad Arteries

We equate the air delivery or ductwork system in your indoor pool room to the arteries of your heart. You may have a great heart, but if the arteries are “plugged up” or are “choked down...” the heart is rendered ineffective. This applies to indoor pool room air delivery systems as well. The dehumidifier is the “heart” —your air delivery system/ductwork are the “arteries.” The air delivery system is the most critical part of your dehumidification system installation.

Our approach to dehumidification and air flow is different from other manufacturers. We begin by designing a dehumidification system with 8 air turnovers/hour minimum on standard new construction. Additional air turnovers may be required upon review of building design and operating conditions. ASHRAE Guidelines state 4-6 for residential and 6-8 for commercial projects. As residential indoor pools in general have become larger than, or as large as, commercial projects, and at varying temperatures, we take these factors in consideration. We will continue to exceed ASHRAE minimum requirements for air turnover rates to ensure a healthy, stable, and dry indoor pool room environment.

The air delivery system is recommended to be installed either overhead (blowing downward) or underground (blowing upward) in a continuous (peripheral loop). This basically means all the way around the pool room and back to the mechanical space. This continuous loop of duct will have properly sized diffusers (registers), each sized for the CFM required to move air across glass or any other surface that can reach dew point temperature and form condensation. Skylights and any other dormer type windows/glass need to be addressed in the design of the ductwork as well, as air flow is required across or into them to prevent condensation.

The ASHRAE HVAC Applications Manual States:

As with any installation, proper duct design and installation is necessary for proper equipment performance. Poorly installed return duct connections, for example, can significantly reduce the performance of a dehumidifier. Fiberglass duct liner should not be used. Where condensation may occur the insulation must be applied to the exterior of the



duct. Duct materials and hardware must be resistant to chemical corrosion from the pool atmosphere. Grilles, registers and diffusers should be constructed from aluminum. Supply air should be directed against interior envelope surfaces prone to condensation (walls, glass, skylights, and doors).

Although recommended by other companies, DXair does NOT recommend blowing air across an open indoor pool as this causes an increase in the evaporation rate of water, a chill affect on bathers, and can increase operating costs. Moving air across the pool water and putting the return air duct at the deck level are popular recommendations to minimize recirculation of chloramines.

Unfortunately, these practices do not work to control the issue of chlorine/chloramines in indoor pools—that is a pool chemistry balancing issue. The chloramine problem is coming out of the water; the solution is treating the water properly. It is not a dehumidification or an air flow issue. Please review our *Pool Chemistry* bulletins and resources for more information.

Dxair provides a shop drawing for duct and mechanical layout to all mechanical contractors that includes duct sizing, diffuser sizing, negative pressure and outside air requirements, as well as assistance in laying out the mechanical space.

New Construction

An underground continuous loop (underground PCD) is recommended as a preferred option. A second option is an overhead continuous loop. Underground ducting is generally installed in a continuous loop before the pool plumbing is put in. This prevents tearing out ductwork to get at a pool plumbing problem. Generally, about 3-5 feet of deck area around the pool is required to “trench” the underground ducting, depending upon the size of your system. It should also be verified that the surface water table is well below the bottom of the pool shell.