

Bulletin # 14

AIR DELIVERY RATES - DUCT SYSTEM

IMPORTANT NOTE: **Total space air flow and the duct delivery system must meet the minimum ASHRAE requirements for any high humidity envelope.** Minimal air turnovers due to inadequate duct design or inappropriate air flow rates may not maintain appropriate conditions of temperature and humidity in the indoor pool room environment.

ASHRAE 1999 HVAC APPLICATIONS MANUAL STATES:
"As with any installation, proper duct design and installation is necessary for proper system performance. Poorly installed return duct connections, for example, can significantly reduce the performance of a dehumidifier. The following duct construction practices apply to natatoriums:

- -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 & doors)."

ASHRAE 1999 HVAC APPLICATIONS MANUAL States:

- "Total airflow should be determined by a psychometric analysis. Most codes require a minimum of six (6) air changes per hour (commercial) , EXCEPT where MECHANICAL COOLING is used. This rate MAY PROVE INADEQUATE for some anticipated conditions of occupancy and use."
- "Where mechanical cooling is provided, air delivery rates should be established to maintain appropriate conditions of temperature and humidity. The following rates are typically desired:"
- (NOTE: These are ASHRAE's recommendations, NOT DXair)
- "Pools w/no spectator areas: 4-6 air changes per hour
- Spectator areas: 6-8 air changes per hour
- Therapeutic pools: 4-6 air changes per hour"

IMPORTANT

GOOD HEART, BAD ARTERIES:

DXair equates the air delivery system in a pool room to arteries to the human heart. You may have a great heart, but if the arteries are "plugged or restricted", the heart is rendered useless. The DXair dehumidifier is state of the art but is useless without a properly designed and installed delivery system. AIR FLOW is the most CRITICAL element for humidity control in all indoor pool rooms.

On new construction, DXair will size the duct system for minimum of 8 air turnovers, and may size for additional air turnovers upon review of building design and operating conditions. The proper duct design, sizing, and installation is necessary for proper equipment performance. Poorly installed air delivery systems (undersized, oversized, choked down, square inside throats, etc.) significantly reduce the performance of the dehumidifier and the air delivery system. A continuous loop (peripheral) or a graduated system will be specified for each project. Please contact DXair for questions on recommended duct work for these applications. DXair will not be held responsible for any project that does not have the properly designed duct work system and proper air turnovers within the envelope. DXair will provide shop drawings, not Engineered stamped drawings, for the architect/mechanical contractor/engineer etc. as part of our package.

NEW CONSTRUCTION: An underground continuous loop - underground PCD is recommended as first option. 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.

The Perfect Balance of Water and Air

DXair Dehumidifiers are designed exclusively for use in all indoor swimming pool applications: from lap pools, schools, large hotel/resort indoor swimming pools, where humidity needs to be controlled with dehumidification to prevent deterioration of the pool enclosure.

For more information,
contact DXair. 800/514-7051