Cleaning Airxchange Wheels

Overview

All air-to-air energy recovery devices will get dirty over time, even with well-maintained filtration. One advantage Rotary wheel technology has over fixed exchangers is the ability to 'self clean' of dry dust and dirt by rotating between two opposing airstreams traveling from 500-800 fpm. In wheels with laminar flow matrix designs, this self-cleaning feature works well until the wheel is exposed to oils, tars or greases in either the supply or exhaust air streams. Once these pollutants deposit on the rotary surface they become 'sticky' and begin to attract and hold the dust particles that previously passed thru the wheel. Over time this particle build up can lead to blocked airflow passages, loss of recovery, excessive pressure drop through the wheel and loss of energy savings.

Field experience shows that offices, schools and other 'clean' environments will often go 10 years before any build up of dust and dirt is noticed. Restaurants, Casinos, factory environments experience fairly rapid build up of contaminants and require multiple cleanings a year to maintain airflow and recovery.

Field experience also shows that all rotary wheels will experience some degradation of latent recovery, long before they appear to be plugged. While exhaust air contamination is the primary source, local environmental conditions can contribute. For example units located near heavily traveled expressways or downwind of fast food restaurants may experience measurable loss of latent performance within 3-5 years of operation.

Airxchange wheels are manufactured to be easily cleaned outside of the unit. The benefits include elimination of a drain pan in the wheel section of the unit and associated IAQ problems, the elimination of the need to drag a pressure hose to the unit on a roof and the ability to soak the individual segments clean so that the need for cleaning is less frequent. An alternate to cleaning is the periodic replacement of dirty segments. This can be economically advantageous when both labor costs and energy costs are rising.

Recommended Cleaning Procedure

Access the energy recovery wheel and remove the energy transfer matrix segments. (For one-piece wheels 25 inches in diameter and smaller, remove the wheel from the cassette.) First brush the wheel face to remove loose accumulated dirt.

Wash the segments or small wheels with a non-acid based (evaporator) coil cleaner or alkaline detergent solution. Non-acid based coil cleaner such as KMP Acti-Clean AK-1 concentrate in a 5% solution has been demonstrated to provide excellent results. **Do not use acid based cleaners, aromatic solvents, temperatures in excess of 170 ^{O}F or steam; damage to the wheel may result.** Soak in the cleaning solution until grease and tar deposits are loosened. An overnight soak may be required to adequately loosen heavy deposits of tar and oil based contaminants.

Internal heat exchange surfaces may be examined by separating the polymer strips by hand. (Note: some staining of the desiccant may remain and is not harmful to performance.) After soaking, rinse the dirty solution from the wheel until the water runs clear. Allow excess water to drain prior to replacing segments in the wheel or reinstalling the wheel in the cassette. A small amount of water remaining in the wheel will be dried out by the airflow.