TOPIC: Louver Considerations for Combating Infectious Aerosol Transmission in Buildings

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In this paper, we discuss louver selection for HVAC systems designed and/or operated with the prevention of airborne disease transmission in mind.

With the arrival of the COVID-19 pandemic, building managers and HVAC designers have been challenged with providing a comfortable indoor environment that is as safe as possible for its occupants. A recently published document from ASHRAE offers several strategies for the design and operation of HVAC systems that may help reduce infectious aerosol transmission. Among the strategies identified, increasing outside air ventilation and running HVAC systems longer (24/7 if possible) are suggested for indoor air dilution and replacement.

For systems that use intake louvers, increased airflow and longer operation cycles could increase water penetration through existing louvers causing building damage and indoor air quality issues. Retrofitting with more efficient louvers might be a consideration. For new systems, proper louver selection is vital in designing an effective HVAC system.

Wind-Driven Rain Resistant Louvers provide superior rain protection making them the best choice for new system designs and retrofits. AMCA 500-L Wind-Driven Rain Class A rated louvers allow only a few ounces of water penetration in an hour vs. several gallons through a traditional drainable louver in storm conditions.

Wind-Driven Rain Resistant Stationary Louver (Vertical Blades)

Wind-Driven Rain Louvers are available in horizontal and vertical blade models. Horizontal models can often be sized comparably to traditional louvers for a given airflow with similar pressure drop and high rain rejection effectiveness. Vertical blade models that provide the best rain resistance and lowest pressure drop usually will handle the highest air volumes through a given size. For the most demanding applications, AMCA 550 compliant models are available providing 99% rain rejection effectiveness when subjected to hurricane-level wind and rain conditions.

Providing constant airflow and outside air circulation, while keeping water out of a building reduces damage and limits the opportunity for mold and dampness. Both of these are proven to be negative contributors to Indoor Air Quality. Referencing ASHRAE Position Document on Infectious Aerosols, additional moisture in the air system can also rehydrate and propagate infection.

Utilizing Wind-Driven Rain Resistant Louvers for HVAC system intakes offers the highest airflow capacity for increased dilution and minimizes water infiltration for building protection and acceptable indoor air quality (IAQ). AMCA offers Certified Ratings and Listed Label programs that verify the published performance of louvers. Specifying louvers with these credentials is highly recommended for all louver applications. Visit AMCA.org to see Certified and Listed louver models.

References:

AMCA Standard 500-L-12 Laboratory Methods of Testing Louvers for Rating
AMCA Standard 550-15 Test Methods for High Velocity Wind Driven Rain Resistant Louvers
AMCA 511 Certified Ratings Program
AMCA 512 Listing Label Program (Hurricane tests)
ASHRAE Position Document on Infectious Aerosols

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