

STATE OF MICHIGAN – MICHIGAN STATE POLICE HEADQUARTERS DYNAMIC AIR CLEANERS - PERFORMANCE VERIFICATION

PREPARED FOR:

**State of Michigan, Department of Technology , Management and Budget
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PREPARED BY:

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Introduction

Matrix was asked to review the manufacturer's performance information for the Dynamic V8 Air Cleaners that were installed in the Michigan State Police Headquarters.

Performance Verification

After reviewing the manufacturer's specifications and performance information for the Dynamic V8 Air Cleaners, the Dynamic V8 Air Cleaners are a great solution for existing HVAC systems to obtain high-efficiency filtration since they have a low pressure drop compared to similar passive filters with equivalent Minimum Efficiency Reporting Values, (MERV). The Dynamic V8 Air Cleaners achieve a 15+ equivalent MERV rating and they have the enhanced ability to remove ultrafine particles, odors, and Volatile Organic Compounds, (VOCs) compared to passive filters. With this capability to remove these particles through the charged media of the Dynamic V8 Air Cleaners, the Indoor Air Quality Procedure in the American Society of Heating, Refrigerating, and Air-Conditioning Engineers, (ASHRAE) 62.1 Standard can be used that allows the minimum outside air rate for the air handling unit to be reduced to much lower levels than the existing minimum outside air rates. Per our evaluation of this installation at the Michigan State Police Headquarters and through our previous experience with the Dynamic V8 Air Cleaners, we have determined that the containment sources, contaminant concentration limits and the level of perceived indoor air quality is acceptable and allows the outside air rate to be lowered to 5 cfm per person in the building as proposed by the manufacturer. This reduction of outside air rate settings is useful since a reduction of outside air being brought into the building means lower energy usage and lower utility costs related to cooling, heating, and humidifying the air being supplied to the building.

Since there are no testing results available for the Michigan State Police Headquarters Dynamic V8 Air Cleaners installation available at this time, if the American Society of Heating, Refrigerating, and Air-Conditioning Engineers, (ASHRAE), recommended filters with a minimum filtration rating of MERV 13 would have been the existing filters serving the air handling units at the Michigan State Police Headquarters building instead of the existing MERV 8 filters, the same fan motor amperage draw reduction of approximately 19% that was verified after the Dynamic V8 Air Cleaners were installed at the Operations Center would be anticipated at the Michigan State Police Headquarters.

Further Recommendations

Due to the current COVID-19 pandemic, it is recommended that all air handling units operate at an outside air setting as high as possible without causing temperature and humidity issues inside the building or damaging the existing HVAC system. It is also recommended that air handling units should operate at 100% outside air for two, (2), hours before and after the building is occupied **when** the outside weather conditions allow without damaging equipment or losing space temperature.

It is also recommended that the indoor air quality of the Michigan State Police Headquarters building be continually monitored for radon, VOCs, CO2, and fine particulate to further validate the increased air quality of the air in the building and the performance of the Dynamic V8 Air Cleaners.

Sincerely,

Matrix Consulting Engineers, Inc.



Neal Spitzley, P.E.
Mechanical Engineering Project Manager