The Dynamic V8 Air Cleaning System:
A New Level of Performance and Savings from a New Category of Air Cleaner

Dynamic V8®

The Dynamic V8 is the new standard in air cleaning– outperforming anything on the market in contaminant control, maintenance and cost of ownership.

Designed to meet the rigorous requirements of Green buildings, data centers, hospitals, pharmaceutical and clean manufacturing, the Dynamic V8 Air Cleaning System couples maximum effectiveness with unparalleled energy and operational savings.

The Dynamic V8 utilizes both the principles of existing Dynamic products as well as several important technological advances to create a system that is a quantum leap over the current state of the art.

Dynamic®
Air Quality Solutions

In the past you had to choose between air quality and operating costs: Now you don't.

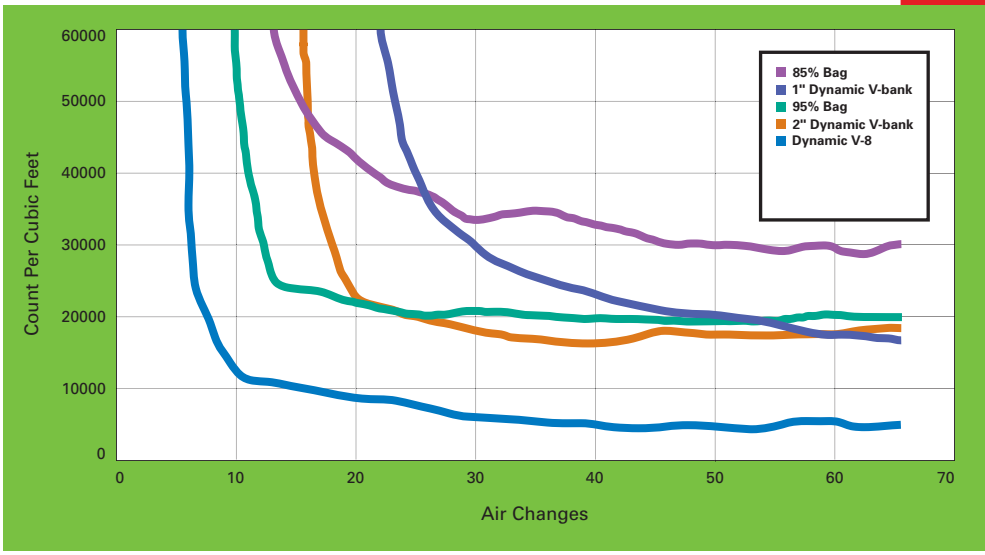
The New Standard in Air Cleaning

The Dynamic V8 provides MERV 13-15+ performance without ionizing or Ozone generation– plus VOC reduction and superior capture of dangerous ultra-fine particles. It is constructed to eliminate bypass, a critical issue for maximum perfomance. Further, because of the various mechanisms of the Dynamic V8, the MERV results understate the real-world effectiveness, as shown below. A typical MERV 14 passive filter will leave behind four times as many 0.3 micron particles. In actual installations, levels of ultra-fine particles and black carbon were over 90% lower than outdoor levels.

Real-World Effectiveness

Figure 1

The graph at right shows particle counts at 0.3 microns as a function of air changes in an AHAM chamber. The airflow for all devices is 2,000 cfm.



Note on Filter Testing

As stated in the standard, the MERV test is a test for passive filters and not truly applicable for active and electronic air cleaners because of the highly conductive loading dust used (typical atmospheric dust is not conductive). However, in the absence of a universally applicable performance test, ASHRAE 52 is what many rely on. In the standard MERV test with conductive dust, the Dynamic V8 starts as a MERV 16, briefly drops to a 13 and winds up a 14. But since the "M" in MERV is for "minimum", the V8 is a MERV 13. If the MERV protocol is followed with non-conductive dust (MERV-NC), the Dynamic V8 achieves MERV 15.

Tests performed by Intertek and Blue Heaven.

V8 Results

In a highly urban environment, the Dynamic V8 provided indoor air with levels of ultra fine particles and black carbon from vehicle exhaust that were over 90% better than the levels in the outdoor air.

V8 Longevity

As of September 2012, the first Dynamic V8 installations have been in service for over 4½ years. No pre-filters are used. Pressure drop has increased only .2"w.g. The air cleaners will have many more months of operation before the media needs to be replaced.

The least expensive filter is the one that you never put in.

Lowest Life-Cycle Cost/Longest Life

- **Energy, maintenance and disposal account for over 90% of the cost of filtration.**
- **The Dynamic V8 slashes all three to deliver operating costs that are 1/3 that of alternatives.**
- **Typical paybacks are less than three years.**

Maximum Loading

The Dynamic V8 holds up to ten times the dust of standard cartridge and bag filters and up to 100 times the dust of shallow-bed passive filters, as shown in Figure 2. Loading is critical to the ongoing costs of filtration, but is often overlooked or not reported. Unlike passive filters (which load primarily on the face of the media), the Dynamic V8 loads throughout the full 1" depth of each of the eight media pads and 360° around each fiber. This three-dimensional loading accounts for the V8's dramatic ability to collect contaminants. And the active-field technology tightly holds what has been collected so it is not shed back into the airstream.

Unequalled Dust-Loading
Figure 2
The graph at right shows pressure drop as a function of dust load.

Longest Maintenance Cycles

Dramatic loading means a typical maintenance cycle should be over three years. That means no quarterly pre-filter changeouts and nine-month final filter replacements. That frees up a lot of time for maintenance personnel to concentrate on other things. Less media changes also means less material use, less disposal costs and a smaller environmental footprint for the building.

The least expensive kilowatt is the one you never use.

Maximum Energy Savings

Superior loading also flattens the pressure drop curve to save over 1" of static. This means big energy savings and the potential for smaller fan selection. Energy costs are a major concern for facility managers and are, at current rates, typically 80-85% of the cost of filtration, far outweighing initial filter cost. A MERV 14 cartridge filter array with pre-filters will consume three times more energy than a Dynamic V8.

Green Design and LEED

- ***The Dynamic V8 is completely consistent with the goals of LEED and Green Design: it does more with less: more IAQ, less energy, less time, less waste.***
- ***The choice for over 50 LEED certified projects including the LEED Platinum renovation of ASHRAE Headquarters and hundreds of sustainable Green design projects around the world.***
- ***Exceeds MERV 13 and contributes to LEED credits:***
  1 Point – Indoor Air Quality – EQ Credit 5
  1 Point – Reduced HVAC Energy – EA Credit 1

Acoustics:

1 Point – IEQ Interior Design & Construction *(Commercial Interiors)*

1 Point – IEQ New Building Design *(New Construction)*

V8 Energy & Carbon Emissions

On a 20,000 cfm air handler, the Dynamic V8 can save up to 30,000 kWh and 40,000 pounds of CO_2 per year versus passive alternatives.

V8 OSHPD Seismic Certified

The Dynamic V8 has passed rigid special seismic testing requirements to obtain California OSHPD Certification.

V8 Testimonials

It's exciting to know we have a beautiful, state-of-the-art facility that is not only safe for our children but also environmentally friendly.

Debi Bell
Baker Center Manager

It has been almost three years and we have still not needed to change the media – which today is running at a low ½ inch. The air quality is outstanding. I have found Dynamic to be among the top HVAC companies when it comes to responsiveness and the service has been excellent.

Darrell Boling
Director of Plant Operations
Firelands Hospital

We have been completely satisfied with all of the Dynamic Air Cleaners. They have met our expectations and performed just as promised. We attribute the odor removal to the Dynamic V-Banks.

Dave Downing
Facilities Manager
Ohio Veterans Home

The feedback we received was that once the Dynamic filters were retrofitted into the existing air handler and in the new Phase One units, the jet exhaust odor complaints stopped. We were originally skeptical, but that was the first indication that the Dynamic Air Cleaners really did perform well.

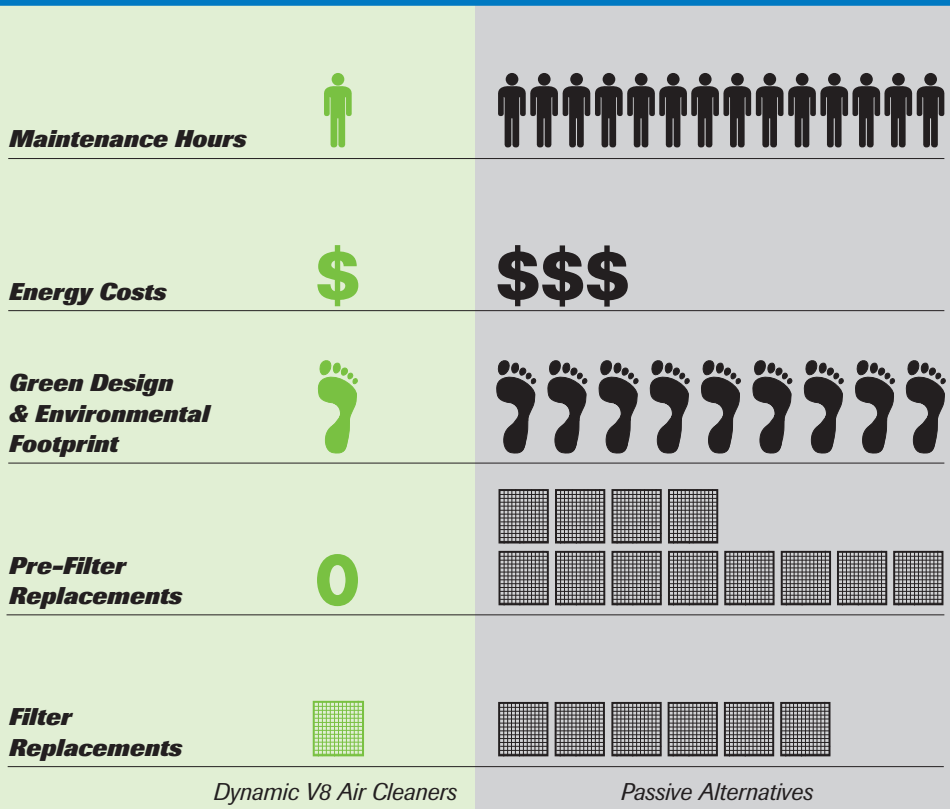
Mark Williams
President
Hirschfield Williams Timmins Ltd.

The Dynamic V8 outperforms anything on the market.

Above is a bank of Dynamic V8's in a 125,000 cfm custom air handler in a high-risk office application. These units are permanently mounted with front access.

This is a slide out Dynamic V8 module in a filter box for a fan coil unit. These give a MERV 13 option for smaller equipment in LEED projects. This module was part of those that were installed throughout the LEED EB renovation of ASHRAE headquarters.

Dynamic V8 Air Cleaners vs. Passive Alternatives



Configurations and Applications

The Dynamic V8 Air Cleaner can be configured and fine-tuned for a wide range of applications and equipment types. The Dynamic V8 modules can be factory or field installed in the filter section of air handlers configured for high-efficiency passive filtration. Because of its low pressure drop and flat loading curve, the Dynamic V8 can also be used with smaller equipment such as packaged rooftops, fan coils, heat pumps, and VRF units. In the illustration above, the Dynamic V8 modules are installed and accessed in external filter sections.

V8 Specifications

MERV rating: *13*

MERV-NC rating: *15-16*

Typical clean pressure drop in an air handler: *<0.3" w.g.*

Typical clean pressure drop in a filter box application: *<0.15" w.g.*

Dust required for .25" w.g. increase in pressure drop: *2,385g*

Input Voltage: *24vac*

V8 Technology

Like previous generations of Dynamic Air Cleaners, the Dynamic V8 utilizes active-field technology to polarize both media fibers and airborne particles. The polarized particles are then drawn to both the fibers of the media and other particles. This process brings about a deep cleaning of the air.

The Dynamic V8 utilizes these basic physical principles and couples them with patented developments in material and composite chemistry and media fiber design. The result is revolutionary performance and a new level of energy and operational savings.

Dynamic Air Quality Solutions
P.O. Box 1258
Princeton, New Jersey 08542
800.578.7873
fax 609.924.8524
www.DynamicAQS.com

dynamic
Air Quality Solutions
THE SCIENCE OF CLEAN AIR