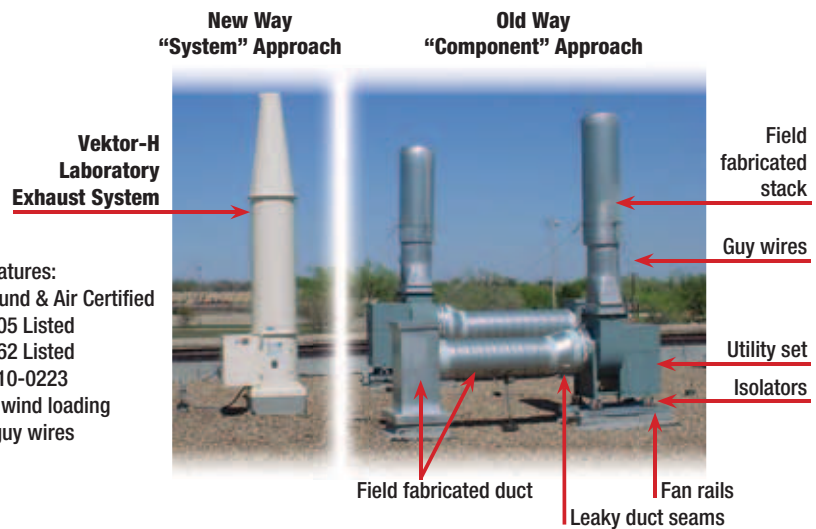


FROM THE INSIDE OUT

A technical educational paper for engineers and contractors in the air movement and control industry.

Greenheck Vektor®-H Laboratory Exhaust System Offers Cost Savings and Significant Engineering Benefits Over Field Built-Up Exhaust System

Traditionally, many laboratory exhaust fan systems consist of field fabricated, or field “built-up” systems utilizing scroll type centrifugal fans and field fabricated components. These systems require extensive pre-engineering by the consulting specifying engineer or design-build contractor to ensure all integrated components meet laboratory design standards, including the pressure losses of field fabricated components in the fan selections. Additionally, field fabrication and installation of parts and pieces add to the installed cost of field built-up laboratory exhaust systems.



- Vektor-H features:**
- AMCA Sound & Air Certified
 - UL/cUL 705 Listed
 - UL/cUL 762 Listed
 - OSHPD #10-0223
 - 125 mph wind loading without guy wires

The Greenheck Vektor-H provides a system approach with the following benefits:

Benefit 1: Lower first installed cost — The installed cost of the Vektor-H is significantly less than the field fabricated “built-up” system, and is illustrated to the right.

In this example, the Vektor-H system approach results in approximately a 25% reduction in installed cost, and allows the contractor to complete the project more efficiently and move on to other projects. Extra installed costs are incurred in a built-up system by the additional labor of field fabricating and then installing the parts and pieces to assemble the exhaust system.

Item	Vektor-H-22 “System”	SWSI Size 22 “Built-Up”
Fan	\$11,200	\$2,800
Crane Charge	\$375	\$650
Guy Wire and Hardware		\$75
12” Stainless Spiral Stack (6’)		\$1,150
12” to 10” Transition		\$285
Square to Round Inlet Transition		\$1,570
23” Stainless 90 Degree Elbow		\$3,070
23” Stainless Spiral Inlet (6’)		\$2,430
Isolation Damper	Included	\$500
Curb	Included	\$500
Field Labor (Mechanical @ \$100/hr)	\$1,040	\$2,600
Field Labor (Roofing @ \$50/hr)	\$100	\$250
TOTAL Cost	\$12,715	\$15,880
Total Labor Hours	12.4	31

Design engineers benefit from the Vektor-H system because it is predesigned and engineered, streamlining their design process. Most importantly, the end user receives a system that will perform as specified and provide years of reliable service.

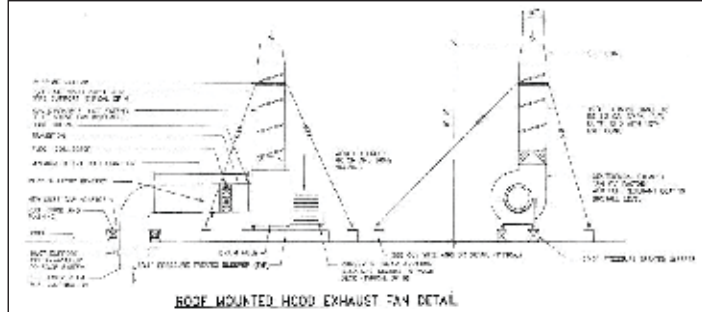


Figure 1 - A typical detail for built-up system.

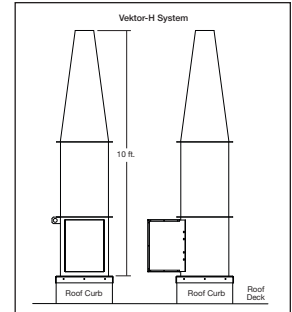


Figure 2 - Cost-effective Greenheck Vektor-H system

Benefit 2: Certified performance for the “system” – Greenheck’s Vektor-H system is tested as an assembly in accordance with AMCA 210 and 300, has AMCA certified sound and air performance, and licensed to bear the AMCA seal for sound and air. AMCA is the independent third-party industry recognized authority on fan performance testing. AMCA certified ratings assures that equipment will perform as cataloged by the manufacturer.



The assembled components of the “built-up” system should be analyzed for the resultant noise that will be generated as to not negatively impact the acoustic requirements of a project. Stacks with high velocity cones (nozzles) further complicate the acoustic performance and fan performance calculations.

Benefit 3: Single source responsibility – Factory engineered and manufactured by Greenheck.

Benefit 4: Free standing design – The Vektor-H is designed to withstand a 125 mph wind loading without the use of guy wires or tie down points. Installation is efficient and quick.

Benefit 5: Single roof penetration point – With the Vektor-H system, only a single roof penetration for the roof curb is required, minimizing the possibility of roof leaks. Other field build-up systems will require roof penetration for the ductwork, but also tie-down points as well as other elements which must be installed on the roof decking increasing mechanical and roofing installation.

Benefit 6: Exhaust system integrity and reliability – No possibility of duct leakage, no field fabricated and sealed duct connections. Blower bearings are air handling quality concentric mount L₁₀ 100,000 hour minimum; fan construction is AMCA spark resistant Class “B”. Dual-groove belt drive is sized for 2.0 service factor.

Benefit 7: Corrosion resistant throughout – Entire system is coated with LabCoat™ zinc rich epoxy primer and Hi-Pro polyester resin finish, electrostatically applied and baked.

Benefit 8: Applicable to constant volume or variable volume exhaust – Variable volume application is achieved using the Vektor-H optional bypass air plenum.

Benefit 9: Application flexibility – Can be applied to manifolded fume hood systems with up to three Vektor-H blowers on a common plenum.

Benefit 10: The Greenheck Vektor-H laboratory exhaust system can be applied to installations with vertical exhaust risers as well as those requiring roof mounted horizontal inlet collection ducts.