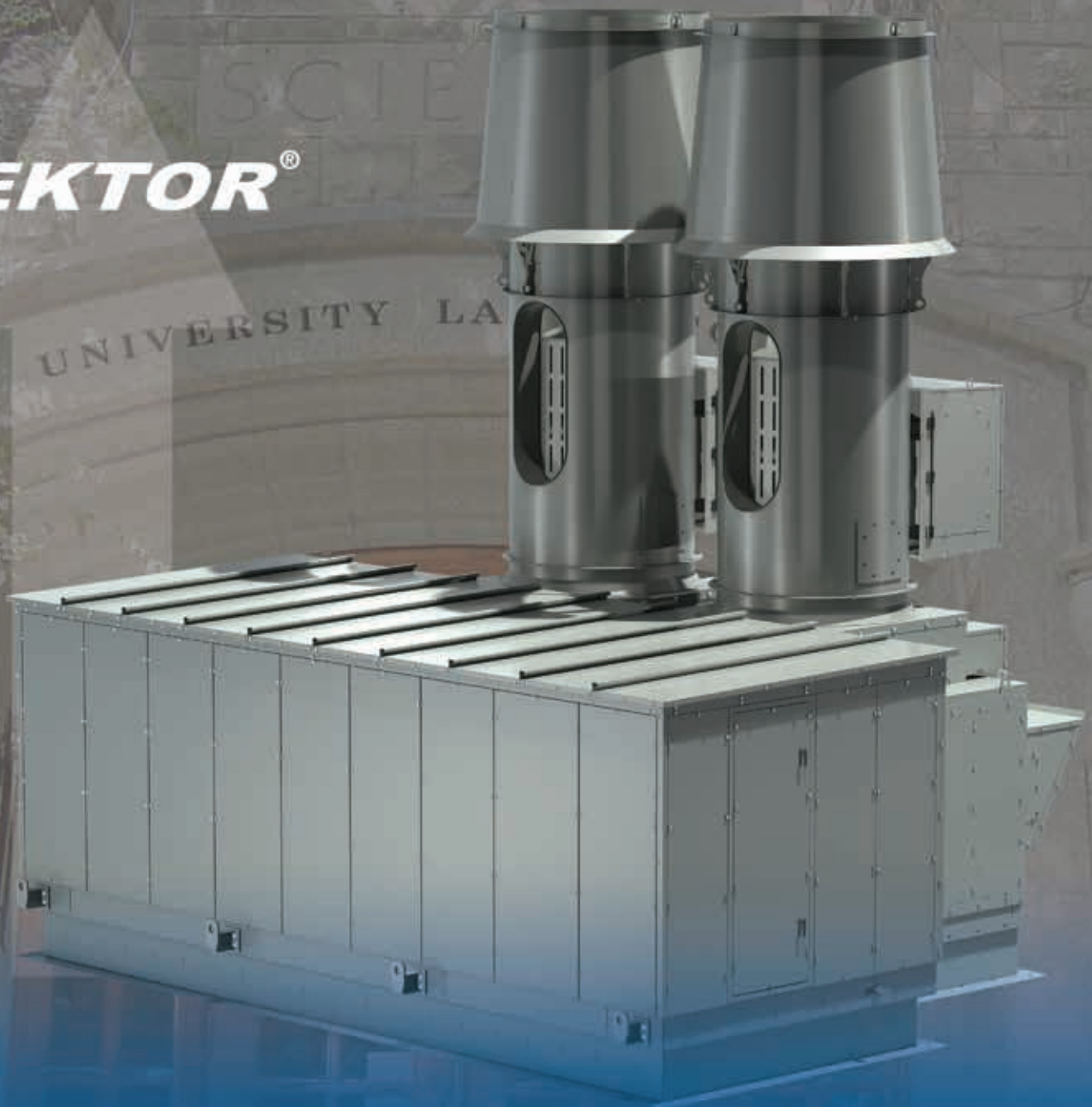


Energy Recovery Laboratory Exhaust Model Vektor® ERS-MD

For Vektor-MD Fan Systems



VEKTOR®



GREENHECK
Building Value in Air.

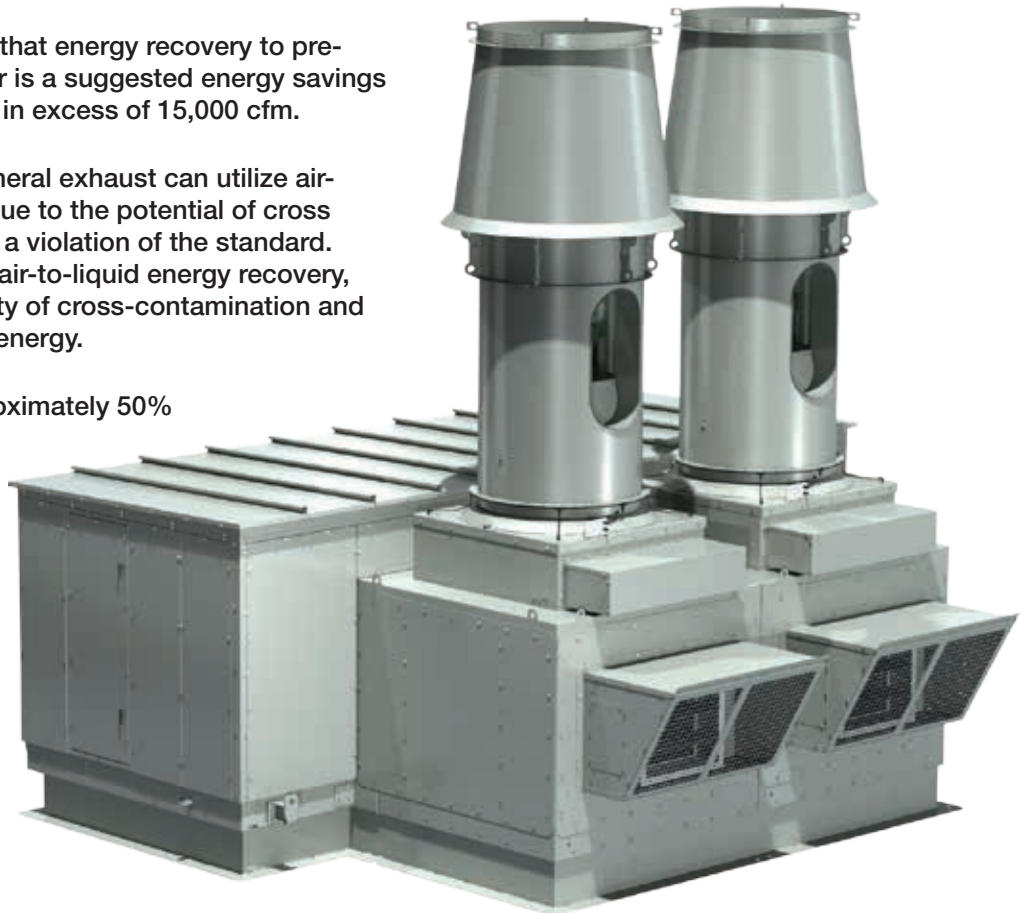
September
2012

Greenheck's Vektor®-ERS is a pre-engineered laboratory exhaust energy recovery system. In combination with our Vektor-MD high plume dilution blowers, this system is designed to effectively remove contaminated laboratory exhaust and dilute and disperse the exhaust high above the roof.

Vektor energy recovery exhaust systems utilize run around coils to recover energy from the exhaust airstream and apply the energy to the make-up air system. Vektor ERS-MD offers a safe and efficient solution to minimize the possibility of cross-contamination between exhaust and supply airstreams. Vektor ERS-MD run around coil loops can achieve energy recovery efficiencies up to 50% to lower heating and cooling costs for the laboratory facility.

Did you know...

- ▶ Laboratories typically require 100% outside air with ventilation rates ranging from 6 to 15 air changes per hour.
- ▶ ASHRAE 90.1 indicates that energy recovery to pre-conditioned make-up air is a suggested energy savings method for laboratories in excess of 15,000 cfm.
- ▶ NFPA 45 states only general exhaust can utilize air-to-air energy recovery due to the potential of cross contamination, which is a violation of the standard. Vektor ERS-MD utilizes air-to-liquid energy recovery, eliminating the possibility of cross-contamination and recovers more exhaust energy.
- ▶ Studies show that approximately 50% of the energy costs associated with operating a laboratory are the result of heating and cooling the make-up air. The addition of energy recovery can significantly reduce this cost.



Model Vektor®-MD is listed for electrical (UL/cUL 705).
File No. E40001



	Run Around Coil Loop Specifications
Type of Heat Transfer	Sensible
Sensible Effectiveness %	Up to 50%
Location of Exhaust/Supply Airstream	Separate
Cross-Contamination	None
Cross-Leakage	None
Temperature Range	-45° to 200°F

Vektor® ERS Features:

- Four pre-engineered energy recovery plenum sizes
- Heresite coated coils
- Insulated double-wall plenum with stainless steel interior
- Run around coil loop energy recovery
- Coil bypass option
- Physical separation between exhaust and supply
- Single source responsibility

Vektor® MD Features:

- High plume, induced flow dilution blower
- Utilizes an efficient and quiet mixed flow impeller
- Bifurcated fan housing with motor, drive, and bearings located out of the airstream for safe, easy servicing
- AMCA 260 Licensed for Induced Flow Fans
- Single source responsibility



Performance Ranges

VKERS-020

Up to 24,000 cfm

VKERS-030

12,500 - 28,750 cfm

VKERS-040

17,000 - 41,200 cfm

VKERS-060

30,000 - 66,000 cfm

Applications

- University Laboratories
- Pharmaceutical Companies
- Biosafety Laboratories
- Research Facilities
- Any contaminated exhaust system where reducing energy cost is desired

VKERS-040-075-MD303

Model Name

Cabinet Size
020, 030, 040, 060

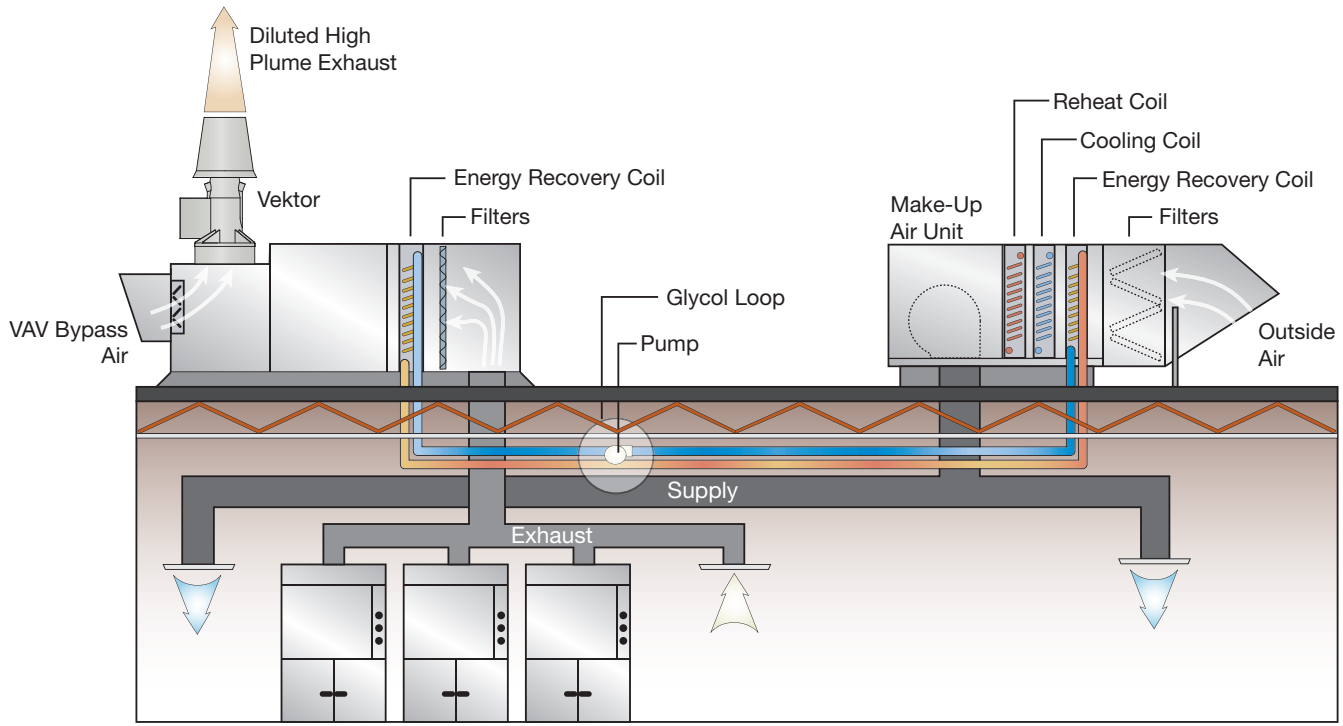
Cabinet Height
75, 90, 110

Fan Type
MD

Number of Fans
1, 2, 3

Fan Size
15 20 27 36 49
16 22 30 40 54
18 24 33 44

The Vektor ERS uses a corrosion-resistant run around liquid coil loop to recover energy from the laboratory exhaust airstream and transfer the energy to the laboratory make-up air. The energy transfer preheats make-up air in the winter and precools make-up air in the summer.



Safe, Reliable, Cost-Effective

The run around coil loop is the preferred method of recovering energy from hazardous lab exhaust because separation is maintained between the exhaust and supply airstreams, eliminating the concern of cross-contamination. The exhaust coil is corrosion-resistant coated and in subfreezing climates, a percentage of glycol is added to depress the freezing point of the circulated fluid. The Vektor ERS system also eliminates the need to duct large volumes of supply and exhaust air to a common point—which is required with other energy recovery systems—reducing the Vektor ERS system installed cost and improving economic payback.

Significant Energy Savings

The Vektor ERS can significantly reduce a laboratory facility's heating and cooling load. The tables illustrate preheating and precooling temperatures of make-up air and load reductions for various cities based on standard weather bin data. Greenheck offers a complete thermodynamic and economic analysis of a Vektor ERS for your specific project.

	Winter / Preheated					Summer / Precooled		
Outdoor Air Temperature (°F)	-10	0	10	20	30	85	95	105
Preheat Air Temperature (°F)	26.9	32.4	37.9	43.4	48.9	79.2	84.7	90.2

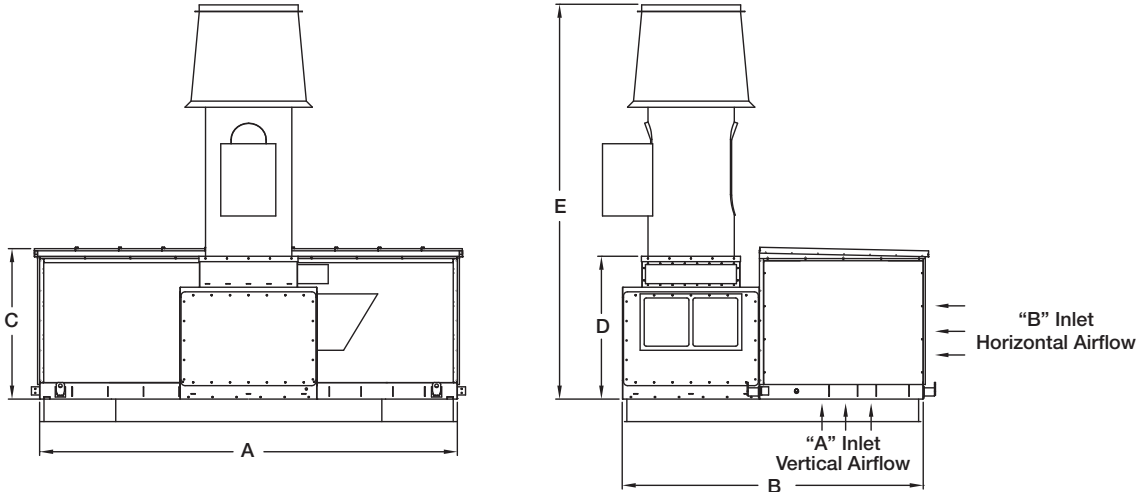
Preconditioning of make-up air based upon 72° exhaust and 45% energy recovery efficiency.

City	BTUH Saved Annually		Net Dollars Saved Annually
	Heating	Cooling	
Atlanta	7,556,153	(1,657,890)	\$42,303
Boston	8,927,100	(1,657,890)	\$77,779
Chicago	13,677,593	(1,657,890)	\$86,261
Cincinnati	13,794,495	(1,594,125)	\$75,385
Portland	3,528,330	(1,647,263)	\$59,063
Syracuse	9,458,475	(1,594,125)	\$90,887

Energy saving shown for annual operation, at outdoor TMY2 bin data for the specified location. Systems operating at 50,000 cfm, equal supply and exhaust; \$0.1/kWh, and \$1.75/MMBtu, assuming 80% heating efficiency.

NOTE: kWh and MMBtu costs may vary by locale.

Dimensions, Weights and Configurations



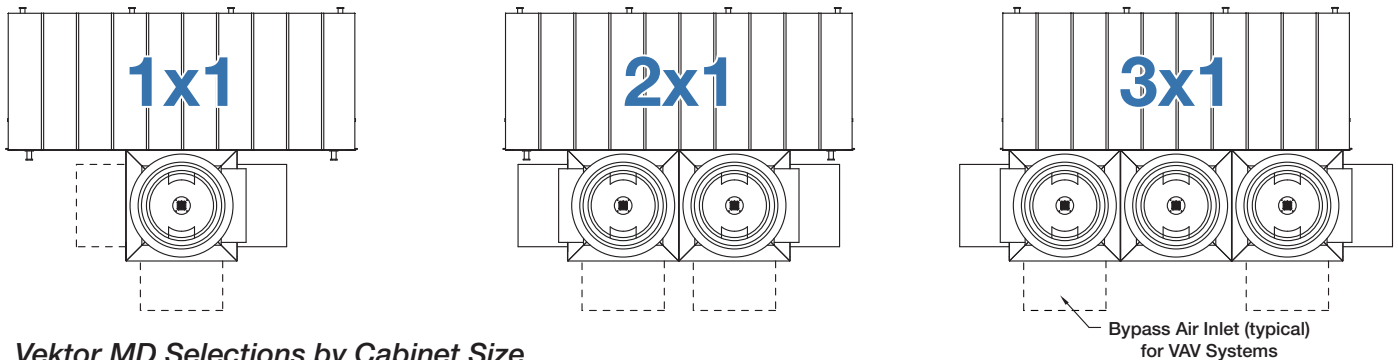
	A (Length)		B (Width)		C			D		Weight** (pounds)				
	Maximum	Minimum	Maximum		Coil Section Height*			Minimum	Maximum	75	90	110		
VKERS-020	120	133	153		75	90	110	70	70	3564	4386	NA		
VKERS-030	154	127	181	70				84	4042	4644	NA			
VKERS-040	206	147	181	70				84	5117	5824	NA			
VKERS-060	270	147	181	70				84	6609	7515	8001			
E Overall System Height														
Fan Size	15	16	18	20	22	24	27	30	33	36	40	44	49	54
Minimum	145	147	161	174	169	177	193	202	194	201	209	225	240	250
Maximum	145	161	175	188	183	191	207	216	208	215	223	239	254	264

Dimensions shown in inches.

* = Curb not included

** = Approximate weight based on maximum coil size and maximum number of filters. Fans, bypass plenums and roof curbs are not included. Obtain from CAPS (Computer Aided Product Selection).

Available Configurations



Vektor MD Selections by Cabinet Size

	1x1	2x1	3x1
VKERS-020	VK-MD 15-36	VK-MD 15-22	Not available
VKERS-030	VK-MD 20-44	VK-MD 15-33	VK-MD 15-22
VKERS-040	VK-MD 24-50	VK-MD 24-54	VK-MD 20-27
VKERS-060	VK-MD 40-54	VK-MD 30-54	VK-MD 24-40

Consult factory for additional configuration options.

A Cabinet Construction

- Coated steel exterior with stainless steel interior
- Double-wall construction with two-inch foam filled panels
- Stainless steel fasteners
- Bottom or side inlet locations
- Hinged access door with “tooled entry” handles
- Optional coil bypass design

B Coil Construction

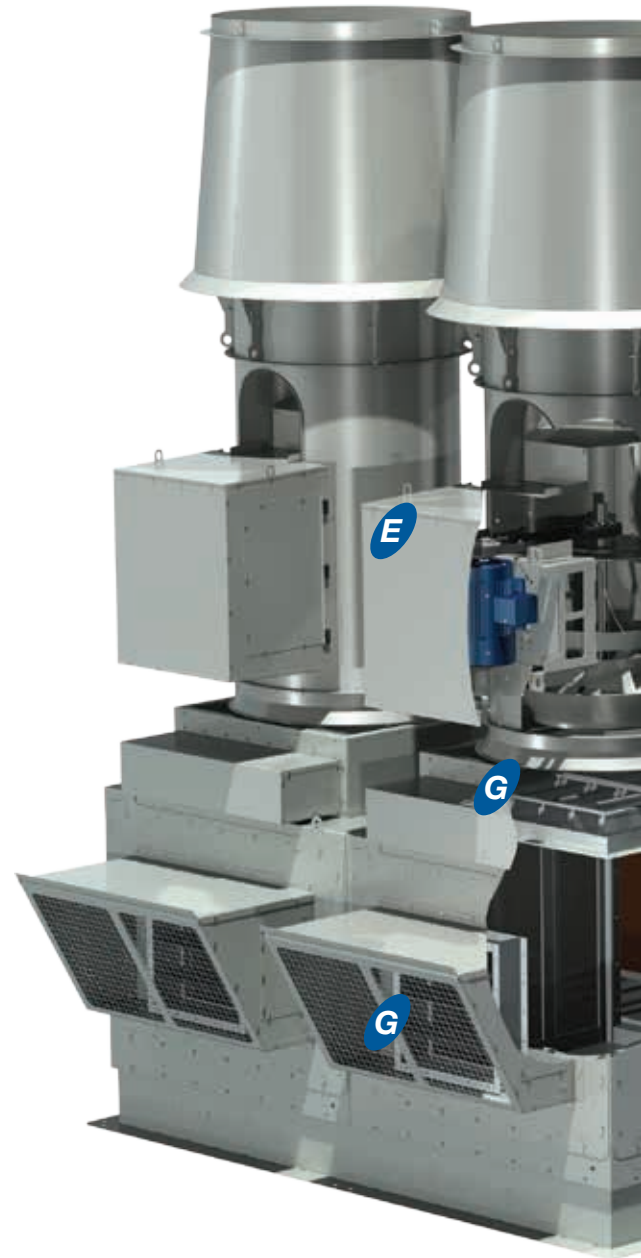
- Aluminum fins with copper tubing, corrosion-resistant Heresite coated
- Stainless steel casing, corrosion-resistant Heresite coated
- Sized for maximum velocity of 500 ft/min
- Six row coils, eight fins per inch (standard)
- Rated in accordance with ARI 410-2001
- UL and ETL recognized
- Leak tested under water at 450 PSIG dry nitrogen

C Filters

- Two-inch up to 35% disposable pleated filters, MERV 8 (0.24 inch wg pressure drop at 500 ft/min)
- Four-inch up to 65% disposable pleated filters, MERV 11 (0.40 inch wg pressure drop at 500 ft/min)

D Fan Plenum Curb

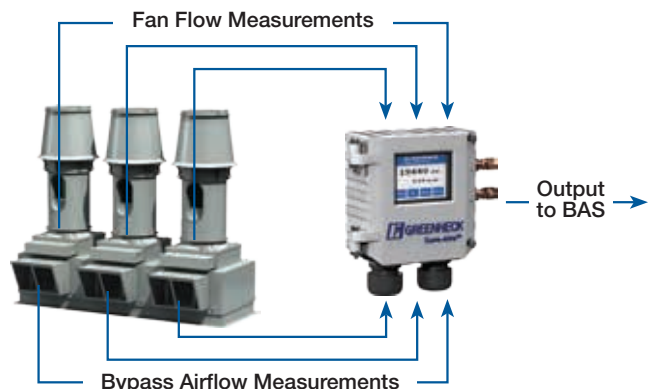
- 12 gauge welded steel, coated with LabCoat™
- Insulated
- Minimum of 12 inches high
- Gasket provided for curb seal
- Designed to withstand 125 mph wind-load rating without the use of guy wires

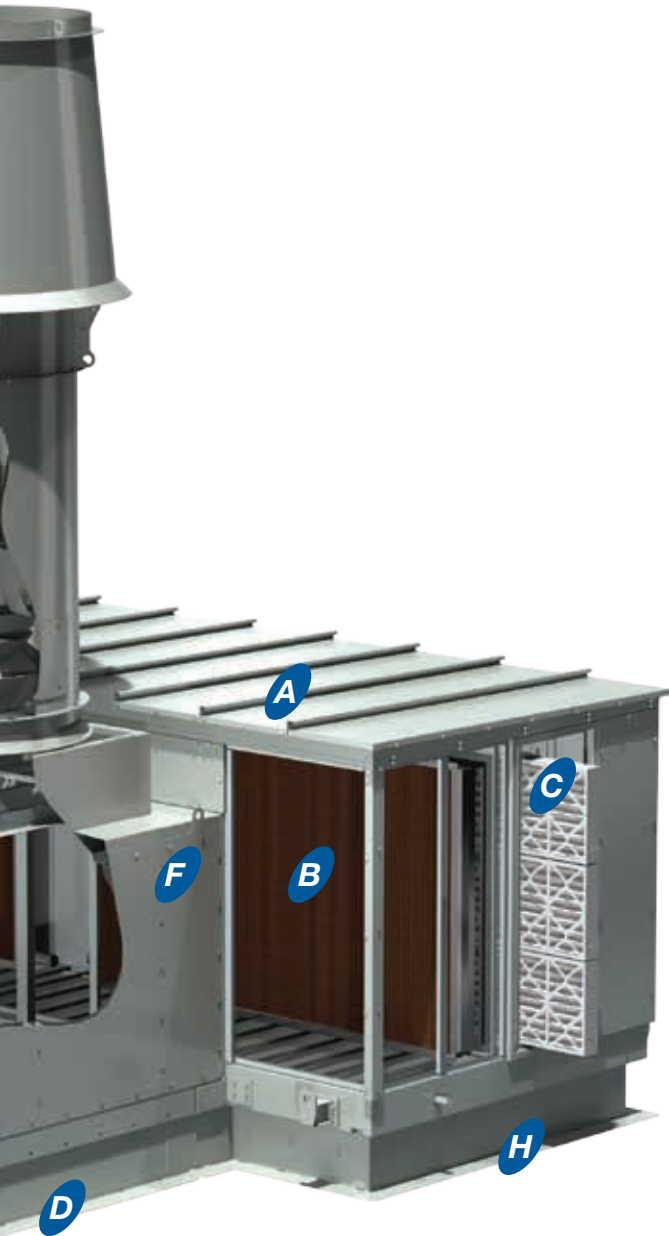


Vektor Sure-Aire™...another energy saving system from Greenheck

Continuously monitor critical laboratory fan exhaust and building exhaust flow without airflow probes in the exhaust airstream. Benefits of the Sure-Aire™ system:

- Continuously measures critical fan and laboratory exhaust flow
- Reports values to Building Automation System (BAS)
- No system effect or resistance to airflow
- No additional pressure loss
- No increase in fan RPM, sound or brake horsepower
- No additional energy cost for the building owner
- No probe corrosion to cause fan failure





E Fan Construction

- Efficient and quiet mixed flow impeller technology
- Bifurcated housing with motor, belt and bearings out of the airstream
- Corrosion-resistant welded steel construction, coated with LabCoat™
- Belt or direct drive
- Totally enclosed fan cooled, premium efficient motors

F Fan Plenum Construction

- Single or double-wall construction
- Exterior steel walls coated with LabCoat™
- Interior walls available in stainless or coated steel with LabCoat™

G Damper Features

- Isolation damper completely accessible from exterior of system
- Bypass damper(s) are sized to match system requirements
- Corrosion-resistant polyester resin coated, welded steel airfoil blade design

H Coil Cabinet Curb

- 12 gauge corrosion-resistant welded steel, coated with LabCoat™
- Insulated
- Minimum of 12 inches high
- Gasket provided for curb seal
- Designed to withstand 125 mph wind-load rating without the use of guy wires

Vektor ERS Options and Accessories

Magnehelic Gauge

To measure air pressure drop across the filters indicating filter loading.



Vapor Tight Lights

Moisture and corrosion-resistant construction with no exposed parts. Energy-efficient, compact fluorescent lamps.



Vektor® Products

Vektor-H



Vektor-HS



	Vektor-H	Vektor-HS
Housing Style	Inline Centrifugal	Inline Centrifugal
Stack Style	High Plume Nozzle	High Plume Variable Nozzle
Minimum Flow	270 cfm (459 m ³ /hr)	270 cfm (459 m ³ /hr)
Maximum Flow	24,000 cfm (40,776 m ³ /hr)	24,000 cfm (40,776 m ³ /hr)
Maximum ESP	Up to 3.5 in. wg (875 Pa)	Up to 3.5 in. wg (875 Pa)
LISTED Underwriters Laboratories	UL/cUL Listed for Electrical 705 (File no. 40001) and UL Listed for Grease Removal 762 Power Ventilators for Restaurant Exhaust Appliances (File no. MH11745)	UL/cUL Listed for Electrical 705 (File no. 40001)
AMCA Certification	Sound and Air Performance	-
Warranty	1 Year	1 Year
Patents	-	Patent Pending

Vektor-MD



Other Patents Pending

Vektor-CD



	Vektor-MD	Vektor-CD
Housing Style	Inline Mixed Flow	Centrifugal
Stack Style	High Plume Dilution Nozzle	High Plume Dilution Nozzle
Minimum Flow	1,500 cfm (2,549 m ³ /hr)	500 cfm (850 m ³ /hr)
Maximum Flow	80,000 cfm (135,921 m ³ /hr)	140,000 cfm (237,862 m ³ /hr)
Maximum ESP	Up to 8 in. wg (2000 Pa)	Up to 14 in. wg (3500 Pa)
LISTED Underwriters Laboratories	UL/cUL Listed for Electrical 705 (File no. 40001)	UL/cUL Listed for Electrical 705 (File no. 40001)
AMCA Certification	Induced Flow Fan Air and Sound Performance	Induced Flow Fan Air and Sound Performance
Warranty	1 or 3 Years	1 Year
Patents	United States: 7320636, 7682231, 7048499 Singapore: 124135, 124106 Mexico: 258949, 243465 P.R. China: 20058006160.6, 01813109.3 Hong Kong: 1114659	United States: 7547249 Singapore: 124105

Our Commitment

As a result of our commitment to continuous improvement, Greenheck reserves the right to change specifications without notice.

Specific Greenheck product warranties are located on greenheck.com within the product area tabs and in the Library under Warranties.



Prepared to Support Green Building Efforts

