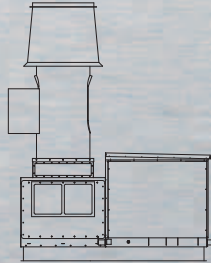


# Energy Recovery Laboratory Exhaust Model Vektor ERS-MD

For Vektor™-MD Fan Systems



**VEKTOR™**



 **GREENHECK**  
Building Value in Air.

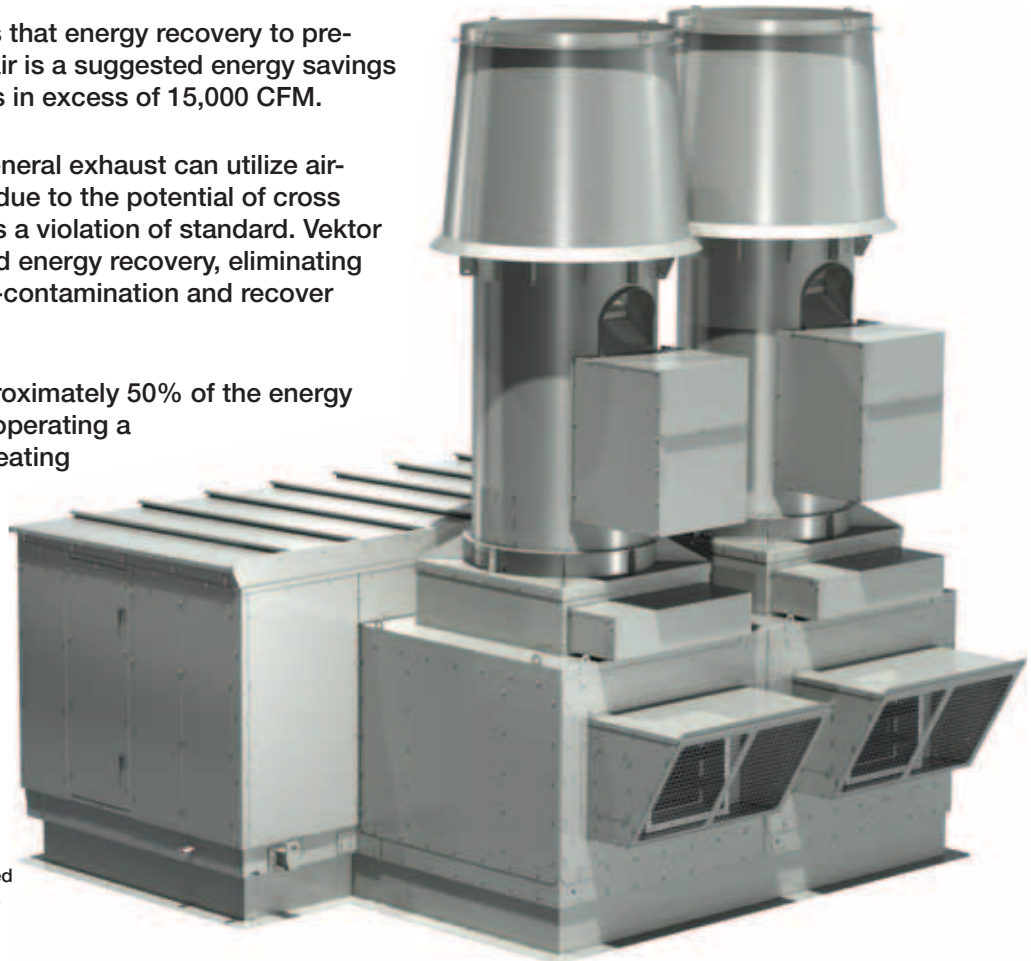
March  
2010

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 offers a safe and efficient solution to minimize the possibility of cross-contamination between exhaust and supply airstreams. Vektor ERS 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 standard. Vektor ERS utilizes air-to-liquid energy recovery, eliminating the possibility of cross-contamination and recover more exhaust energy.
- ▶ Studies show that approximately 50% of the energy costs associated with operating a laboratory are by the heating and cooling of 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 20,000 cfm

#### VKERS-030

12,500 - 30,000 cfm

#### VKERS-040

17,000 - 43,000 cfm

#### VKERS-060

30,000 - 60,000 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

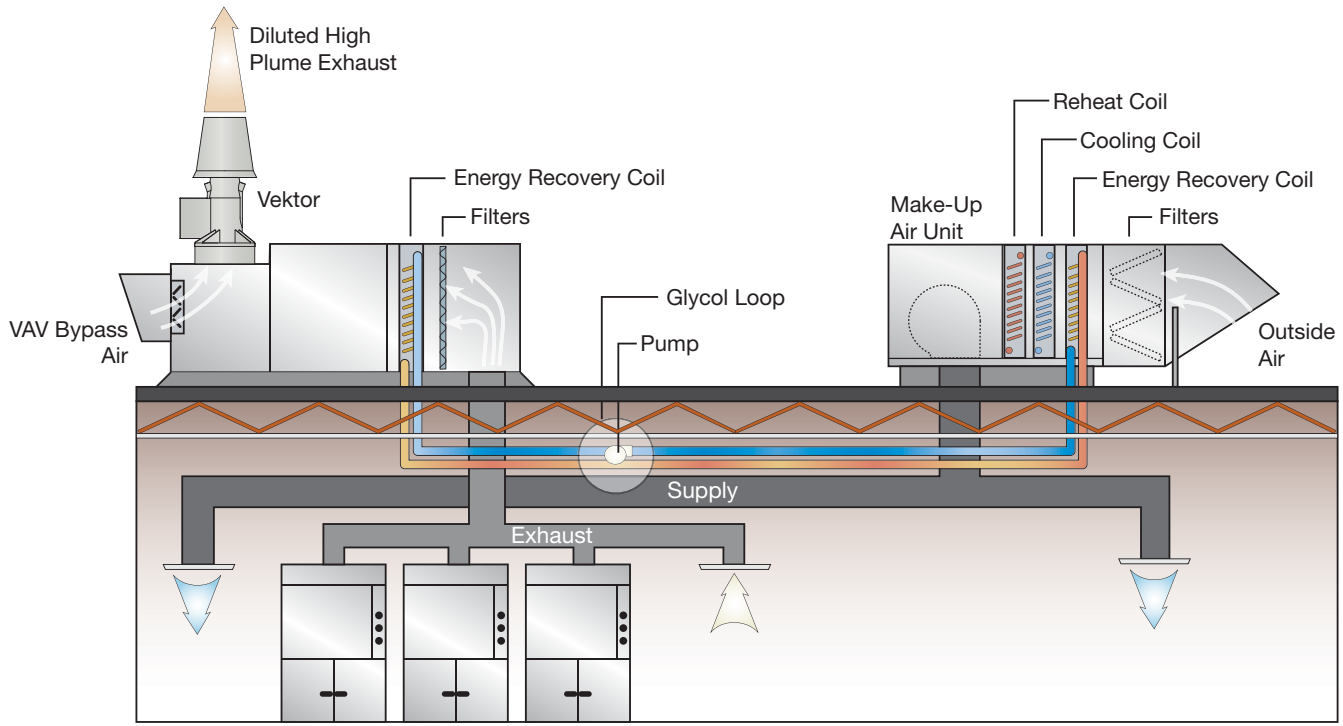
Fan Type  
MD

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

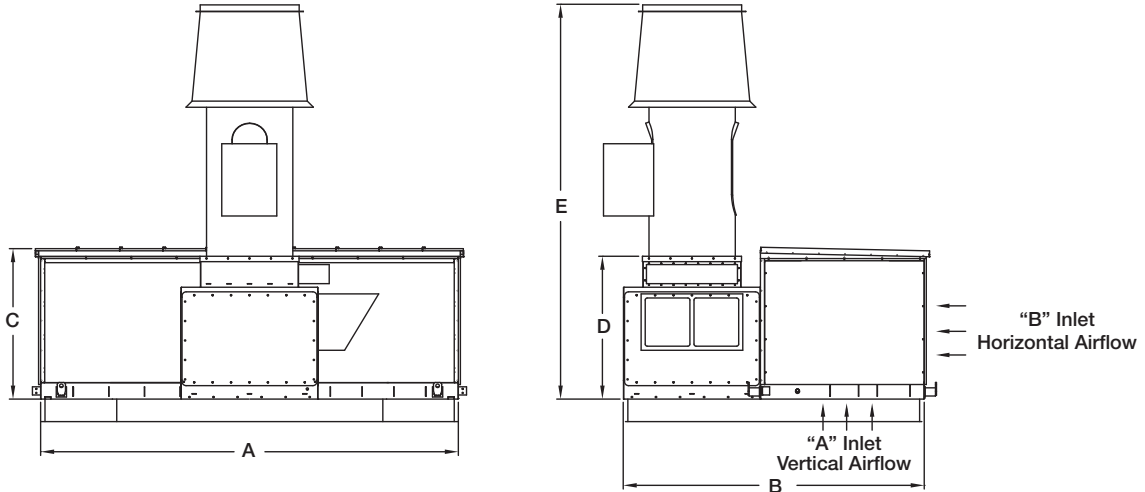
*Preconditioning of make-up air based upon 72° exhaust and 45% energy recovery efficiency.*

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

*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



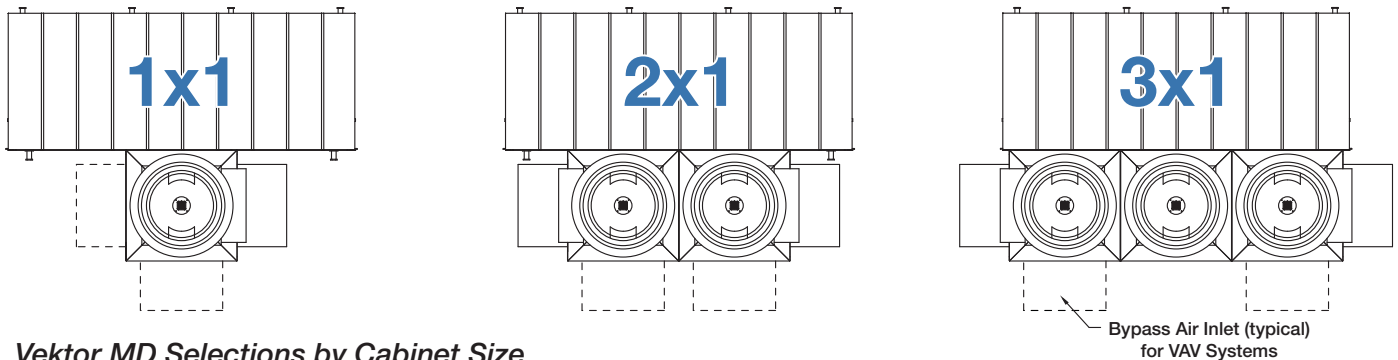
	A (Length)			B (Width)		C			D		Weight** (pounds)			
	Maximum	Minimum	Maximum	Coil Section Height*		75	90	110	Fan Section Height*		75	90	110	
VKERS-020	120	133	153									70	70	3564
VKERS-030	154	127	181						70	84	4042	4644	NA	
VKERS-040	206	147	181						70	84	5117	5824	NA	
VKERS-060	270	147	181						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.

# Vektor™ ERS Standard Construction Features

## **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

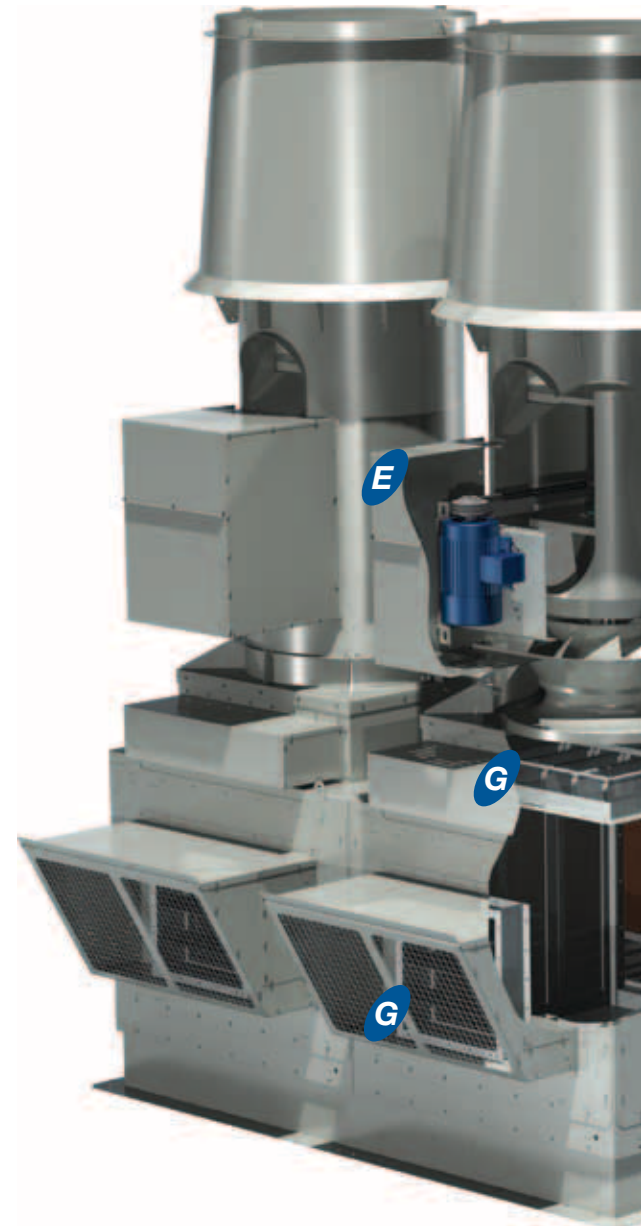
- Aluminum fins with copper tubing, corrosion-resistant Heresite coated
- Stainless steel casing, corrosion-resistant Heresite coated
- Sized for maximum velocity of 500 ft/min
- Six row coils, eight fins per inch (standard)
- Rated in accordance with ARI 410-2001
- UL and ETL recognized
- Leak tested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

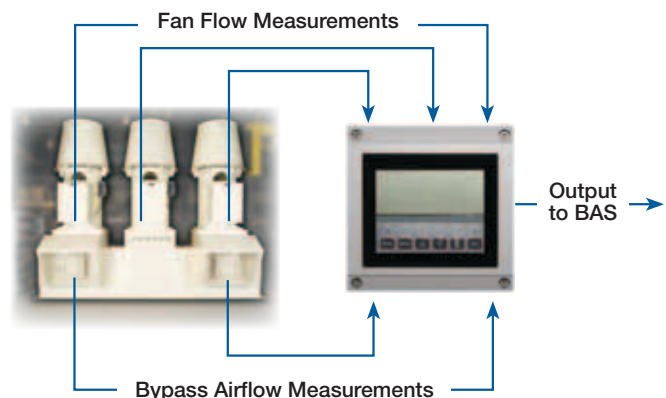
- 12 gauge welded steel, coated with LabCoat™
- Insulated
- Minimum of 12 inches high
- Gasket provided for curb seal
- Designed to withstand 125 mph wind-load rating without the use of guy wires



# 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. Sure-Aire™ offers:

- 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.



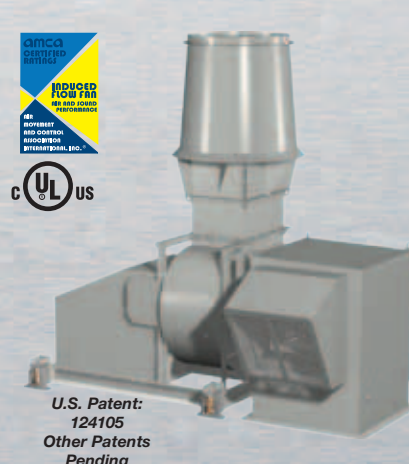
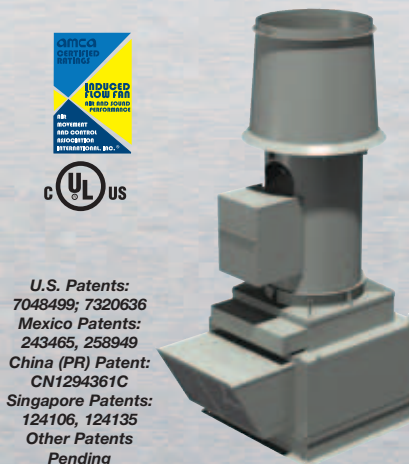
### **Vapor Tight Lights**

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



# Model Comparison and Warranty Information

**VEKTOR™**  
Family  
of Lab  
Exhaust  
Systems



U.S. Patents:  
7048499; 7320636  
Mexico Patents:  
243465, 258949  
China (PR) Patent:  
CN1294361C  
Singapore Patents:  
124106, 124135  
Other Patents  
Pending

U.S. Patent:  
124105  
Other Patents  
Pending

	Vektor-H	Vektor-MD	Vektor-CD
Housing Style	Inline Centrifugal	Inline Mixed Flow	Single Width Centrifugal
Stack Style	High Plume Nozzle	High Plume Dilution Nozzle & Windband	High Plume Dilution Nozzle & Windband
Minimum Flow	270 cfm (460 m <sup>3</sup> /hr)	1,500 cfm (2,550 m <sup>3</sup> /hr)	500 cfm (850 m <sup>3</sup> /hr)
Maximum Flow	24,000 cfm (40,800 m <sup>3</sup> /hr)	80,000 cfm (136,000 m <sup>3</sup> /hr)	140,000 cfm (238,000 m <sup>3</sup> /hr)
Maximum ESP	Up to 3.5 in. wg (875 Pa)	Up to 8 in. wg (2000 Pa)	Up to 14 in. wg (3500 Pa)
US LISTED	UL for Electrical 705 Power Ventilators (File no. E40001) and Grease Removal 762 Power Ventilators for Restaurant Exhaust Appliances (File no. MH11745)	UL/cUL for Electrical 705 Power Ventilators (File no. E40001)	UL/cUL for Electrical 705 Power Ventilators (File no. E40001)
AMCA Certification	Sound and Air Performance AMCA 210 & 300	Induced Flow Fan Air and Sound Performance AMCA 210, 260, 300	Induced Flow Fan Air and Sound Performance AMCA 210, 260, 300
Warranty	1 Year	3 Years	3 Years

## Our Warranty

Greenheck warrants this equipment to be free from defects in material and workmanship for a period of one year from the shipment date. Any units or parts which prove defective during the warranty period will be replaced at our option when returned to our factory, transportation prepaid. Motors are warranted by the motor manufacturer for a period of one year. Should motors furnished by Greenheck prove defective during this period, they should be returned to the nearest authorized motor service station. Greenheck will not be responsible for any removal or installation costs.

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



Prepared to Support  
Green Building Efforts

