

# Vari-Green<sup>®</sup> Motor

EFFICIENT | RELIABLE | CONTROLLABLE

Start saving now — with the low-cost, easy to control, electronically commutated motor that offers high reliability and low maintenance.

The Greenheck Vari-Green Motor blends technology, controllability and energy-efficiency into a low maintenance package that is changing the way the industry designs, specifies and operates air movement equipment.



 **GREENHECK**  
*Building Value in Air.*



Greenheck  
**GREEN**

Supporting Green Building  
Initiatives Worldwide



# VARI GREEN Motor

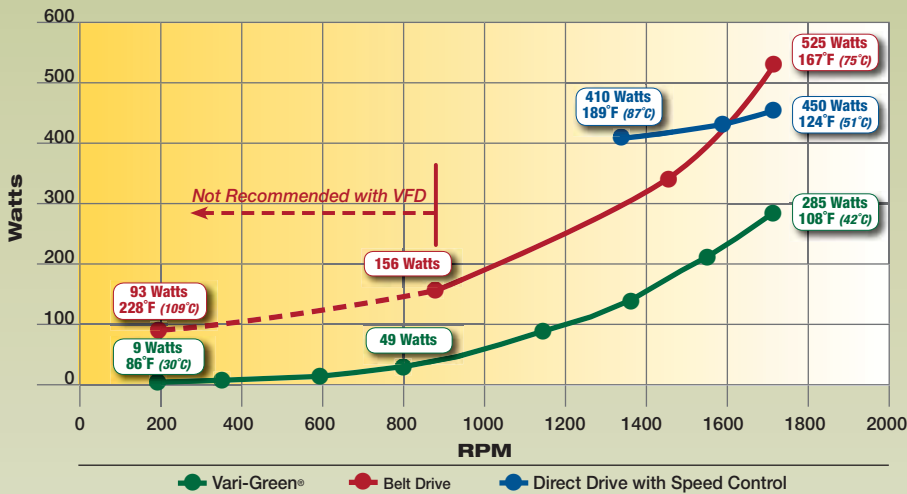
THE FUTURE OF AIR MOVEMENT

Greenheck's electronically commutated (EC) Vari-Green (VG) Motor combines motor technology, controllability and energy-efficiency into one single low maintenance unit and is the industry's first fully controllable motor.

## Advantages

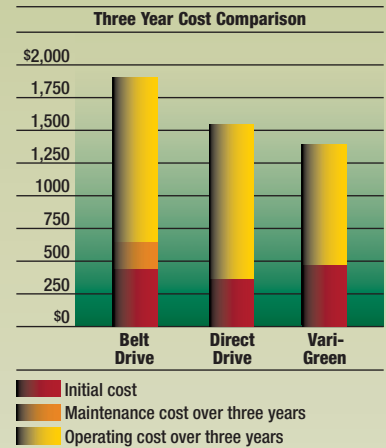
EFFICIENT | RELIABLE | CONTROLLABLE

Comparison: Belt, Direct Drive with PSC and Direct Drive with Vari-Green



Length of each curve indicates the practical turndown range.  
 Data is based on Series C fan with 1/2 hp motor and load of 0.35 Bhp at full speed.

Constant Volume Life Cycle Analysis



Analysis is based on operating costs for a period of three years where the fans operate continuously at 1725 rpm, 24/7, with an energy rate of \$0.10 kWh. Maintenance on the belt drive is estimated at \$65/yr. Note: Example is based on a relative cost. Use and installation variables may produce different results.

### Green

#### Better than a PSC

- Potentiometer dial pre-mounted on motor for speed control
- 80% usable turndown vs. 30%
- No speed controller to wire
- 20%-70% energy savings
- Full speed range for better adjustment

### Greener

#### More Efficient than Belts

- Potentiometer dial pre-mounted on motor for speed control
- No belt and pulley losses
- Higher efficiency motor
- Comparable up-front cost
- No maintenance required

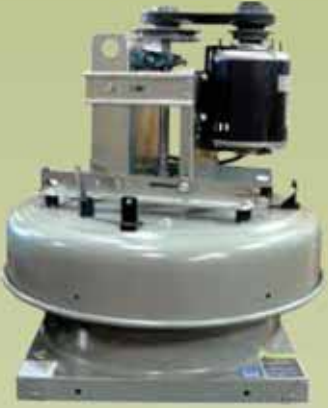
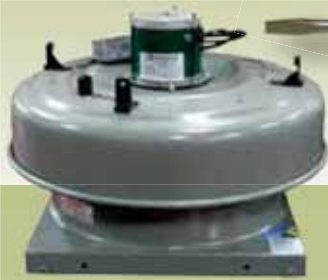
### Greenest

#### Easier than VFD's

- 0-10 volt control wires pre-installed in motor
- No VFD to buy or install
- 30% energy savings
- Lower up-front cost
- Eliminates stray current and carrier frequencies

# A Turn for the better!

Vari-Green Motor



Motor Information			
HP	RPM	Voltage	HZ
1/6	1725	115, 208-240, 277	50/60
1/4	1725	115, 208-240, 277	50/60
1/2	1725	115, 208-240, 277	50/60
3/4	1725	115, 208-240, 277	50/60
1	1725	115, 208-240, 277	50/60
2	1725	208-240	50/60
Extended RPM Motors			
1/2	2500	115, 208-240, 277	50/60
3/4	2200	115, 208-240, 277	50/60

## Models Available with Vari-Green Motors

G	Max RPM	Motor HP	CUE/CW	Max RPM	Motor HP	SWD	Max RPM	Motor HP	
60-75	1725	1/6	60-75	1725	1/6	7	1725	1/4	
80-95	1725	1/6	80-95	1725	1/6		2500	1/2	
97-99	1725	1/4	99	1725	1/4	8	1725	1/4	
103	1725	1/4	101	1725	1/4		2500	1/2	
103HP	1725	1/4	101HP	1725	1/4	10	1725	1/4	
	2500	1/2		2500	1/2		2200	3/4	
123	1200	1/4	121	1400	1/4	13	1200	1/4	
	1725	1/2		1725	1/2		1550	1/2	
133	1150	1/4	131	1200	1/4		1725	3/4	
	1550	1/2		1450	1/2	1150	1/2		
	1725	3/4		1725	3/4	1400	3/4		
143	900	1/4	141	1000	1/4	15	1725	1	
	1200	1/2		1300	1/2		900	3/4	
	1300	3/4		1550	3/4	16	1300	1	
	1725	1		1725	1		1725	2	
143HP	1500	1/4	141HP	1450	1/4	18	850	3/4	
	1725	1/2		1725	1/2		950	1	
	2200	3/4		2200	3/4		1300	2	
163	750	3/4	161	1000	1/2	SQ	60-75	1725	1/6
	1200	1		1200	3/4		80-95	1725	1/6
	1725	2		1300	1	97	1725	1/4	
183	900	3/4		1725	2		2500	1/2	
	1000	1	161HP	1300	1/2	1725	1/4		
1400	2	1650		3/4	2200	3/4			
		1725		1	98	1725	1/4		
			180	875	3/4	99	2200	3/4	
				1000	1		1725	1/4	
				1400	2	2200	3/4		
					100	1725	1/4		
					120	1725	1/2		
					130	1725	3/4		
					130HP	1250	1/4		
						1450	1/2		
					140	1950	3/4		
						1500	3/4		
					140HP	1725	1		
						1100	1/2		
					160	1450	3/4		
						1725	1		
					160HP	1140	3/4		
						1300	1		
					160HP	1725	2		
						850	1/2		
						1000	3/4		
						1600	1		
						1725	2		

\*SE1 Model Only

### Reliability

With industry leading technology comes a new standard in motor reliability.

- No shaft grounding required regardless of the turndown
- Bearing life is greater since the motor runs cooler at lower speeds
- No voltage or current spikes as in VFD controlled motors

### Electronic Commutation

Electronic commutation uses circuitry to control the motor's functions:

Solid state circuitry controls the output of power and the speed of rotation.

Internal circuitry converts AC voltage to DC voltage for increased efficiencies and offers full control over speed.

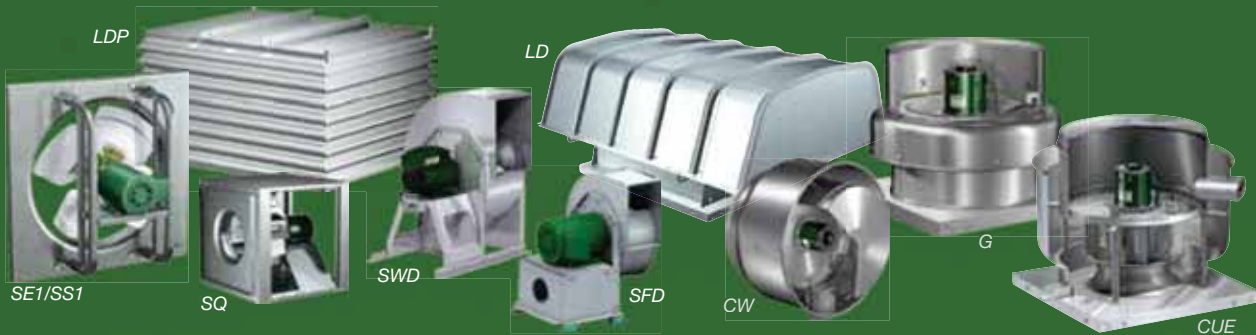
SE1/SS1	Max RPM	Motor HP
8-440*	1725	1/6
10-440*	1725	1/6
12-426	1725	1/4
12-432	1725	1/4
12-436	1725	1/4
14-432	1725	1/4
14-436	1725	1/2
14-440	1725	1/2
16-421	1725	1/2
16-426	1725	1/2
16-428	1725	3/4
16-436	1725	3/4
18-424	1725	3/4
18-429	1725	3/4
20-420	1725	1

LD/LDP	Max RPM	Motor HP
80-95	1725	1/6
100	1725	1/4
120	1725	1/2

SFD	Max RPM	Motor HP
6	1725	1/4
7.5	1725	1/2

SP/CSP	Max RPM	Motor HP
510	1200	1/6
710	1510	1/4

green — It's not just what we make.  
It's where we work. How we work. Who we are.



## EC Motor Specification

Motor shall be an electronic commutation (EC) motor specifically designed for fan applications. AC induction type motors are not acceptable. Examples of unacceptable motors are: Shaded Pole, Permanent Split Capacitor (PSC), Split Phase, Capacitor Start and 3 phase induction type motors. Motors shall be permanently lubricated with heavy-duty ball bearings to match the fan load and prewired to the specific voltage and phase. Internal motor circuitry shall convert AC power supplied to the fan to DC power to operate the motor. Motor shall be speed controllable down to 20% of full speed (80% turndown). Speed shall be controlled by either a potentiometer dial mounted on the motor or by a 0-10 VDC signal. Motor shall be a minimum of 85% efficient at all speeds.

for better air — specify Greenheck fans.

To learn more about the Vari-Green Motor, contact your nearby Greenheck representative or visit our Web site to view the video at [greenheck.com/library](http://greenheck.com/library).



*Prepared to Support  
Green Building Efforts*

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