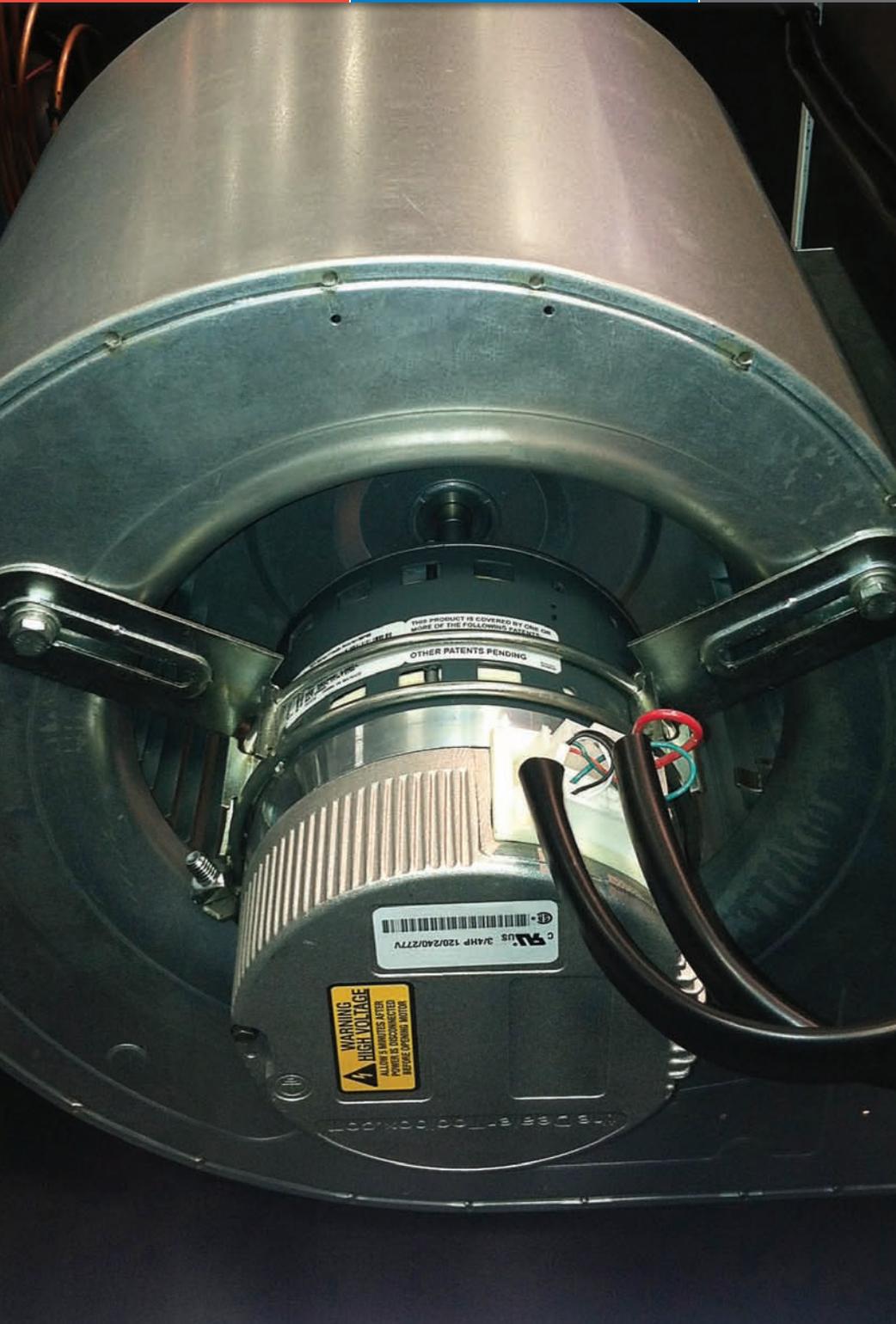


Heating

Cooling

Fresh Air

Clean Air



Efficiency Through Technology

Electronically Commutated (EC) motors offer significant improvements in electrical efficiency, sound quality and control capability when compared to standard PSC motors. These advantages are now available for all Zehnder Rittling direct drive Fan Coils and Water Source Heat Pumps.

- Up to 65% lower power consumption usage than PSC motors
- Quieter operation with smooth speed transitions
- Factory set, field adjustable 3-speed control cards enable on-the-spot fine tuning
- Variable speed control cards interface easily with DDC controls
- Multiple voltages: 120, 208-230 and 277 volts, 1 phase, 60 Hz

Significant energy savings

EC motors are recognized as a critical technology in increasing the efficiency of HVAC systems. When used in conjunction with Zehnder Rittling Fan Coils, energy savings up to 65% can be achieved when compared

to Fan Coils using PSC motors. Our new offering includes both fixed and variable speed control options that readily integrate with 3-speed switches, analog and digital fan coil thermostats, and DDC controllers.

Table 1: ECM vs. PSC energy savings examples

Unit size	PSC motor			EC motor			Energy savings
	Motor FLA	Unit FLA	Power input	Motor FLA	Unit FLA	Power input	
03	0.4A	0.4A	34W	4.3A	0.49A	23W	23%
08	2.35A	2.35A	180W	4.3A	2.41A	62W	65%

Although the motor FLA is much higher with an EC motor, significant power savings are realized.

For our partners

Electronically Commutated (EC) motors have long been available from Zehnder Rittling as a custom option for many of our fan coils however they were not configurable online nor were they available for all models and

voltages. Zehnder Rittling is pleased to announce that this option is now available in RittlingOnline across our entire line of direct drive Fan Coils and Water Source Heat Pumps.



1/4 HP dual shaft EC motor with controller



1/15 HP single shaft EC motor



EC motor application notes

All motors are:

- 3.3", 42, or 48 frame, class B insulated
- Thermally protected
- Permanently sealed ball bearing construction
- UL/CUL recognized, ROHS compliant



Table 1 and Table 3 contain motor nameplate FLA which may not reflect the current draw of each unit. Motor FLA is determined by the motor manufacturer and is a characteristic of the motor.

Unit full load amperage is determined by the Zehnder Rittling programmed maximum operating point and, in most cases, is only a portion of the motor's actual capacity providing a much lower unit FLA.

Zehnder Rittling programs EC motors based on unit size and typically allows an upper limit 10% higher than the corresponding PSC motor.

Table 2: EC motor sizes

Unit type	Unit size											
	02	03	04	06	08	10	12	14	16	18	20	
Fan Coils												
Console	1/15	1/15	1/4	1/4	(2) 1/4	(2) 1/4	(2) 1/4					
Console, high static	1/4	1/4	1/4	1/4	(2) 1/4	(2) 1/4	(2) 1/4	-	-	-	-	-
Vertical Hi-Stack	-	1/4	1/4	1/4	1/4	1/4	3/4	-	-	-	-	-
Vertical Hi-Stack, high static	-	1/4	1/4	1/4	1/4	3/4	3/4	-	-	-	-	-
High Capacity	-	-	-	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Water Source Heat Pumps	09	12	15	18	24	30	36	42	48	60	72	
Vertical Stack	1/4	1/4	1/4	1/4	1/4	1/4	1/4	-	-	-	-	-
Vertical Stack, high static	1/4	1/4	3/4	3/4	3/4	3/4	3/4	-	-	-	-	-
Horizontal	1/4	1/4	1/4	1/4	1/4	1/4	3/4	3/4	3/4	3/4	3/4	3/4

Table 3: EC motor nameplate FLA

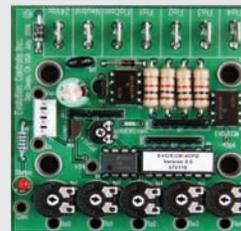
HP	RPM	Motor FLA			
		120V	208V	230V	277V
1/15	500-1800	1.3A	1.1A	1.0A	0.96A
1/4	300-2000	4.3A	2.9A	2.6A	2.5A
3/4	300-1500	9.6A	8.1A	7.3A	5.5A

Electrical controls

EC motors are paired with 24V controllers* that provide either three discrete speeds (for use with 3-speed switches or thermostats) or infinitely variable speed control (0-10V or 4-20mA) for use with DDC controllers.

Table 4: Control options

Control options	3-speed	Variable speed
Thermostat output	24V	0-10 VDC or 4-20 mA
Speed control	3 discrete speeds (H,M,L)	Proportional airflow
Field airflow adjustment	Control card has 3-speed potentiometers that can be set to any speed in the motor's operating range	Control card dynamically sets the motor to any speed in the motor's operating range
Control card	EVO/ECM-3SPD	EVO/ECM-ACU+



3-speed control card



Variable speed control card

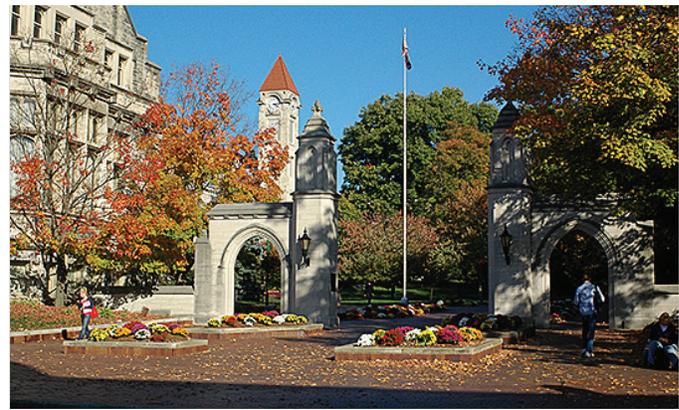
* **Note:** EC motors require 24V controls and are not available for belt drive Fan Coils due to limitations in available motor technology.

Installations with EC Motors

Project Name	Location
Indiana University	Bloomington, IN
Harvard University	Cambridge, MA
Waltham Children's Hospital	Waltham, MA
Coleman Elementary School	Glen Rock, NJ
Fort Richardson Army Barracks	Anchorage, AK
Ormsby House	Carson City, NV
Lexington Town Hall	Lexington, MA
University of Iowa Hospital & Clinics	Iowa City, IA
Boston Housing Authority	Jamaica Plain, MA
Harvard Tower Office Building	Regina, SK
University of Michigan	Ann Arbor, MI
University of Delaware	Wilmington, DE
Indiana Public Schools	Indianapolis, IN
Salisbury University	Salisbury, MD
Fitchburg State College	Worcester, MA
Massachusetts Maritime Academy	Pawtucket, RI
Onamia High School	Onamia, MN



Harvard University



Indiana University



Massachusetts Maritime Academy



University of Delaware

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