

ENERGY EFFICIENT FANS AND VENTILATORS HVAC fact sheet



SAVE MONEY BY REDUCING YOUR HVAC ENERGY CONSUMPTION

Dayton's direct-drive electronically commutated motor (EC Motor) uses AC input power and internally converts it to DC power which provides an 80% turndown capability and increased energy savings.

EC MOTOR VS. BELT-DRIVE

Historically, belt-drive (BD) units were specified because of the easy speed adjustment (changing belts/pulleys), economical first cost and habit. When the Dayton fan with EC motor is used in place of the BD there is easier speed adjustment, higher efficiencies, less maintenance, and about the same initial cost.

Side-By-Side Comparison

At 1500 RPM the EC Motor has a 25% energy savings over the traditional belt-drive in this comparison. If the speed is adjusted to 1000 RPM (easy motor turndown with EC Motor vs. changing belts/pulleys with BD) there is an impressive 45% energy savings!

	EC MOTOR	BELT-DRIVE
RPM	1500	1500
WATTS	480	640

25% ENERGY SAVINGS!

	EC MOTOR	BELT-DRIVE
RPM	1000	1000
WATTS	180	330

45% ENERGY SAVINGS!

EC MOTOR VS. DIRECT-DRIVE PSC

A traditional direct-drive PSC motor will have virtually no maintenance like the EC Motor. However the PSC is no match to the EC Motor in efficiency or turndown capabilities.

Side-By-Side Comparison

At full speed the EC Motor fan has about 20% energy savings over the PSC in this comparison. When the speed is turned down 30% (PSC maximum turndown) the EC Motor's efficiency remains constant where the efficiency of the PSC reduces dramatically. There is about 70% energy savings¹ with the EC Motor fan at this level!

	EC MOTOR	PSC MOTOR
RPM	1720	1720
WATTS	220	270

20% ENERGY SAVINGS!

	EC MOTOR	PSC MOTOR
RPM	1200	1200
WATTS	75	260

70% ENERGY SAVINGS!

¹ Energy savings are based on application, installation, model and size. Actual results may vary.

ADVANTAGES OF ELECTRONICALLY COMMUTATED MOTORS

Energy Efficiency

Minimum 85% efficient motor (maintains high efficiencies with turndown)

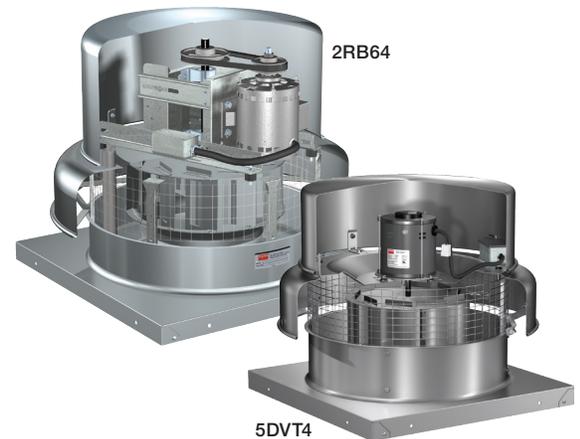
Reliability = Longer Motor Life

Lower operating temperatures, soft start (no voltage spikes), virtually maintenance free, and decreased operating temperatures & noise on turndown



Controllability

80% motor turndown, 0-10 VDC wiring harness, motor mounted speed adjustment potentiometer



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DEMAND CONTROLLED VENTILATION – CONTROLS

Exhaust only the necessary amount of air throughout the day by using any of the controls below or any 0-10 VDC signal (BAS, CO2, etc.)

Remote Dial Kit

- Provides easy manual control in an occupied space



43Y140

Touch Remote Kit

- Provides easy manual control in an occupied space
- Time delay shut down feature for 90, 60, 30 or 10 minutes



35YV94

Two Speed Control

- Toggle between two speed settings with a field supplied Single Pole Double Throw switch or relay
- For manual or demand controlled ventilation applications requiring two speed operation



35YV92

Temperature/Humidity Control

- Adjusts motor speed to maintain a constant temperature and/or relative humidity level
- For demand controlled ventilation applications where temperature and humidity drive demand

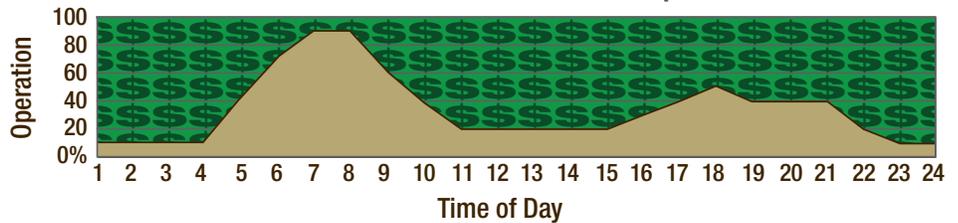


35YV93

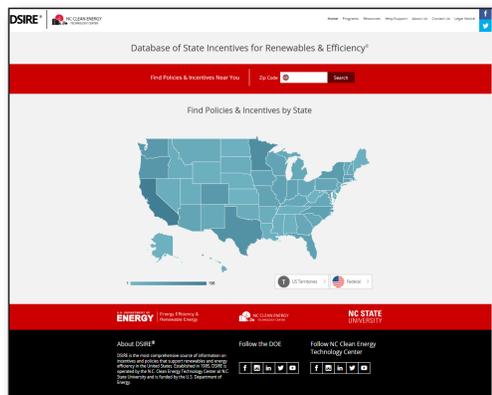
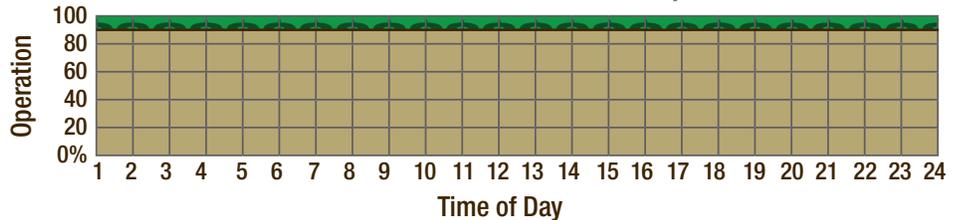
HYPOTHETICAL SYSTEM (HOTEL BATHROOM)

Variable volume systems reduce the amount of energy used by decreasing the speed of the fan when demand is low (based on occupancy, temperature, etc.). This in turn lessens the amount of conditioned air exhausted and further reduces total operating costs associated with air conditioning and heating. In a constant volume system, the speed of the fan remains constant regardless of demand.

Variable Volume - Load Shape



Constant Volume - Load Shape



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EC FANS CAN SAVE YOU EXTRA MONEY WITH ADDITIONAL INCENTIVES!

- Federal, State, and Local Incentive Programs
- Visit the Database of State Incentives for Renewables & Efficiency for current eligibility.



Call or visit your local branch or go to grainger.com/dayton for complete product line information.

