



Electric Motors Savings in Hotels

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Agenda:

- What is an ECM Motor?
- Hotel EC Motor Retrofit Opportunities
- Commercial Refrigeration Air Moving
 - Walk In Cooler & Freezer Retrofits
- HVAC Air Moving
 - Fan Coil Motor Retrofits
 - Case Studies
- Pumping Applications
 - Pool & Spa Filter Pumps

WHAT IS AN ECM MOTOR?

Electronically Commutated Motor

Are motors powered by direct current (DC) electricity and have electronic commutation systems, rather than mechanical commutators and brushes.

Benefits of an EC motor:

- Higher Efficiency
- Less susceptibility to mechanical wear
- Increased reliability
- Less noise
- Full Variable Speed
- Controllability



Building Motor Retrofit Opportunities



Commercial Refrigeration Air Moving Application

- Coolers & Freezers
- Food Display
- Vending Machines



Walk-In Refrigeration

EC Motor & Fan Controller Case Study

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EC Motor Overview

High Efficiency: ECM technology

- Efficiencies three times higher than shaded pole motors
- Indirect energy savings: reduced compressor usage due to less heat output from EC motors

Enhanced Programming Module: two speed program available

- Factory/field speed programming to meet coil requirements

Increased Reliability

- Fully encapsulated electronics
- Form/Fit: direct replacement for existing motors in evaporators
- Front mount/back mount/belly band mount

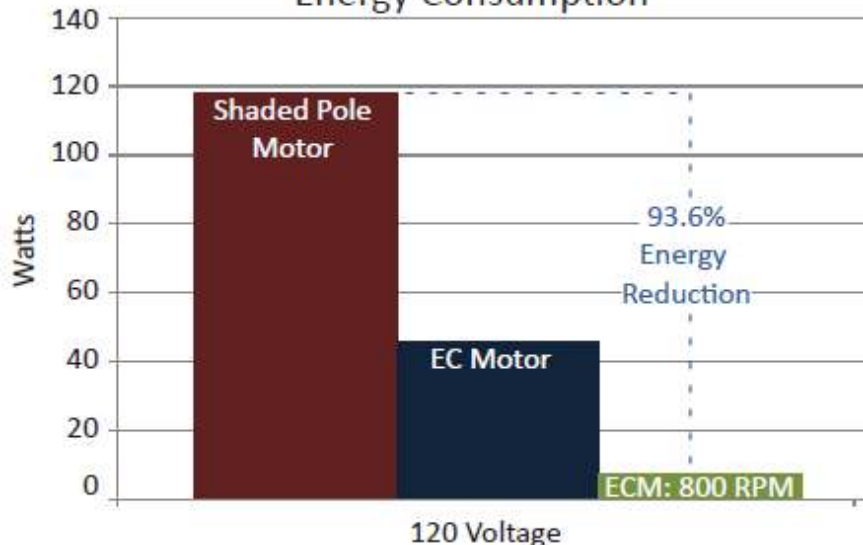


Shaded Pole Motor
Watt Usage



EC Motor @ Low Speed
Watt Usage

Shaded Pole Motor vs. EC Motor
Energy Consumption



	Annual kW Usage	Annual \$ Energy Costs
SP Motor: 1550 RPM	1,033.68	\$103.37
EC Motor: 1550 RPM	402.96	\$40.30
ECM: 800 RPM	65.7	\$6.57
ECM: Combined*	234.33	\$23.43

*Typical compressor run-time: 40 - 60%
Based on continuous operation at \$0.10/kWh

HVAC

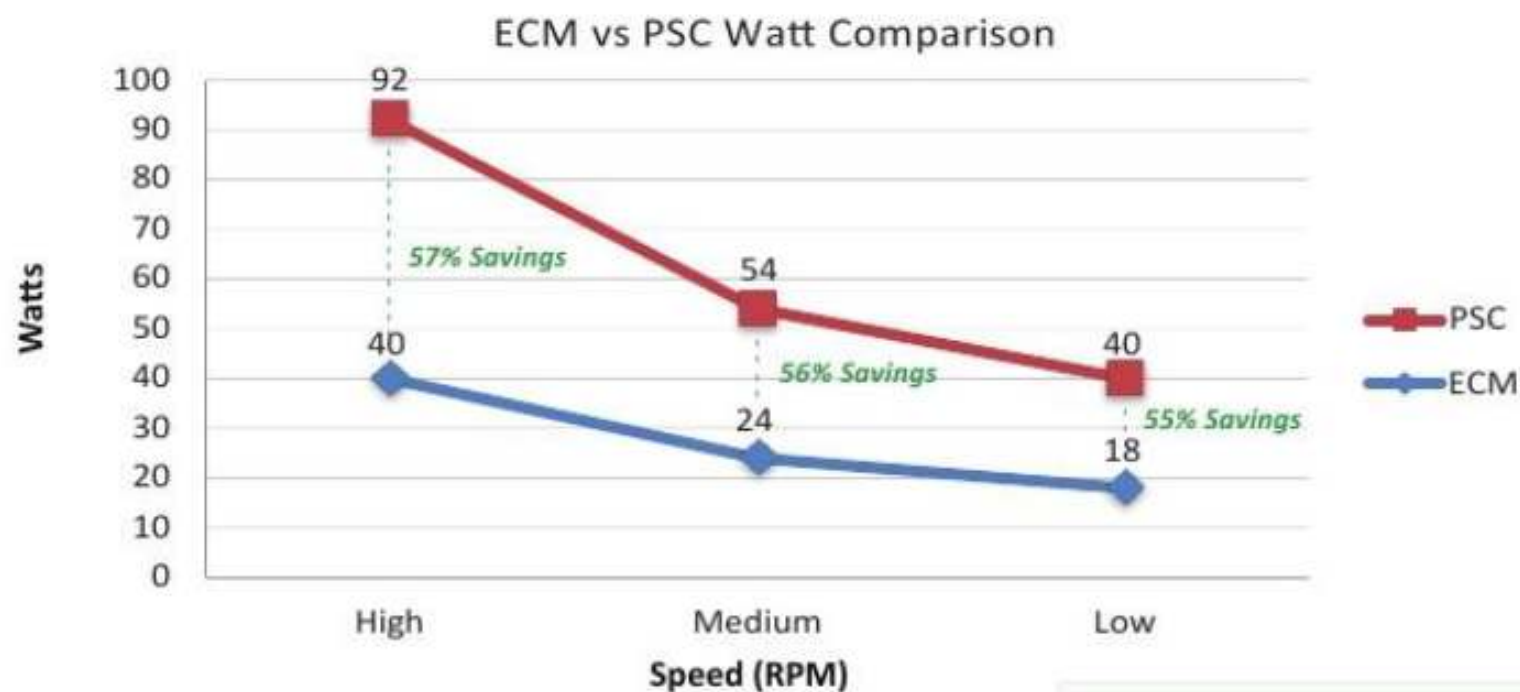
Air Moving Applications

- Fan coil units
- Blowers/exhausters
- Air Handlers
- Fan Filter Units
- VAV Terminal Box



FAN COIL CASE STUDY

HYATT REGENCY CAMBRIDGE



57% Energy Reduction at High Speed

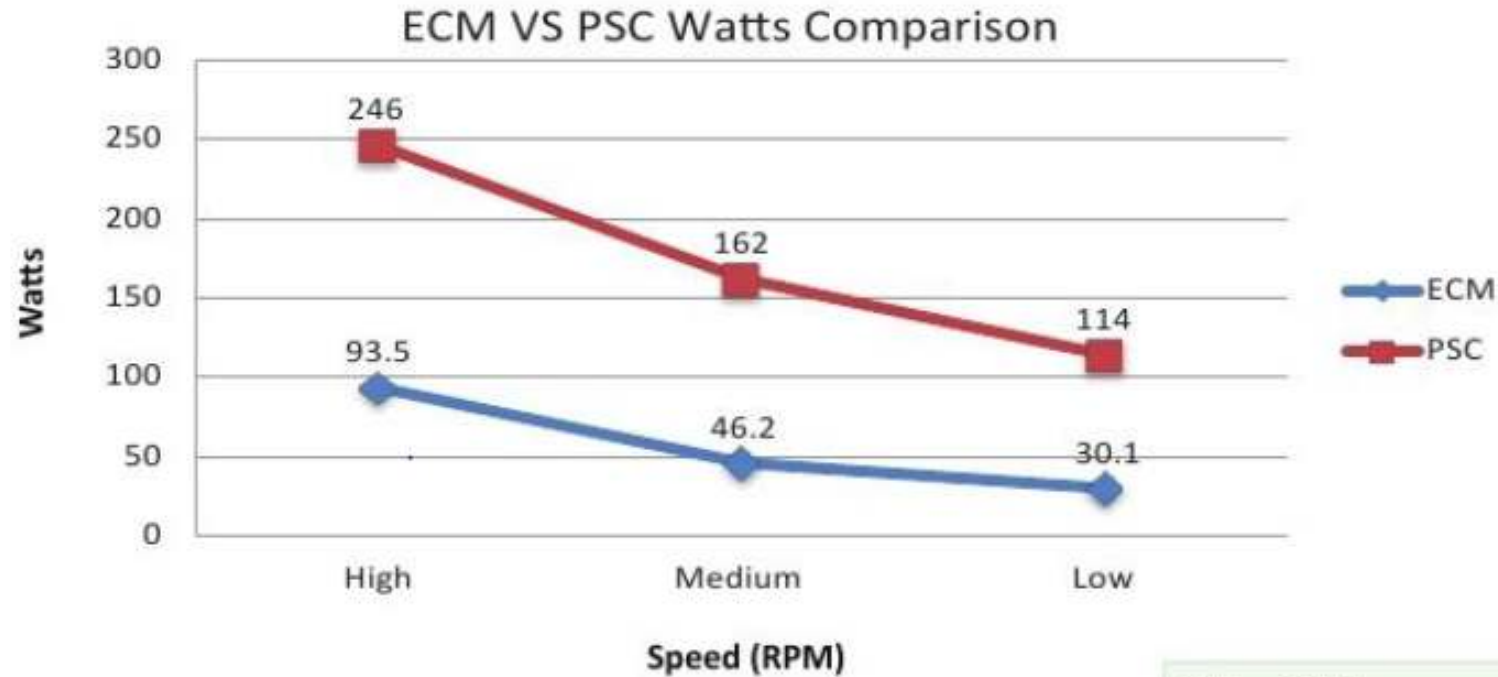
Features

- Multiple input options
- PWM Variable speed operation
- 3 Selectable Discrete Line Voltage Speeds
- 24 Volt input Selection
- Ball Bearing construction
- Efficiencies exceeding 78%
- Low Voltage allows for use of existing system controls

FAN COIL CASE STUDY

GAYLORD HOTEL TEST PROGRAM

NATIONAL HARBOR MARYLAND



Units: 2000
\$/kW: \$0.13
Continuous Operation Hours: 6570

Product Overview

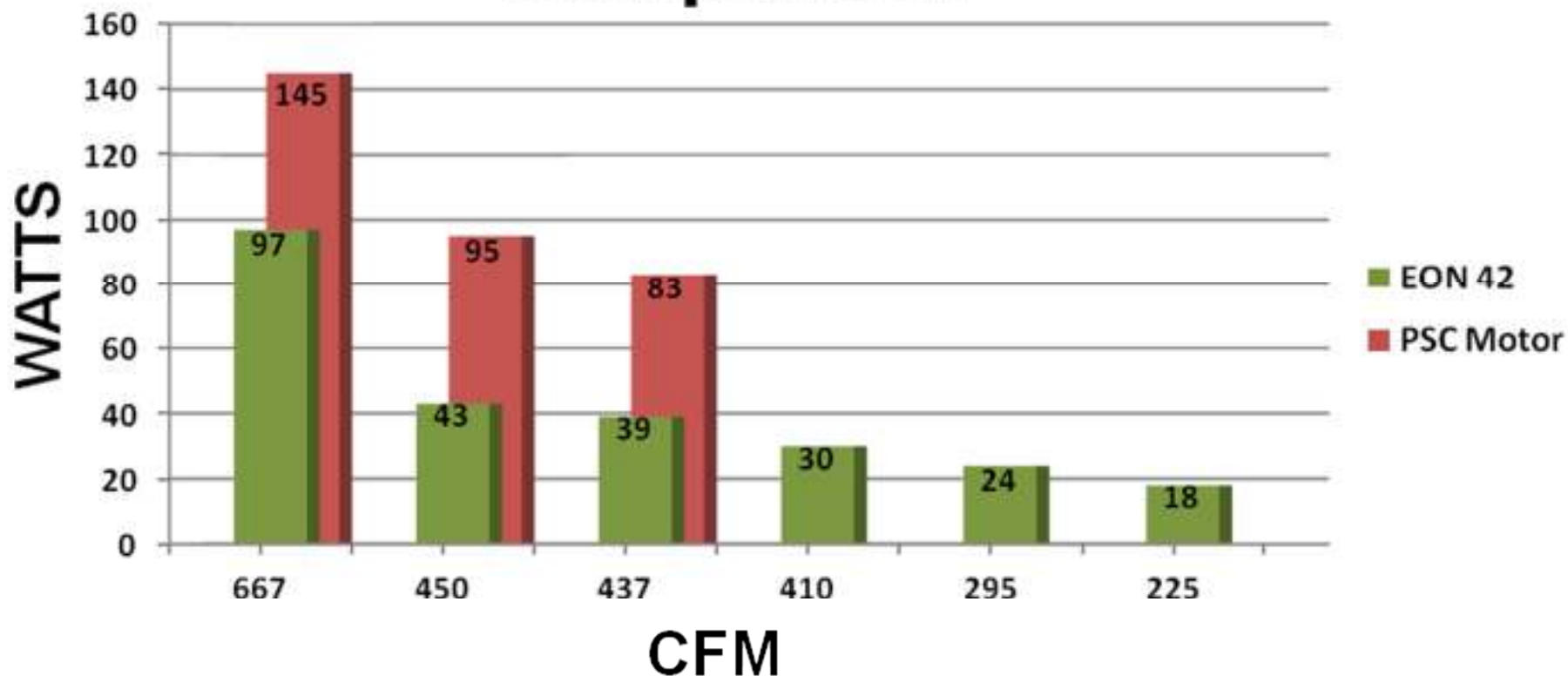
- Variable Speed, Constant Torque motor
- Designed for direct drive blower applications
- 120V or 208/240/277V AC single phase input, 50/60Hz
- Available in 1/8hp and 1/4hp
- Operating speed range: High Speed - 300 -1800 RPM and Low Speed 300 -1200 RPM
- NEMA 42 frame
- UL and cUR recognized
- RoHS Compliant

Total Annual Savings Per Room: \$109

Combined Room (\$109 X 2000) Annual Savings: \$218,154.00

FAN COIL CASE STUDY SPECIFIED CFM

PSC to ECM Motor Watt Comparison



Operating the ECM motor at the specified airflow provided greater energy savings of 64% to 79% when compared to the existing setting obtainable by the PSC motor.

FAN COIL



Save energy, money, and increase guest comfort on fan coil applications with EC motors

Features:

Multiple input options

- 120V or 208/240/277V AC single phase input, 50/60Hz
- 24 Volt Discrete input Selection
- PWM Variable speed operation

Multiple Run options

- Constant Speed
- Constant Torque
- Variable Speed

Program Parameter Adjustments

- Control Slew Rate
- Rotation
- Constant Fan

Benefits:

- Efficiencies exceeding 78%. Consume an average of 50% less energy.
- Low Voltage AC or DC thermostat inputs allow for use of existing system controls
- Quiet Operation
- Less susceptibility to mechanical wear
- Provide exact specified CFM to the space

Pumping Applications

- Pool & Spa Filter Pumps
Reduce peak demand with variable speed pump motors





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THANK YOU

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