

# Hidden Energy Electric Motors Savings in Hotels

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## Agenda:

- What is an ECM Motor?
- Hotel ECM Motor Retrofit Applications
- HVAC Air Moving
  - Fan Coil Motor Retrofits
  - Case Studies
- Commercial Refrigeration Air Moving
  - Walk In Cooler & Freezer 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



# Air Moving Applications



# HVAC

## Air Moving Applications

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





#### **EON™ 42**

The new Eon 42 motor is the latest in the Eon line of energy efficient motors. The Eon 42 is a more energy efficient solution for the standard PSC motor found in many fan coils and blower deck applications today saving up to 56% of the electricity consumed by the motor. This motor offers simple installation along with a wide range of horsepower, voltages, and mechanical features, truly making the Eon 42 the simplest and most cost effective upgrade solution.

#### **SPECIFICATIONS**

- Variable Speed, Constant Torque motor
- Designed for direct drive blower applications
- 120V or 208/240/277V AC single phase input, 50/60Hz
- Available in 1/15hp (low speed only) as well as 1/8hp and 1/4hp (high and low speed)
- Operating speed range: High Speed - 300 -1800 RPM and Low Speed 300 -1200 RPM
- NEMA 42 frame
- UL and cUR recognized component
- RoHS Compliant

#### **FEATURES**

- Multiple input options
- PWM Variable speed operation
- 3 Selectable Discrete Line Voltage Speeds
- 24 Volt Discrete input Selection
- 6kV Surge Protection
- BlakBox enabled
- Ball Bearing construction

#### **BENEFITS**

- Efficiencies exceeding 78%
- Low Voltage AC or DC thermostat inputs allow for use of existing system controls
- PWM Control allows for fully Variable Speed retrofits
- Reliable. Backed by over 20 years of experience in ECM technology

#### **APPLICATIONS**

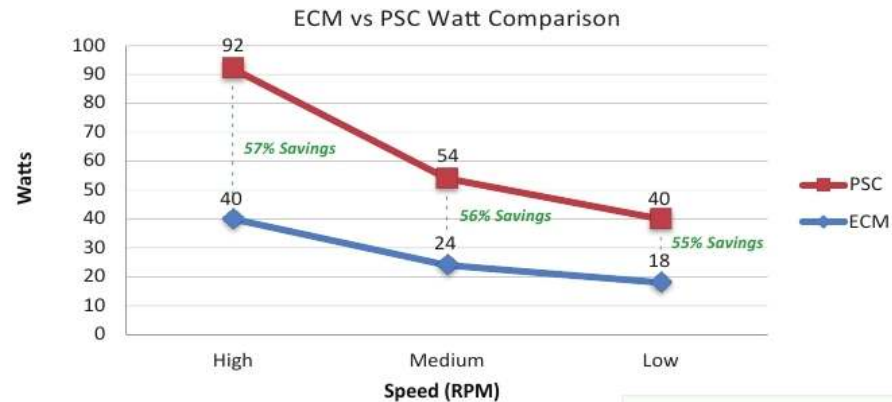
- Fan coils
- Kitchen Ventilators
- Air Curtains
- Unit Heater/Cooler

## Gexpro & Hotel Applications Hyatt Hotel Test Program

### Product Overview

#### EON™ 42

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57% Energy Reduction at High Speed

### Features

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### About Gexpro

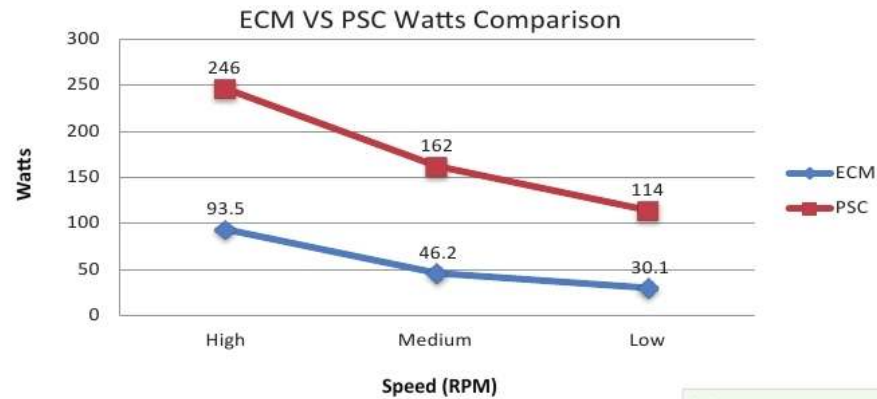
Gexpro is a full line electrical distributor with 100+ locations in the US. We can supply all your electrical product needs, and we have a dedicated Energy Solutions team that can help you with energy-efficiency solutions and products, including lamps, light fixtures, LED lighting, occupancy sensors, solar, motors and drives, and energy audits.

## Gexpro & Hotel Applications Gaylord Hotel Test Program

### Product Overview

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

Total Annual Savings Per Room: **\$109**

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

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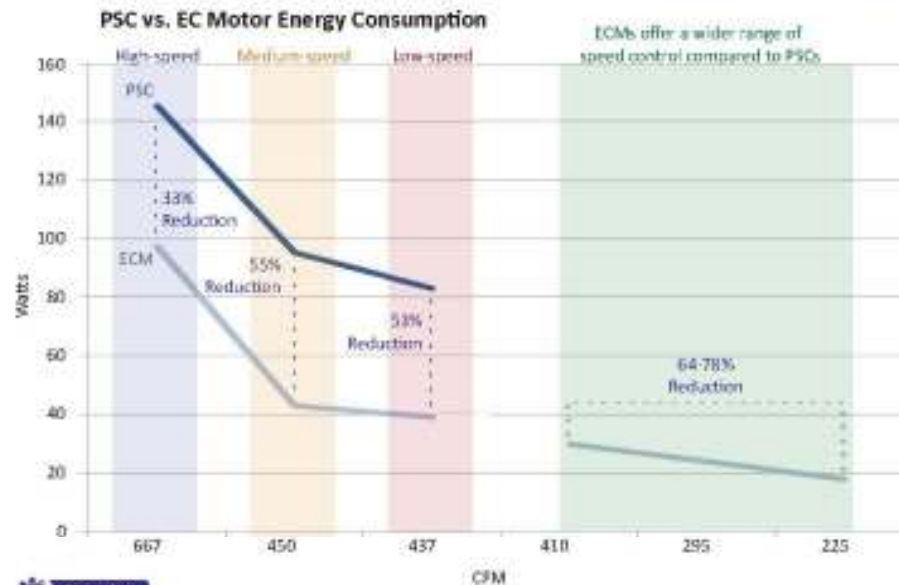


## PWA & Gexpro Chrysler Building Fan Coil Case Study



### Project Background

- Gexpro's partner, PWA, performed a retrofit project to replace fan coil and air-moving motors in the Chrysler Building
- Customer requirements: reduce energy consumption and noise levels
- Permanently split capacitor blower motors were replaced with electronically commutated blower motors
- Installed over 7,000 EC motors in fan coil units



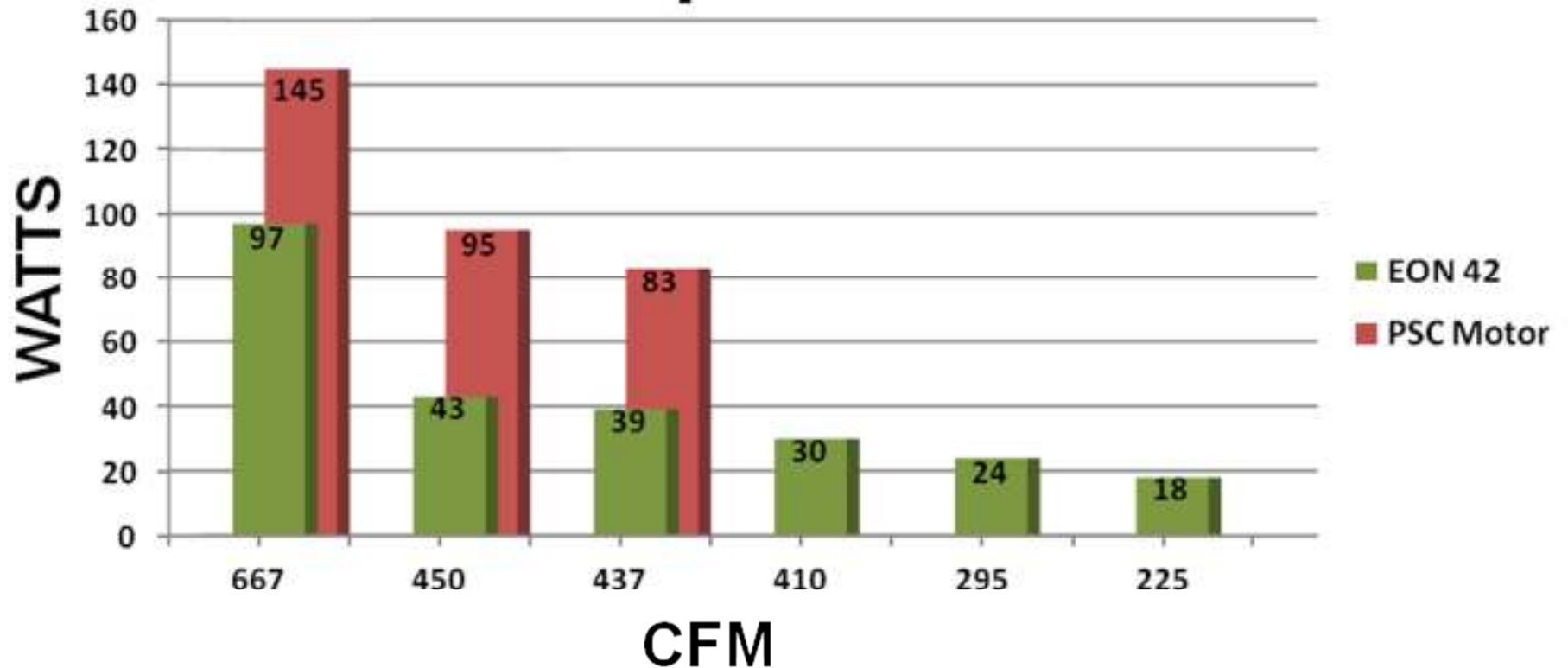
### Results

- EC motor's programmability achieved the OEM's original specification airflow requirements at high, medium, and low settings
- ECM Benefits: energy reduction, motors controllability, and noise reduction
- Partnered with customer to obtain local energy rebates

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## 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.

# Commercial Refrigeration Air Moving Application

- Coolers & Freezers
- Food Display
- Vending Machines



## Gexpro Walk-In Refrigeration EC Motor & Fan Controller Case Study

### 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

Gexpro: industry leader in motor retrofits

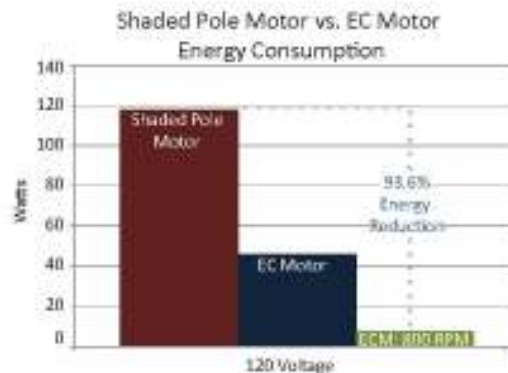
- Over one million motors installed



Shaded Pole Motor  
Watt Usage



EC Motor @ Low Speed  
Watt Usage



	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 local load operation at 51.00/MBH

### Fan Controller Overview

- Energy reduction up to 90%
- FCX controller: utilizes existing on/off cooling call from thermostat to set motor speed
- Minimal equipment costs
  - Can control multiple evaporator coils that share a common thermostat

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# Pumping Applications

- Pool & Spa Filter Pumps





# Gexpro<sup>®</sup>

## THANK YOU

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