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 horsepowers, 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
- 64V Surge Protection
- Blanking 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**
- Variable Speed, Constant Torque motor
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- 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

![ECM vs PSC Watt Comparison](image)

**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

**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**

**EON™ 42**
- Variable Speed, Constant Torque motor
- Designed for direct drive blower applications
- 120V or 208/240/277V AC single phase input, 50/60Hz
- Available in 1/3hp 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

**Features**
- Multiple input options
- PWM Variable speed operation
- 3 Selectable Discrete Line Voltage Speeds
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**ECM VS PSC Watts Comparison**

![Graph showing ECM vs PSC watts comparison](image)

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

**Combined Room ($109 x 2000) Annual Savings: $218,154.00**
FAN COIL CASE STUDY

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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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/hexy band mount
- Gexpro: industry leader in motor retrofits
- Over one million motors installed

Shaded Pole Motor vs. EC Motor
Energy Consumption

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
THANK YOU

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