Engineered Comfort
by Nailor Industries, Inc.

ARE YOU READY TO LEED®? WE ARE!

- OUR VERTICAL HI-RISE FAN COIL UNITS OFFER UNSURPASSED OPERATING EFFICIENCY AND ENERGY RECOVERY
- FEATURING VARIABLE AIR VOLUME EPIC FAN TECHNOLOGY® AND ECM MOTORS
- ULTIMATE IN ENERGY SAVINGS, FLEXIBILITY, DESIGN, QUIET COMFORT, AND EASE OF INSTALLATION

...AND INTRODUCING OUR "ULTRA PLUS" ENERGY RECOVERY MODULE

Engineered Comfort Vertical High-Rise Fan Coil Units
A New Level of Energy Efficiency and Comfort

39VH

Features:

- Risers (2 and 4 pipe configurations) can be located on the back, left or right side of unit
- Commercial Grade Supply Grille Combinations are available on the front, left or right side of unit
- Quick panel removal and access
- Removable Controls Enclosure
- Powder coat painted finish resists scuffing and scratching
- Slide Out Blower for easy maintenance
- ECM Motor with variable air volume and EPIC Fan Technology®
- Soft start
- Ultra low air flow
- Factory mounted Control Valves and Piping Packages
- Stainless Steel Flex Hoses with Full Port Ball Valves
- Commercial Grade Return Grille/Panel
- Filter - 1" Throwaway Glass Media type standard. (MERV 8 Pleated Filters are available)
- Filter Rack
- UV Light (Optional)
- Coils are AHRI 410 listed and labeled
- Insulated Galvanized Drain Pan (Stainless Steel available)

Control Systems Available:

- Staged ECM 3-Speed **(Manual)**
- Staged ECM 3-Speed **(Auto)**
- **EPIC/ECM** Fan Technology® - **Fully Modulating**
  - MWF, Modulating water flow valve package
  - VAV, Pressure independant fan operation
- **EPIC/ECM** Fan Technology® - **Ultra Plus**
  - MWF, Modulating water flow valve package
  - VAV, Pressure independant fan operation
  - Energy recovery module (remote mount)

Not Shown:

- Electric Heat (Optional)
- Access Panel
- DDC Controller (Optional)
- Electrical Knockout
- P-Trap
- Special Plenum and Hush Balancing Damper Mechanism to suit ECCODUCT™ II In-Slab Supply Duct (Optional)
- Energy Meter Compatible (Optional)
- Thermostat, Remotely Mounted (Optional-Unit Mounted)

AHRI CERTIFIED™ www.ahridirectory.org Room Fan-Coils AHRI Standard 440

c ETL LISTED us Intertek

39VH WITH "ULTRA PLUS" ENERGY RECOVERY MODULE

Top Outside Air Connection to Internal Conduit Mixing Port

(Interconnecting Piping and Installation - by other)

- Helps to meet the stringent LEED® and Municipal Energy Saving Demands
- Improves Indoor Air Quality (IAQ)
- Super low noise levels
- Dedicated constant tempered air
- MERV 6, MERV 8 & electrostatic filters
- Activated charcoal intake filters

- Remote Mount **BTR**
- Compact size (19" x 19" x 8.5" high)
- High speed intermittent pure exhaust for up to 3 bathrooms (100 - 200 CFM)
- Leak proof washable sensible or enthalpic cores
- Not affected by wind or stack effect
- Factory set constant ventilation rate with multiple sections for balanced supply and exhaust
- Auto-defrost, non-recirculating
- Anti-mold and fungus/bacteria protection

Nominal Constant Ventilation					Bathroom	Rated Electrical 1.5/2.1 AMPS	
Supply & Exhaust Factory Set (L/S)					Intermittent Exhaust	Typical Running Load	
150-1	25 CFM (12)	35 CFM (16.5)	50 CFM (23.5)	–	100 CFM (47)	42 Watts L	72 Watts H
150-2	25 CFM (12)	35 CFM (16.5)	50 CFM (23.5)	70 CFM (33)	150 CFM* (71)	48 Watts L	78 Watts H
220	25 CFM (12)	35 CFM (16.5)	50 CFM (23.5)	100 CFM (47)	200 CFM* (94)	97 Watts L	198 Watts H
NOMINAL SENSIBLE EFFICIENCY @ 32°F (0°C) 74% @ 5°F (-15°C) 57% @ 35 CFM *RECOMMEND COMBINED TWO WASHROOM							

Coming Soon – Our "Integral" energy recovery module option; contact factory

ECM/EPIC Fan Technology® Story

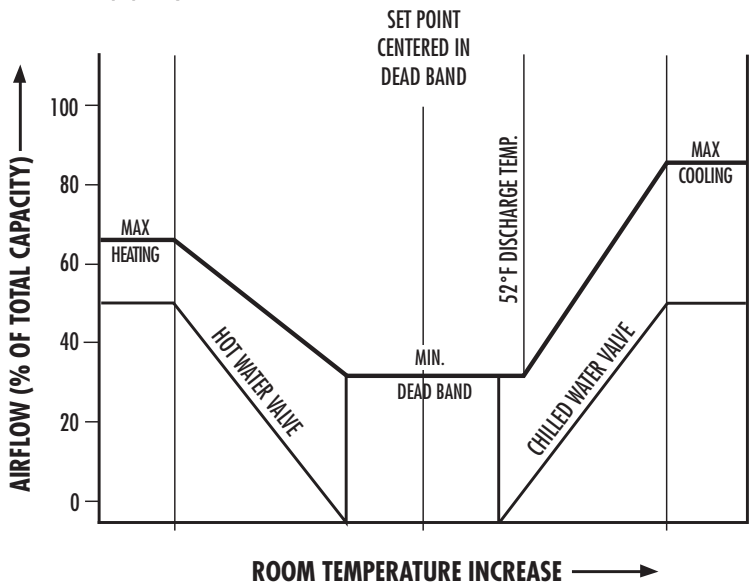
Nailor®/Engineered Comfort was the first company to introduce the GE ECM™ motor to the commercial HVAC market (ASHRAE Journal, April 1997). Our pioneering efforts led to the development of our EPIC Fan Technology® which has taken ECM motors to the highest energy efficiency levels on the market. One of our first major fan coil projects to incorporate this proven technology was The Hilton Americas in Houston, Texas. When this 1,200 guest room convention hotel opened in 2003 it was recognized as being the most energy efficient in the world! This technology, and our state-of-the-art EPIC® control package, now allows us to offer ***VAV/MWF Fully Modulating*** fan coil units which feature: ***MWF*** – fully modulating water flow (Heating & Cooling); ***VAV*** - variable air volume pressure independent fan operation; unique pre-set air volume capacities; higher turn down ratios allowing for more flexibility; reduced system pump operating HP; improved chiller efficiency; ***SIGNIFICANT*** energy savings; very low noise levels; lower humidity and improved comfort; soft starts and extended motor life (ECM = up to 90,000 hours on average); low motor operating temperatures which offsets heat gain and wider operating ranges which means fewer fan coil models are required.

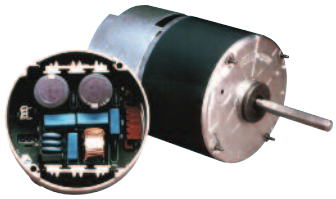
"Ultra Plus" Energy Recovery Module Story

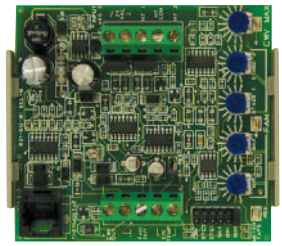
Our matching "ULTRA PLUS" energy recovery module has helped us to take energy savings even further while helping to meet the more stringent LEED® and Municipal energy savings demands. This component provides constant tempered air which not only recovers energy efficiently but also improves indoor air quality (IAQ). It is remotely mounted and connected to the top outside air BTR connection/internal mixing port (interconnecting piping and installation by other). It has been designed to work in conjunction with the Engineered Comfort vertical stack fan coil product offering. The KANAIRE® module was designed SPECIFICALLY for Multi-Unit residential High-Rise buildings in extreme climates and comes with these standard features: Factory set constant ventilation rate with multiple selection for balanced supply and exhaust, high speed intermittent pure exhaust for up to three bathrooms (100 – 200 CFM); super low noise levels, simple remote exhaust activation; balanced flow rates; auto-defrost and non-recirculating; leak proof washable sensible or enthalpic cores; anti-mold and fungus/bacteria protection; three filter options with a unique quick release hanging system; comes in a rugged compact size (19" x 19" x 8.5" high) and it's NOT affected by wind or stack effect.

FAN COIL WITH EPIC/ECM FAN TECHNOLOGY® AND FULLY MODULATING WATER FLOW VALVE PACKAGE

- 2 and 4 pipe systems are available







Cooling Operation:

On a call for cooling, the chilled water valve will begin to modulate open. As the cooling demand increases, the valve will continue to open until the discharge air temperature reaches 52°F (11°C). On continued call for cooling, the fan will begin to modulate toward the maximum cooling fan airflow as the chilled water valve continues to modulate open maintaining a 52°F (11°C) discharge air temperature. This process will continue until the fan reaches the cooling maximum airflow and the chilled water valve reaches maximum flow. Upon a decrease in cooling demand, the sequence will reverse.

Heating Operation:

On a call for heat, the hot water valve will begin to modulate open. As the heating demand increases, the valve will continue to modulate open as the fan begins to modulate from dead band towards the maximum heating fan airflow. This process will continue until the fan reaches the heating maximum airflow and the hot water valve reaches maximum flow. Upon a decrease in heating demand, the sequence will reverse.

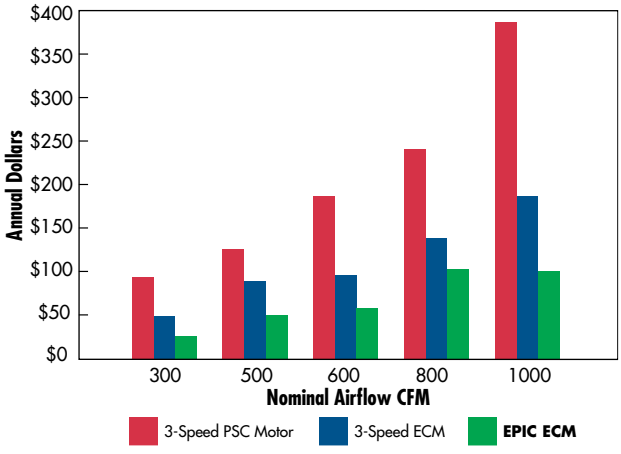
Dead Band Operation:

With no demand in the space, there will be no call for heating or cooling. The fan will be at minimum airflow and both the hot and chilled water valves will be closed.

Features & Benefits	Control System Comparison vs. Conventional PSC			
	Staged ECM 3-Speed (Manual)	Staged ECM with 3-Speed Change (Auto)	EPIC/ECM[1] VAV/MWF - Fully Modulating	EPIC/ECM[1] VAV/MWF - Fully Modulating Energy Recovery
Fan Energy Savings	40% Plus	50% Plus	Up to 80%	80% Plus
Improved Comfort	Satisfactory	Better	Excellent	Ultimate
Full Fan Modulation	–	–	Yes	Yes
Fully Modulating Water Flow	–	–	Yes	Yes
Reduces System Pump Operating HP	–	–	Yes	Yes
Improved Chiller Efficiency	–	–	Yes	Yes
De-Humidification	–	Some	Yes	Yes
Reduced Sound/Noise	Better	Good	Excellent[5]	Excellent[5]
Turn Down Motor Ratio Capability up to 90%	–	–	Yes[2]	Yes[2]
Increased Lifespan	Better	Good	Excellent	Excellent
Matching "External" Energy Recovery Module Compatible - Up to Three Bathrooms	Yes[3]	Yes[3]	Yes[3]	Yes[3]
Improved Air Quality (IAQ)	Yes[4]	Yes[4]	Yes[4]	Yes[4]
"Internal" Energy Recovery Module - Option	Coming Soon	Coming Soon	Coming Soon	Coming Soon

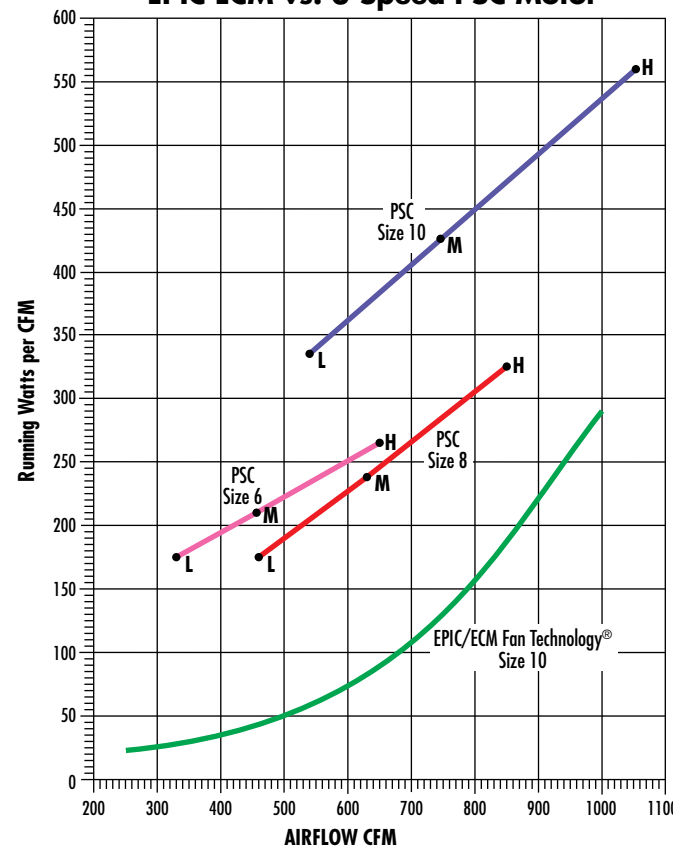
[1] Ultra low constant airflow capabilities with fully modulating water flow (heating and cooling)
[2] Fan runs continuously at ultra low speed consuming 30 watts or less!
[3] Energy recovery unit is remotely mounted; interconnecting piping by other
[4] When used with the energy recovery module
[5] Up to 20 NC vs. conventional PSC units depending on model

Typical Operating Cost Comparison PSC vs. 3-Speed ECM vs. EPIC ECM



NOTES:
1. Based upon typical fan operation, 5 Row Coil (3/2) and 120 V motors.
2. PSC and 3-speed ECM units selected at medium/high speed. EPIC units selected mid-range for optimum VAV performance and maximum energy savings.
3. **EPIC** units also include a MERV 8 filter.
4. This does NOT include the significant chiller and pump horsepower savings on the overall system when incorporating the **MWF** fully modulating water flow valves; or the **Ultra Plus** energy recovery module.

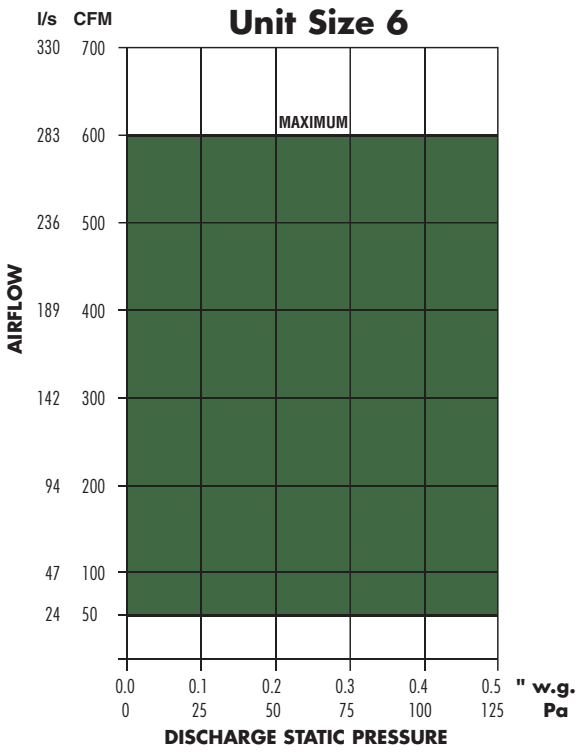
Energy Consumption Comparison Chart EPIC ECM vs. 3-Speed PSC Motor

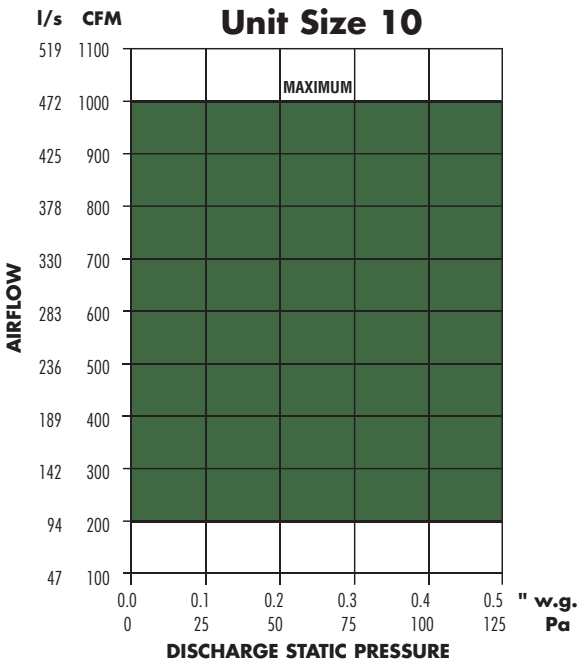


NOTES: 1. Only one EPIC/ECM Size 10 Unit is needed to cover the range that would require three conventional PSC unit sizes.
2. 120V motor, 5 Row Coil (3/2).
3. **EPIC** units also include a MERV 8 filter.
4. 3-speed PSC motor taps are Low (L), Medium (M), and High (H); EPIC/ECM motor is variable air volume.
5. Further savings available when incoporated with our **Ultra Plus** Energy Recovery Module.

Model Series: 39 • ECM Motor Fan Performance Curves

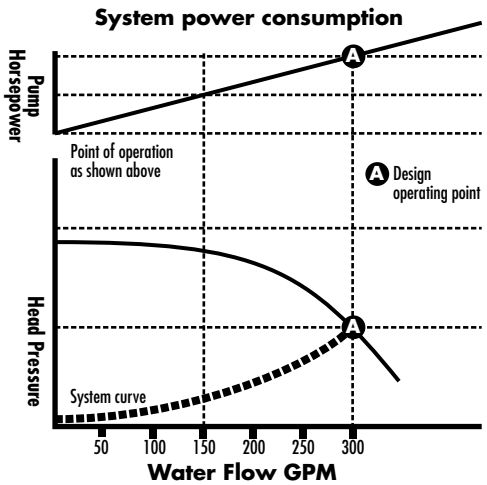
Airflow vs. External Static Pressure





NOTES:

- The fan curves for the ECM motor are unlike those for traditional PSC motors. The ECM motor is a pressure independent constant volume device at set point and airflow does not vary with changing static pressure conditions. The motor compensates for any changes in static pressure such as filter loading. Variations in airflow are generated by the controls which reset the fan airflow based on room demand.
- Airflow can be set to operate on a horizontal performance line at any point within the shaded area using the solid state volume controller provided.
- Engineered Comfort Fan Coil units featuring the optional ECM motor have considerably wider turndown ratios than conventional PSC motors. Hence, a reduced number of unit sizes are required in order to provide the same fan airflow range when compared with fan coils equipped with PSC motors. A reduction in the number of different fan coil sizes required on a typical project simplifies design lay-out and installation and reduces the inventory of field service parts.
- Fan curves shown are applicable to 120/208/240 and 277 volt, single phase ECM motors.



NOTE: The pump's horsepower consumption decreases as the GPM decreases

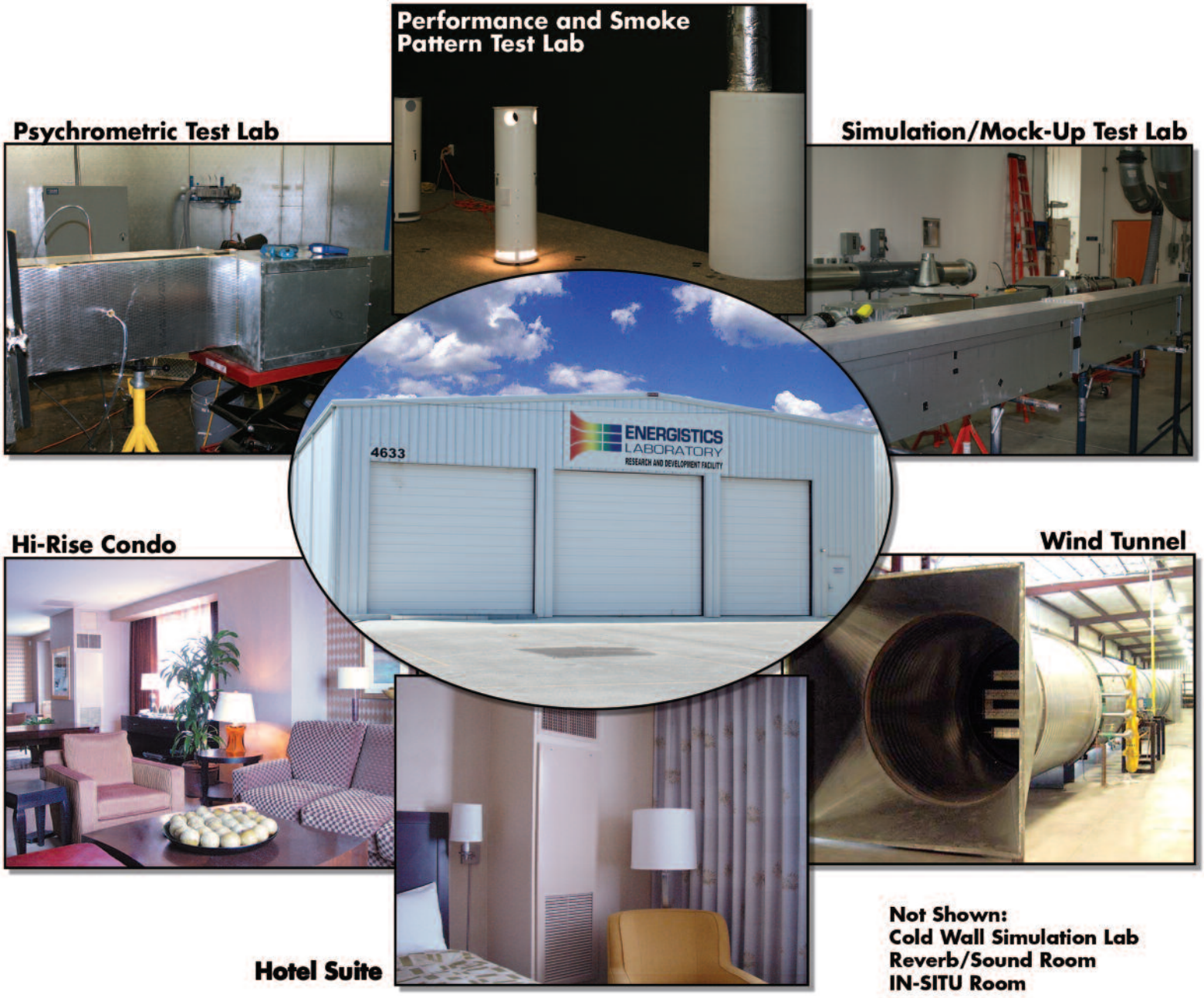
AHRI Standard Ratings

Unit Size	Coil			Airflow CFM (Dry Flow)	Cooling Capacity		Water		Power Input @ FLA (Watts)
	Row	FPI	CIRC		QT (BTUH)	QS (BTUH)	Flow Rate (GPM)	WPD ft - wg	
6	3	14	2	600	16000	12000	3.6	7.4	280
	4				21000	14000	4.5	15.1	280
10	3	14	2	1000	29000	21000	6.7	37.5	510
	4		4		33000	22000	7.3	11.1	510
15	3	14	6	1500	38000	29000	8.5	7.4	790
	4				49000	34000	10.8	13.4	790

NOTE: Based on 80°F DB and 67°F WB EAT, 45°F EWT 10° temperature rise, maximum fan speed. Motor type is EPIC/ECM and motor voltage is 115/1/60; Airflow under dry coil conditions. Our EPIC/ECM software enables us to operate over a broader, stable air volume range as compared to standard ECM Motors. All of these models were tested at **0.7"** external static pressure.

Independent Laboratory Certification and Testing

Engineered Comfort is committed to providing accurate and reliable performance data on our entire range of products. As such we voluntarily certify our product performance with an independent rating/testing agency, **AHRI**. It's also important to note that during the development stages Engineered Comfort enlists an independent testing facility, Energistics Laboratory, to conduct product performance analysis and sound power level data. We willingly do this even though sound certification isn't currently required to comply with **AHRI 440**! Energistics Laboratory is a state-of-the-art facility complete with all of the equipment and personnel necessary to ensure that we comply with ***All*** applicable industry standards. Below are a few photos of the Energistics testing facilities and a couple of photos of actual Engineered Comfort installations. We trust that our project experience, coupled with our commitment to independent testing, will serve as a testament that we now offer the most comprehensive, reliable and energy efficient fan coil systems in North America!



Not Shown:
Cold Wall Simulation Lab
Reverb/Sound Room
IN-SITU Room

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