

Digital Scroll Technology & EC Fans



By : Amro Said – Product Manager



Objective

- ActronAir Profile
- ESP Series
- Digital Vertical Package
- Tri-Capacity
- Q & A





Residential

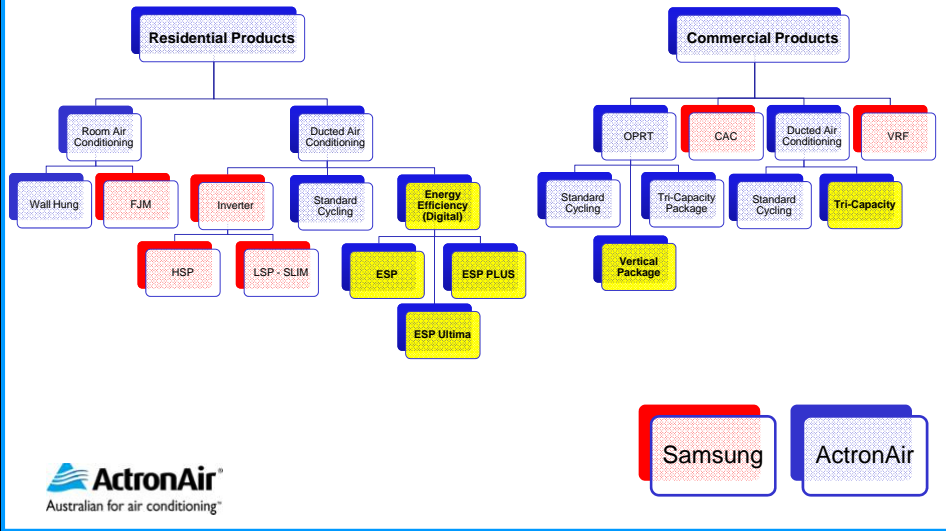
 **ActronAir**[®]
Australian for air conditioning[®]



Commercial

 **ActronAir**[®]
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The largest Air Cooled Product Range in Australia!



ESP Series



Energy Smart Performance (ESP Series)



+



Sophisticated micro-technology achieves faster, more precise temperature control and energy savings.



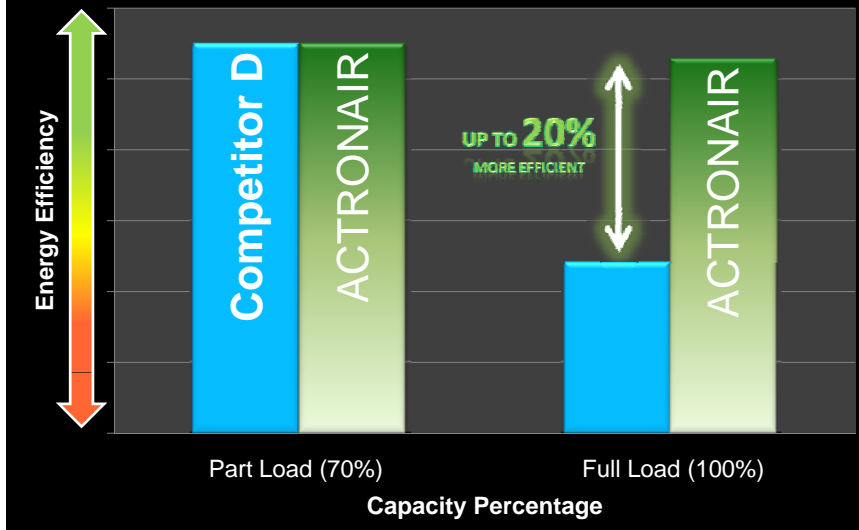
ESP Plus's Indoor Smart Fan Upgrade gives you advanced air flow control and can save up to 85% on indoor fan power consumption.



ESP Ultima's Individual Zone Control lets you create temperature settings in up to 8 different areas of your home.

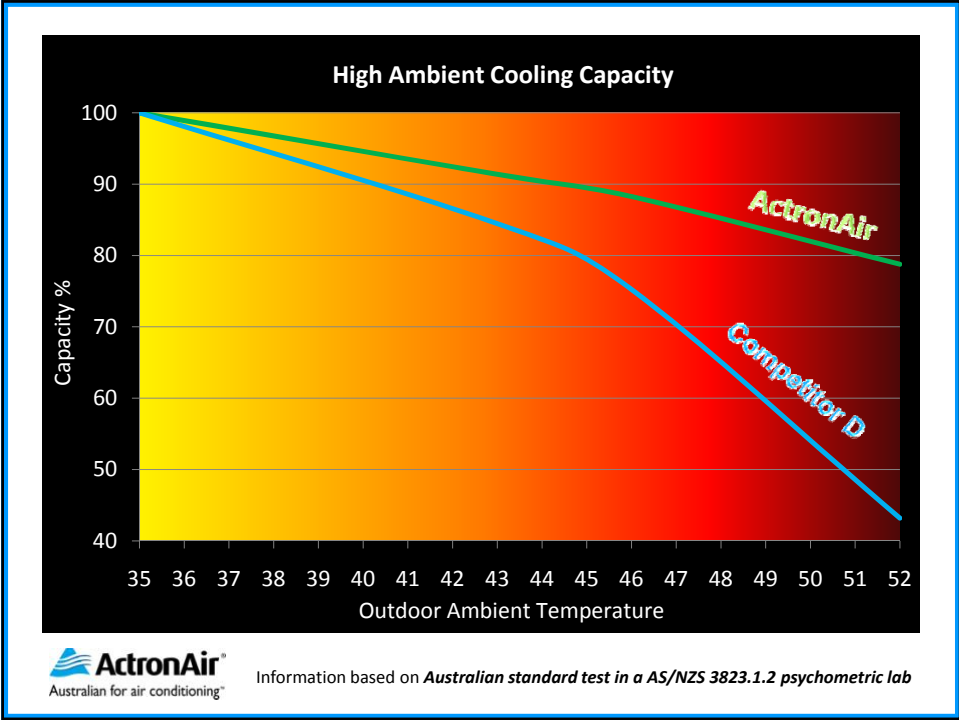
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EER Vs. Variable Capacity



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Information based on Australian standard test in a AS/NZS 3823.1.2 psychometric lab



Award winning innovation for ESP Plus

- AIRAH Achievement Awards
- CoolWorld Awards



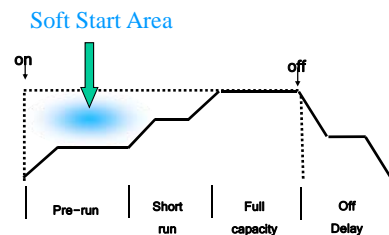
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Variable Air Flow technology

- Has the intelligence to actually learn the ducting and zoning system?
- Can operate with only one zone on.
- Subject to min air flow of 20%
- Starts and Stops very quietly.

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———— Variable fan
······ Std fan

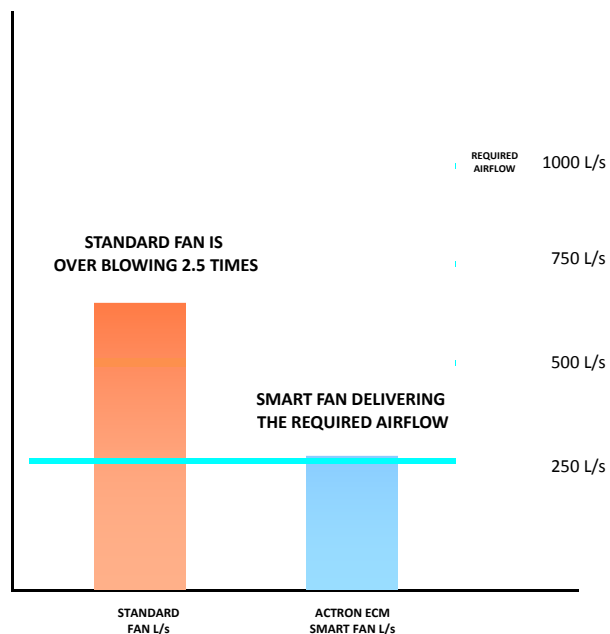
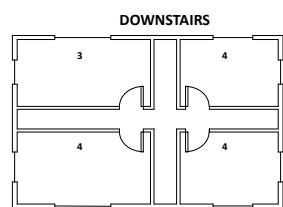
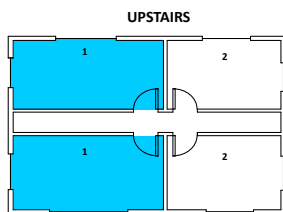


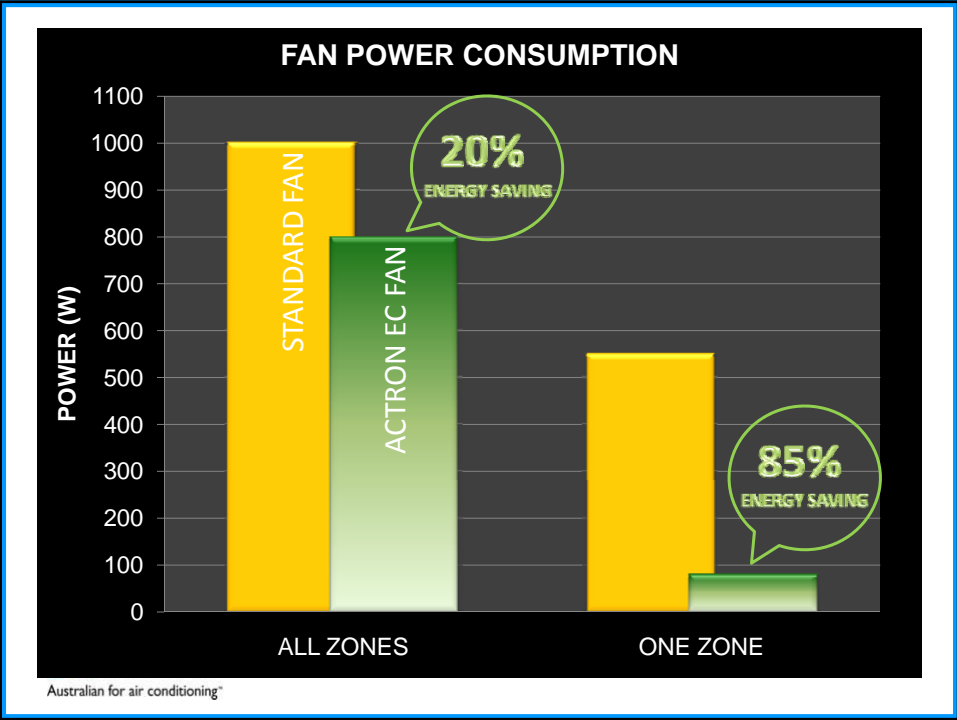
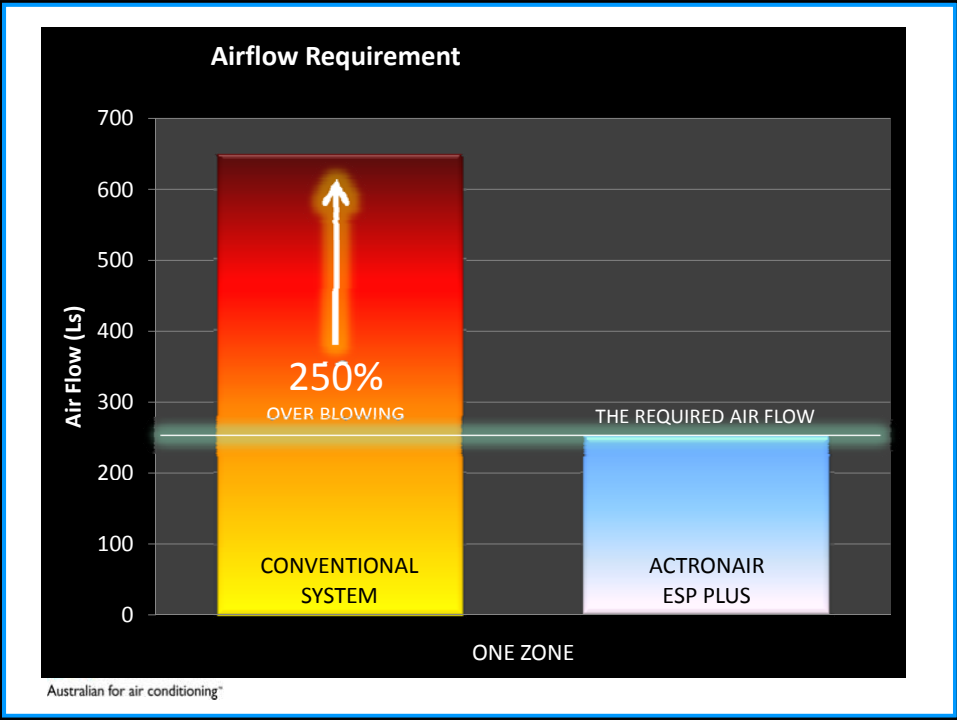
ActronAir Variable Fan v Std Fan

Variable Fan	Standard Fan
Airflows as per required Duty.	Excess Supply air when Zoning.
Superior Energy savings using the EC motor.	Induction Motor is less efficient.
Reduced Noise levels on start up and zoning.	Noisy when Zoning and on start up.

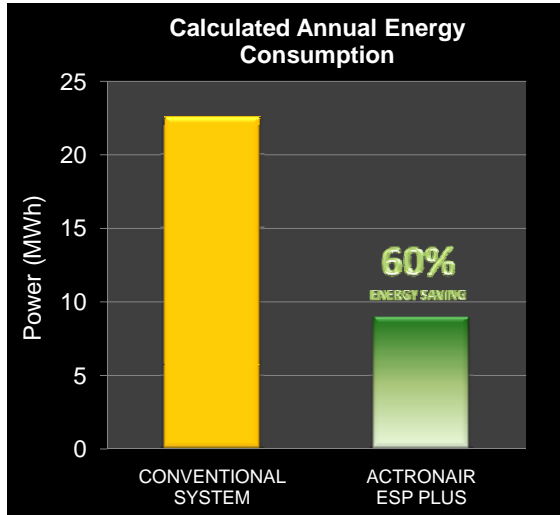


Required Air Flow Vs Delivered Air Flow (L/S)





Energy Saving Products



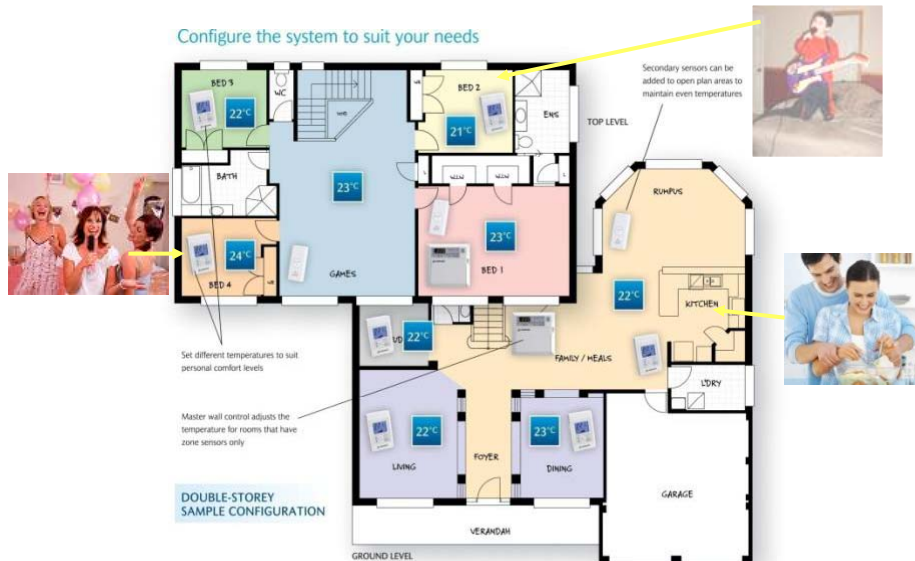
An independent energy modeling analysis indicates that annual energy consumption for a 2 story, 4 bedroom brick veneer home in Sydney's west is reduced by up to **60%** when using **ESP plus** as opposed to a comparable conventional system



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The ESP Ultima Home

Configure the system to suit your needs



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Variable Air Volume (VAV) Technology for Light Commercial Applications



Master Controller

- Controls system operation, fan speeds and sets master temperature limits



Individual Zone Controller

- Sets temperature for individual zone
- On/Off temperature controls for the zone

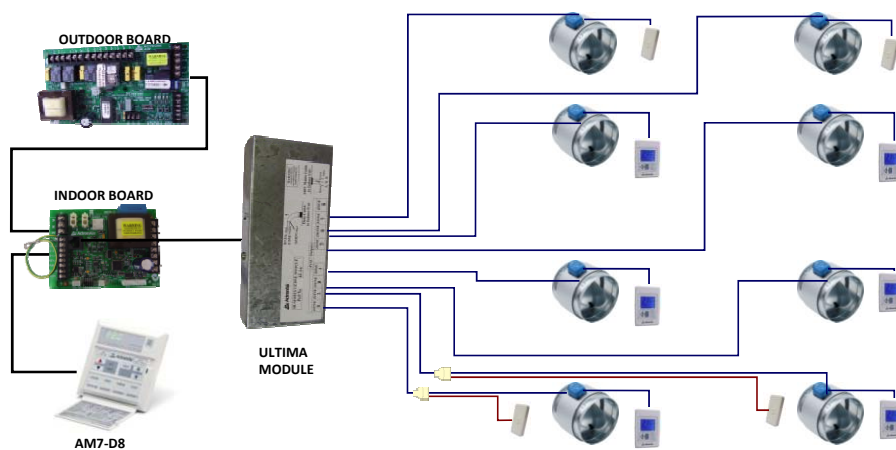


Zone Sensor

- Used in conjunction with master controller to improve temperature control






For maximum efficiency, the system has a default maximum temperature span of $\pm 2^{\circ}\text{C}$ between the master controller and individual zones.

DESIGN ANY COMBINATION



Max Number of sensors is = 16

Product Line-up

Net Cooling Capacity	12.5	14.5	16.6	18	19	23
Outdoor 1PH						
Outdoor 3PH						
ESP						
ESP Plus						
ESP Ultima						

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Digital Vertical Package



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Digital Vertical Package (PMD)



- Operating Range
- Digital Scroll Compressor
- EC Indoor Fan
- Large Condenser Coil
- High Ambient 3 speed condenser fan
- Designed for Australian harsh environment in mind



Product Line-up



Total / Gross kW	11.5	16	19
Cooling Only – R Type	●	●	
Reverse Cycle – R Type	●	●	●
Cooling Only – X Type		●	
Reverse Cycle – X Type		●	●

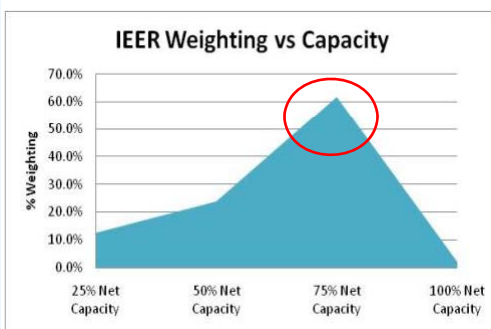




Tri-Capacity Series



Matching capacity to the load



6.2.2 Integrated Energy Efficiency Ratio (IEER).
For equipment covered by this standard, the IEER shall be calculated using test derived data and the following formula.

$$\text{IEER} = (0.020 \cdot A) + (0.617 \cdot B) + (0.238 \cdot C) + (0.125 \cdot D)$$

Where:

A = EER at 100% net capacity at AHRI standard rating conditions

B = EER at 75% net capacity and reduced ambient

C = EER at 50% net capacity and reduced ambient

D = EER at 25% net capacity and reduced ambient

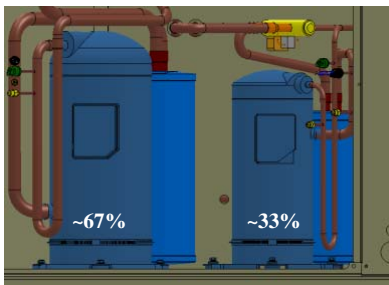
- A 'typical' commercial building air conditioner operates between 60 to 75% capacity most of the time
- This observation is supported by the US calculation for IEER ratings (AHRI 340/360) for commercial ducted systems.



Tri-capacity Compressor Operation

- Designed for improved seasonal efficiency
- 2 compressors 470-700
- 3 compressors for the 820 / 960
- 3 capacity steps of cooling/heating
~ 33%, ~67% and 100% capacity

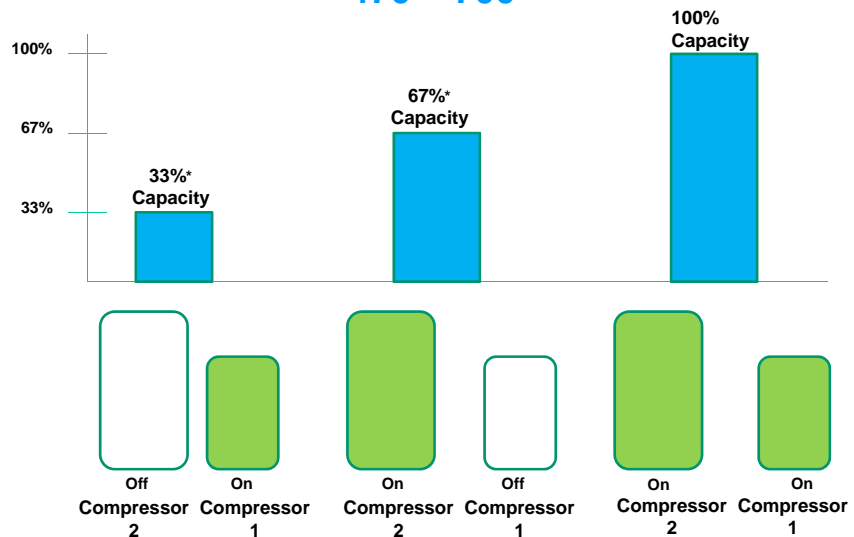
PKY 470 / 700



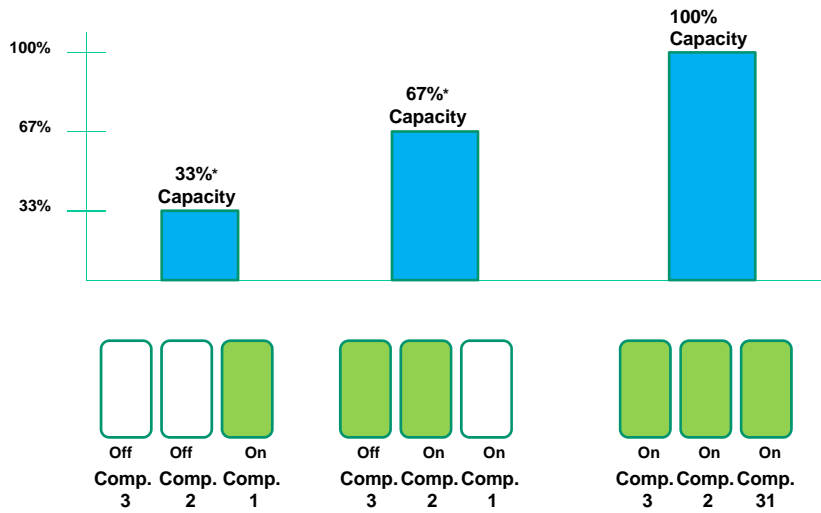
PKY 820 / 960



Tri-capacity Operation 470 ~ 700



Tri-capacity Operation 820 / 960



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ebm-papst EC plug fans and EC HyBlade axial fans



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ebmpapst





High Efficiency EC Plug Fan



- Delivers improved energy savings utilising:
 - EC motor
 - Non overloading **Backward Curved** fan.
- Improved performance and efficiency vs. traditional forward curve belt and pulley systems
- Other advantages:
 - Greater flexibility of supply and return air configurations.
 - High Static easily achieved. (Up to 500Pa)
 - Quick 'dial-up' air flow adjustment
 - Quiet start up, eliminates sudden start-up noises.



Product Line-up

	Total / Gross kW	47.0	53.5	63.0	71.0	82.5	96.0
 Packaged Unit (PKY)		●	●	●	●	●	●
 Outdoor Unit (CAY)		●	●	●	●		
 Indoor Unit (EVY)		●	●	●	●		
 Indoor Unit Low Profile (ELY)		●	●	●	●		

