

# Outside Air Solutions

TD Series - Premium CHOICE Series - TR Series - reFresh Series - And More

Indoor

Air

Quality

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# Indoor Air Quality

Today's construction practices have created structures that are tighter and more energy efficient than ever. Vapor barriers, caulking, high R value insulation, better windows and tighter joints have resulted in less air filtration and more efficient spaces. Tightly constructed structures trap pollutants inside resulting in poor indoor air quality which is not only uncomfortable to the occupants but also a health hazard. Volatile Organic Compounds (VOC's) like formaldehyde, as well as cigarette smoke, radon, cleaners, and perfumes can threaten health.



Everyday activities such as showering, cooking, laundry and even breathing are ways that moisture is generated in your home (one gallon per person every day.) Moisture trapped in buildings lead to structural damage. Signs of structural damage include heavy condensation on windows, sills, and mold forming inside the spaces.

## Codes and Standards

### Definition

The ASHRAE 62.2 standard sets the minimum requirements for mechanical ventilation systems to provide acceptable IAQ in residential buildings. Building codes such as the International Residential Code (IRC) and International Mechanical Code (IMC) amend and reference these requirements to ensure occupant health. There are 2 basic requirements:

### 1. Whole House Ventilation

Intended to dilute the unavoidable contaminant emissions from people, from materials, and from background processes. An exhaust fan, supply fan, motorized damper, ERV, or combination thereof can all be used to meet the continuous whole-house ventilation requirement determined by one of 2 ways: the equation or the table.

#### Equation:

- Required Rate =  $0.01 \times \text{Floor Area} + 7.5 \times (\text{Number of Bedrooms} + 1)$
- If the number of occupants exceeds the assumed 2 persons for the first bedroom and 1 for each additional room, increase the ventilation rate as follows:  
***Number of additional occupants x 7.5 CFM***

### Ventilation Air Requirements Table

Floor Area (ft <sup>2</sup> )	Bedrooms				
	0-1	2-3	4-5	6-7	>7
<1500	30	45	60	75	90
1501-3000	45	60	75	90	105
3001-4500	60	75	90	105	120
4501-6000	75	90	105	120	135
6001-7500	90	105	120	135	150
>7500	105	120	135	150	165



## Codes and Standards (continued)

### 2. Local Demand-Controlled Exhaust

Intended to remove contaminants from kitchens and bathrooms that, because of their design function, are expected to contain sources of contaminants. A continuous or intermittent local mechanical exhaust system shall be installed in each kitchen and bathroom.

Area To Be Exhausted	Exhausters
Kitchens	100 CFM intermittently or 25 CFM Continuous
Bathrooms-Toilet Rooms	Mechanical exhaust capacity of 50 CFM intermittent of 20 CFM continuous

In addition to these 2 basic requirements, the International Energy Conservation Code (IECC) requires that mechanical ventilation system fans meet the efficacy requirements in the table below.

Fan Location	Air Flow Rate Minimum (CFM)	Minimum Efficacy (CFM/WATT)	Air Flow Rate Maximum (CFM)
Range Hoods	Any	2.8 CFM/WATT	Any
In-line Fan	Any	2.8 CFM/WATT	Any
Bathroom, Utility Room	10	1.4 CFM/WATT	< 90
Bathroom, Utility Room	90	2.8 CFM/WATT	Any

## S&P USA IAQ Products

### MD6-ES24VK - Outside Air Motorized Damper & Environsense Ventilation Control Kit

The MD6-ES24VK Outside Air Kit combines the MD6 with the ES24V to allow fresh, clean air to enter the building. The ES24V can command the central HVAC blower to help distribute fresh air through the existing duct work if necessary. It can be programmed to allow outside air to enter intermittently when the temperature is inside of your set temperature and humidity parameters. This prevents hot, humid, or freezing air from flooding your house all at once, while still meeting code. The combination of the control and damper will help you meet ASHRAE 62.2 (2010/2013) and IRC (2012/2015) code standard requirements.

#### Features & Construction

- 24V
- 6" round duct
- Sequences outside air in forced-air systems
- Comes with ES24V control with 3 modes (OFF, ON, and ECO)
- Easy to read, back-lit LCD screen
- Simple 4-button interface
- Can be set up to run fan continuously or intermittently, or use Eco-mode to turn fan off at set temperature/humidity
- Measures outdoor temperature to stop ventilation at adjustable high and low outdoor temperature/humidity lockouts
- Control programming maintains ASHRAE 62.2-2010 even during high and low temperature limit lockouts
- Installation flexibility – ability to override humidity and temperature control
- Inputs for optional duct heater and motorized damper



MD6-ES24VK





# S&P USA IAQ Products (continued)

## TD-MIXVENT - In-line Mixed Flow Duct Fan

S&P's best selling product worldwide! The TD-MIXVENT series are in-line duct fans specially designed to maximize the airflow performance with minimal noise levels in a small, compact housing. This makes the TD-MIXVENT series the ultimate solution for small to medium sized ventilation installations which require a high airflow to pressure ratio and occupy minimum space (e.g., false ceiling voids, cabinets and many other limited space environments).

### Features & Construction

- Combines best features of centrifugal and axial fans
- Low Profile, requires minimum space
- Integral mounting bracket
- Multiple mounting options for more pressure or more airflow
- Exhaust air up to 3,124 CFM with static pressure capabilities to 1" w.g.
- Mixed flow impeller for excellent airflow to pressure performance ratio
- Ideal for applications where space is limited



TD-MIXVENT



## PC - Premium CHOICE Standard Size with AC Motor

Available in 4 sizes with single speed motors (PC50X, PC80X, PC110X, and PC150) the Premium CHOICE AC Standard Models, as the name suggests, is all about the CHOICE! The fans are engineered to accept S&P's PC plug-&-play options: lighted or motion sensing grille kits, and humidity sensing module, VOC sensing module, speed control module, or Bluetooth® speaker module. One fan can be modified to be the exact fan needed. You even have the CHOICE to add a control or change the grille after the initial installation.

### Features & Construction

- Extremely quiet operation <0.3 to 1.1 Sones
- Totally enclosed condenser motor for long life - rated for 30,000 hours continuous operation
- Built-in backdraft damper
- Robust steel housing
- Unique grille
- Options: Lighted (LED or Fluorescent) or Motion Sensing Grilles, Speed Control, Humidity Sensor, IAQ Sensor, Radiation Dampers



PC50X



PC80X • PC110X • PC150



# S&P USA IAQ Products (continued)

## PCD - Premium CHOICE with DC Motor

PCD fans feature the most efficient DC motors available to help improve indoor air quality and increase your home's durability by quickly exhausting contaminants and excess moisture that can cause health issues, mold growth, and structural damage. With built-in control boards, the PCD models allow you to CHOOSE your airflow. The DC fans are available with humidity sensing, motion sensing, and VOC sensing options built-in.

### Features & Construction

- Extremely quiet operation <0.3 to 2.5 sones
- Brushless DC motor for long life
- Motor rated for 60,000 hours continuous operation
- High/Low speed delay timer\*
- 6" duct connector with built-in backdraft damper
- 4" duct connector with built-in backdraft damper (*PCD80XH only*)
- Robust steel housing
- Unique grille

\*PCD110X models only



PCD110X •  
PCD110XH •  
PCD110XIAQS

PCD110XMH •  
PCD110XM



PCD200



PCD80XH



CAL Green



## PCLP - Premium CHOICE Low Profile

The Premium CHOICE Low Profile Ventilation fans feature ultra-low profile housings suitable for both wall and ceiling installations. Installing a PCLP in a wall means that you do not need a radiation damper to meet fire-resistance requirements in the building code like you do when installing the fan in a fire-rated ceiling making the PCLP the more economical CHOICE for multi-family applications.



PCLP80 • PCLP100

### Features & Construction

- Low profile housing design
- Quiet operation 1.2 to 2.0 sones
- Totally enclosed condenser motor for long life - rated for 30,000 hours continuous operation
- Built-in backdraft damper
- Options: LED Lighted Grilles, Speed Control, Humidity Sensor
- Unique grille
- Robust steel housing



CAL Green





# INTELLIVENT

FANS THAT THINK FOR THEMSELVES



**PCLP100**  
Premium CHOICE  
Low Profile Model



**MD6-ES24VK**  
Outside Air  
Motorized Damper Kit

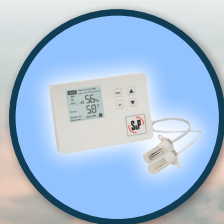


Thermostat

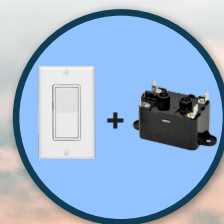
Intellivent is comprised of a low profile bathroom exhaust fan, outside air motorized damper kit, and relay. The components work together to provide cost effective balanced fresh air into the dwelling. This is a low cost package deal that provides everything you would need for simple, yet effective fresh air supply and bathroom exhaust.



Supply Damper



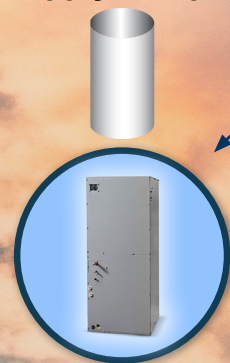
ES24V Control



Fan/Wall Switch  
+ Relay



PCLP



HVAC/ACU



# S&P USA IAQ Products (continued)

## The reFresh Series

Low profile, all-in-one units to introduce fresh air from outside into the residence. The reFresh is specifically engineered to meet building and energy codes that call for ASHRAE 62.2 CFM requirements. The reFresh Low Profile Units have set speeds at 40, 100, and 140 CFM (Low, Medium, and High). The reFresh Full Size Units have set speeds at 40, 100, and 170 CFM (Low, Medium, and High).

### RF8 - reFresh Low Profile

#### Features & Construction

- Low profile, galvanized, 26 ga., insulated housing
- Models with and without ES24V control
- 6" round duct connectors
- Test port for easy air flow measurement
- 2" wide filter slot for optional 8 x 8 x 2" filters
- Integral mounting tabs allow mounting in any orientation
- Backward inclined wheel
- Speed controllable, AC or EC motor, 120V, 60 Hz
- 4 pole, permanently lubricated, thermally protected motor
- Internally mounted speed control to set required intake with high, medium, and low set points
- 6' power cord
- EC motor models are ENERGY STAR qualified
- HVI Certified performance with and without optional MERV13 Filters



RF8



### RF10 - reFresh Full Size Units

#### Features & Construction

- Galvanized, 26 ga., insulated housing
- Models with and without ES24V control
- 6" round duct connectors
- Integral backdraft damper
- Test port for easy air flow measurement
- 2" wide filter slot for optional 10 x 10 x 2" filters
- Integral mounting tabs allow mounting in any orientation
- Backward inclined wheel
- Speed controllable, AC or EC motor, 120V, 60 Hz
- 4 pole, permanently lubricated, thermally protected motor
- Internally mounted speed control to set required intake with high, medium, and low set points
- Models with and without 6' power cord
- EC motor models are ENERGY STAR qualified
- HVI Certified performance with and without optional MERV13 Filters
- Models with UL 2043 plenum rating



RF10



# S&P USA IAQ Products (continued)

## **RFV8 - reFresh Value Model** **Features & Construction**

Basic model, with the following modifications:

- No insulation
- No speed control
- No impeller guard
- No filter slot
- New 1 piece lid w/ 4 screws (no latch)
- With backdraft damper
- With 6' power cord
- With mounted/wired ES24V control/relay.

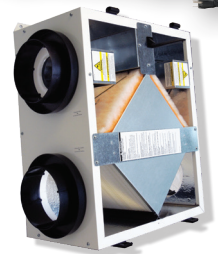


## **TR - Total Recovery for All Climates**

To protect the two most valuable investments of your life, your home, and your family, improving indoor air quality is key. With S&P's TR (total recovery) Series for all climates, stale room air is exhausted, and the fresh outdoor air is brought back into the house. With this line of ERVs (Energy Recovery Ventilators) these two air streams are directed through a highly developed "air-to-air" energy exchange core. The air streams are physically separated by many layers of "plates" so there is no mixing or contamination of the fresh air. The plates are made of an engineered "resin" material that simultaneously transfers heat by conduction and humidity by attracting and moving water vapor from one air stream to the other.

### **Features & Construction**

- MERV-8 filters
- Less than 1 watt stand-by power consumption
- Transformer/relay package allowing simple on/off control
- Plastic double collars for 6" or 8" direct duct connection (TR300 is 8" only)
- TR90, TR130, TR300 have painted case, low voltage controls, 3' Power cord
- TR90G has galvanized case, line voltage and no line cord
- Integral mounting flange and hanging bracket system
- Fully insulated case
- Large cores for high efficiency
- No condensate pan or drain required





# S&P Fans with Timer Control - ASHRAE 62.2



## **FT622 - ASHRAE 62.2 Bath Fan Ventilation Control**

The FT622 is designed to replace bathroom fan and light switches and provide both functions with one easy operation. By using a microprocessor to monitor and control operation, the FT622 delivers a precise amount of ventilation, and is a simple solution to meet ASHRAE 62.2 in conjunction with an S&P fan, specifically a TD-MIXVENT or PC Premium Choice Fan.

There are only two settings on the FT622: VENTILATION and DELAY. The VENTILATION setting allows the user to set the number of minutes per hour the fan should run. The DELAY setting allows the user to set the number of minutes the fan should run after the bathroom light has been turned off. The

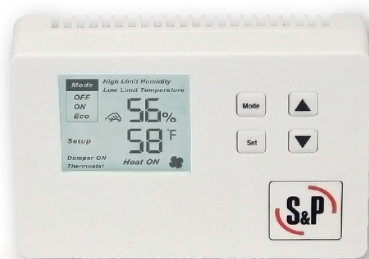
DELAY setting provides additional run time for the fan to complete the remaining necessary ventilation after use.



## **FT247 - Programmable Fan Timer**

S&P offers the FT247 with easy programming for your bathroom fan ventilation needs. Simply set what time you want the fan to turn on and off and what day or days you want the fan to run. S&P recommends using the FT247 with a TD-MIXVENT Fan or PC Premium Choice Fan.

- Provides 7 ON and 7 OFF events per day
- LCD display
- Rechargeable battery back-up
- Push button activation
- Note: Do not use with fluorescent lamp ballasts



## **ES24V - Environsense Ventilation Control**

The ES24V control can be used with our RF-reFresh, TD-MIXVENT, TD-SILENT, PV-POWERVENT, or TR-ERVs. When paired with S&P fans the ES24V provides fully controllable fresh air into a residence. With three modes (Off, On, and Eco-Mode) the ES24v ensures compliance with today's outside air codes.

- "Off" allows for manual override as required by the code.
- "On" allows for continuous operation.
- "Eco-Mode" allows homeowner to set humidity and/or temperature minimum and maximums. When min and max are sensed the fan will not bring in outside air. When the outside air is within the min and max range the fan will operate at the set time limit or continuously to meet the code requirements, i.e. 15 minutes every 4-hours.





# Product Applications and Arrangements




















**MD6-ES24VK** - Use the MD line of motorized dampers for Central Fan Integrated (CFI) outside air supply only applications.

**TD-Mixvent** - Use the TD line of inline mixed flow fans for outside air supply only or exhaust only applications.

**PC** - Use the PC line of bathroom exhaust fans for outside air exhaust only applications.

**reFresh** - Use the Refresh line of inline fresh air supply fans for outside air supply only applications.

**TR** - Use the TR line of energy recovery units for balanced outside air applications.

	<b>MD6-ES24VK</b> Outside Air Motorized Damper Kit	<b>TD-Mixvent</b> Inline Mixed Flow Duct fans	<b>PC</b> Premium CHOICE Bathroom Exhaust Fans	<b>reFresh</b> Filtered Fresh Air Supply Inline Fans	<b>TR</b> Total Recovery ERVs
<b>Good</b>	 <p>Supply Only - Central Fan Integrated</p>	 <p>Supply Only or Exhaust Only</p>	 <p>Exhaust Only</p>	-	-
<b>Better</b>	 <p>+</p>  <p>Or</p>  <p>Balanced Solution</p>	 <p>+</p>  <p>Or</p>  <p>Or</p>  <p>Balanced Solution</p>	 <p>+</p>  <p>Or</p>  <p>Or</p>  <p>Balanced Solution</p>	 <p>Supply Only - Filtered</p>	-
<b>Best</b>	-	-	-	 <p>+</p>  <p>Or</p>  <p>Balanced Solution - Filtered</p>	 <p>Balanced Solution - Filtered with Energy Recovery</p>



**S&P USA Ventilation Systems, LLC**

6393 Powers Avenue  
Jacksonville, FL 32217  
T. 904-731-4711 • F. 904-737-8322  
[www.solerpalau-usa.com](http://www.solerpalau-usa.com)

**S&P Canada Ventilation Products, Inc.**

6710 Maritz Drive Unit #7  
Mississauga, ON L5W 0A1 - Canada  
T. 416-744-1217 • F. 416-744-0887  
[www.solerpalaucanada.com](http://www.solerpalaucanada.com)

