Heat Recovery • Energy Recovery
Total Recovery Ventilators

Balanced Ventilation
for Residential and Commercial Buildings

HRV-ERV-0416
April 2016
With houses and buildings being built as tightly as possible, we are plagued by unbalanced ventilation systems. This means we can have positive air pressure caused by exhausted air not being ventilated as fast as supply air comes in. Or, vice versa. There can be negative pressure with supply air not being brought in as fast as air is exhausted.

This leads to too much moisture in the home or building and increased loads on the heating and cooling system. Poor ventilation can also cause unpleasant odors and buildup of contaminants such as radon, formaldehyde, and VOCs.

### Terms to Know

**Sensible Heat**
The amount of energy involved in raising or lowering the temperature of air not including any energy required to cause water vapor to change state.

**Latent Heat**
The amount of energy associated with the humidity (or water vapor content) of an air stream. A drier air stream contains less latent heat and will impose a smaller latent load on the air conditioner.

**Enthalpy**
The total amount of energy contained in air, the sum of sensible and latent heat.

**Balanced Ventilation**
A ventilation strategy using both an exhaust air blower and a supply or make-up air blower that does not pressurize or de-pressurize a building.

**Air-to-Air Heat Exchanger**
Generic term for technologies designed to transfer heat -- and sometimes moisture -- between two air streams.

**Heat Recovery Ventilator – HRV**
An air-to-air heat exchanger that transfers sensible heat only; no humidity (latent heat) transfer occurs between the two air streams.

**Energy Recovery Ventilator – ERV**
In Cold Weather, some of the humidity in the inside air is recovered -- along with its latent energy. Non-enthalpic heat recovery systems lose that latent energy.
To protect the health of your family, your home, or your building, improving indoor air quality is key. Heat Recovery Ventilators (HRVs) or Energy Recovery Ventilators (ERVs) solve ventilation problems by moderating extremes in ventilation temperature and in humidity. They improve indoor air quality and lessen the load on air handling units for a more efficient system. Stale room air is exhausted and fresh outdoor air is brought back into the structure. The airstreams are physically separated so there is no mixing or contamination of the fresh air.

HRVs and ERVs both:
- Reduce energy consumption while providing fresh air when heating or cooling
- Moderate extremes in ventilation temperature
- Use heat that would otherwise be lost with the exhaust air in the winter.
- Provide necessary fresh air while pre-cooling in summer
- Meet ventilation codes and standards.

Balanced System Application

Balanced air pressure
Airflow supplied is equal to stale air exhaust.

S&P's Solution

Fresh air from outside
Heat recovery core
Exhaust air to outside
Exhaust air from home
Collar system
Fresh air to home
Heat Recovery Ventilator (HRV)
- Generally recommended for use in colder climates
- The core will reclaim the heat from the outgoing stale air and reuse that heat to temper the incoming fresh air.
- Reduces the cost of effectively heating the home during winter.

Energy Recovery Ventilator (ERV)
- Generally recommended for use in warmer climates
- Help prevent moisture damage or over-drying of the structure in colder seasons by moderating extremes in humidity.
- Lessen the demand on the air conditioning system in warmer seasons
- Typically 3x more energy efficient in the summer than products (or units) that transfer only heat (HRVs)
ERV and HRVs

Heat Recovery and Energy Recovery Ventilators
The S&P HR Series heat recovery ventilators (HRVs) are ideal for use in cold climates where home heating is essential. The HR Series uses one motor to exhaust stale room air and another motor to bring fresh outdoor air back into the house. The technology of a plate heat recovery core is that it transfers warm ambient air from one airstream to the other without mixing the air streams for maximum efficiency and comfort.

The HR Series has been engineered & designed to improve indoor air quality by reducing excess humidity and contaminants during the winter time, and replacing this air by fresh filtered air from the outdoors. During colder seasons, the units heat recovery core (polypropylene core) will reclaim the heat from the outgoing stale air and use this heat to temper the incoming fresh air, which reduces the cost of effectively ventilating the home during winter. This process is reversed for summer months.

Standard Features
- Polypropylene HRV core
- 3 operating modes (Intermittent, Continuous and High Speed)
- Duotrol™ balancing system reduces noise that would be produced by balancing dampers
- Unique collar system for easy manipulation of duct for better and quicker installation
- Painted galvanized steel case
- Designed for simple installation by a single person
- Washable filters
- Fully insulated case
- **Limited lifetime warranty** on the heat recovery core
- 5-year warranty on balance of unit
Choosing the correct size HR for your home is easy, all you need to know is the square footage.

If your home is up to:
- 2300 Sq. Ft. you need a **HR100V**
- 3400 Sq. Ft. you need a **HR160H**
- 5000 Sq. Ft. you need a **HR220H**

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**S&P’s HRV System**

- **Duotrol™ Systems**: Selects ventilation modes (OFF, CONT or INTER), and adjusts the continuous airflow rates: Increasing (+)/Decreasing (-).

- **Motors(2)**: Designed with high performance and reliability, they are maintenance free for comfort and peace of mind.

- **Synthetic Filters**: Capture the largest particles & protect the heat recovery core from potential obstruction by these particles.

- **Heat Recovery Core**: A polypropylene cross-flow type, it is designed to transfer the heat between the exhaust & supply air streams without allowing any contamination or mixing of the streams. This maximizes the efficiency and improves indoor air quality.

- **Condensate Drain Pan & Drainage Hose**: Captures the water that accumulates during the heat transfer and defrost sequence in the fall, winter & early spring seasons. Drain hose is connected to the drain pan and serves as drainage for the accumulated water. It is normal during summer months to find no condensation in drain pan or in drainage hose.

- **Automatic Defrost Sequence**: The defrost sequence is electronically controlled by measuring the temperature of the incoming outdoor air. The sequence is activated at 23°F (-5°C) with a five minute duration, then returns to normal operation for 25 minutes. This keeps the heat recovery core from ice build-ups or freezing.

- **Defrost sequence**: Supply fan shuts down, and the exhaust fan speed increases depending on the outside air temperature.
### Air Performance and Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>Airflow Performance (CFM)</th>
<th>Collar System</th>
<th>Port Location</th>
<th>Variable Speed</th>
<th>Motor Warranty</th>
<th>Dimensions</th>
<th>Weight (approx.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR100V</td>
<td>30-100 CFM (14 L/s-47 L/s)</td>
<td>5” Oval Dia. (127 mm)</td>
<td>Top</td>
<td>Yes</td>
<td>5 years</td>
<td>18’x20’x14-1/2” (45.7 cm x 50.8 cm x 36.8 cm)</td>
<td>40 lbs. (18.6 Kg)</td>
</tr>
<tr>
<td>HR160H</td>
<td>30-160 CFM (14 L/s-76 L/s)</td>
<td>6” Round Dia. (152 mm)</td>
<td>Side</td>
<td>Yes</td>
<td>5 years</td>
<td>21-1/2”x23-7/8”x11-3/8” (54.6 cm x 60.6 cm x 28.9 cm)</td>
<td>48.5 lbs. (22 Kg)</td>
</tr>
<tr>
<td>HR220H</td>
<td>50-220 CFM (24 L/s-104 L/s)</td>
<td>6” Round Dia. (152 mm)</td>
<td>Side</td>
<td>Yes</td>
<td>5 years</td>
<td>21-1/2”x23-7/8”x16-1/2” (54.6 cm x 60.6 cm x 41.9 cm)</td>
<td>58.5 lbs. (26.5 Kg)</td>
</tr>
</tbody>
</table>

### Energy Performance (Heating)

<table>
<thead>
<tr>
<th>Model</th>
<th>Supply Temperature</th>
<th>Net Air Flow</th>
<th>Power Consumed (Watts)</th>
<th>Sensible Recovery Efficiency</th>
<th>Apparent Sensible Effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>°F</td>
<td>°C</td>
<td>CFM</td>
<td>L/s</td>
<td></td>
</tr>
<tr>
<td>HR100V</td>
<td>32</td>
<td>0</td>
<td>40</td>
<td>19</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>32</td>
<td>0</td>
<td>65</td>
<td>30</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>-13</td>
<td>-25</td>
<td>37</td>
<td>18</td>
<td>30</td>
</tr>
<tr>
<td>HR160H</td>
<td>32</td>
<td>0</td>
<td>65</td>
<td>31</td>
<td>72</td>
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<td>32</td>
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<td>80</td>
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<tr>
<td></td>
<td>-13</td>
<td>-25</td>
<td>76</td>
<td>36</td>
<td>94</td>
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<tr>
<td>HR220H</td>
<td>32</td>
<td>0</td>
<td>118</td>
<td>55</td>
<td>106</td>
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<td></td>
<td>32</td>
<td>0</td>
<td>160</td>
<td>75</td>
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</tr>
<tr>
<td></td>
<td>32</td>
<td>0</td>
<td>185</td>
<td>87</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>-13</td>
<td>-25</td>
<td>120</td>
<td>57</td>
<td>105</td>
</tr>
</tbody>
</table>
Types of Installation
The HR Series can be installed as independent systems that use dedicated ductwork, or they can be connected to the existing duct of the forced air heating or cooling system. The “Best” and “Better” systems meet the ASHRAE 62.2 Whole Building requirement when using an S&P HR control.

The Good System:
Exhaust and supply in the return

Bathroom fans are required for point source exhaust. S&P’s TD Mixvent inline fan makes the perfect choice.

The Better System:
Exhaust at the source and supply in the return

The Best System:
Independent System

Fresh Air is supplied to bedrooms and living rooms through the furnace
Stale/humid air is exhausted from baths and kitchen through the furnace

Fresh Air is supplied to bedrooms and living rooms
Stale/humid air is exhausted from baths and kitchen

Bathroom fans are required for point source exhaust. S&P’s TD Mixvent inline fan makes the perfect choice.
HRT-3 - Push Button Timer
• The HRT-3 model push button timer allows the homeowner control of the indoor humidity level in rooms were excess humidity is produced
• Press the button once the LED comes on then release, this activates the ventilation system to high speed for 20 minutes.
• Press the button until the LED blinks 2 times then release, this activates the ventilation system to high speed for 40 minutes.
• Press the button until the LED blinks 3 times then release, this activates the ventilation system to high speed for 60 minutes.
• Meets ASHRAE 62.2 continuous ventilation standards

HRRD-1 - Dehumidistat
• The HRRD-1 allows the users to select the humidity level using the Relative Humidity Sensor Dial
• The Relative Humidity Sensor Dial will “click” when the dial reaches approximate level of relative humidity and overrides the ventilation system to high speed once the level of humidity is above the set point
• For best results install in bathrooms, kitchen and laundry room
• Meets ASHRAE 62.2 continuous ventilation standards

HRRD-3P - Dehumidistat
• The HRRD-3P allows the users to select the humidity percentage, fan range and operation modes.
• Includes Relative Humidity Sensor, Speed Control Selector Switch and Mode Selector Switch
• The Relative Humidity Sensor Dial will “click” when the dial reaches approximate level of relative humidity and overrides the ventilation system to high speed once the level of humidity is above the set point
• Speed Control (OFF, NORMAL and REDUCED)
• Mode Control (INTERM and CONT)
• For best results install in bathrooms, kitchen and laundry room
• Meets ASHRAE 62.2 continuous ventilation standards

FT247 - Programmable Fan Timer
• Provides 7 ON and 7 OFF events per day
• LCD display
• Rechargeable battery back-up
• Push button activation
• Meets ASHRAE 62.2 continuous ventilation standards
• Note: Do not use with fluorescent lamp ballasts
ERV Series Specifics
(TR and TRC)

The S&P Advantage - The Ultimate ERVs

With S&P’s TR & TRC (total recovery) ERV Series for all climates, stale room air is exhausted and fresh outdoor air is brought back into the building. 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.

S&P’s TR & TRCs moderate extremes in both temperature and humidity, creating a comfortable indoor environment. The unique moisture transfer capability of the S&P core also eliminates condensation and frost build up in most applications. Unlike other ERVs on the market, no mechanical or electrical defrost systems are needed, which means higher heat recovery efficiencies, easier installation and more reliable operation.

The CORE

- Efficient transfer of heat and moisture
- No liquid is accumulated; no drain pan or defrost mechanism is required!
- Contaminated air is exhausted from the building, while the static plate core regulates extremes in humidity
- Industry best 10-year warranty

The Warranty

An S&P TR or TRC is protected by a 10-year core warranty (2 years on balance of the unit). This commitment - twice as long as coverage on the best wheel products - means with S&P you can just fit and forget.
Choosing the Right Size TR by Square Footage

*Based on square footage.*

If the space is up to:
- 1500 Sq. Ft. you need a **TR90/TR90G**
- 2700 Sq. Ft. you need a **TR130**
- 4000 Sq. Ft. you need a **TR200**
- 6000 Sq. Ft. you need a **TR300**

Choosing the Right Size TR or TRC by Air Handler Load

<table>
<thead>
<tr>
<th>Ton</th>
<th>Capacity 30% Outside Air Fraction in CFM</th>
<th>Model Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>120</td>
<td>TR130</td>
</tr>
<tr>
<td>1.6</td>
<td>192</td>
<td>TR200</td>
</tr>
<tr>
<td>2.0</td>
<td>244</td>
<td>TR300</td>
</tr>
<tr>
<td>2.5</td>
<td>299</td>
<td>TR300</td>
</tr>
<tr>
<td>3.0</td>
<td>360</td>
<td>TRC500</td>
</tr>
<tr>
<td>3.5</td>
<td>415</td>
<td>TRC500</td>
</tr>
<tr>
<td>4.0</td>
<td>490</td>
<td>TRC500</td>
</tr>
<tr>
<td>5.0</td>
<td>594</td>
<td>TRC800</td>
</tr>
<tr>
<td>6.8</td>
<td>810</td>
<td>TRC800</td>
</tr>
<tr>
<td>9.3</td>
<td>1,116</td>
<td>TRC1600</td>
</tr>
<tr>
<td>14.3</td>
<td>1,716</td>
<td>TRC1600</td>
</tr>
</tbody>
</table>
Residential/Light Commercial Energy Recovery Ventilators (ERVs)

TR Series Specifics

Models TR

**Standard Features**
- 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
- **10-year** industry best core warranty
- 5-year warranty on balance of unit

**Central Exhaust**

![Central Exhaust Diagram](image)

Note: ERV Blower may be operated separately from Furnace Blower

**General Exhaust**

![General Exhaust Diagram](image)

Note: ERV Blower may be operated separately from Furnace Blower

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EA: Exhaust Air to outdoors
OA: Outdoor Air intake
RA: Room Air to be exhausted
FA: Fresh Air to inside

10-YEAR Core Warranty

(Specify manual for additional installation details.)
Model TR90/TR90G

Residential/Light Commercial Energy Recovery Ventilators (ERVs)

Specifications

Ventilation Type: Static Plate, Heat and Humidity Transfer

Typical Airflow Range: 40-110 CFM

TR90 - Painted Case, Low Voltage Controls, Line Cord
TR90G - Galvanized Case, Line Voltage, No Line Cord

Unit may be mounted in any orientation and in heated or unheated locations

Number Motors: Two, 0.03 HP each, totally enclosed, thermally protected, 0.35A

V | Hz | Phase | Input Watts | FLA
---|---|---|---|---
120 | 60 | Single | 94 @ 69 CFM | 0.16

Control Voltage: 24 VAC

Filters: MERV 8, spun polyester media. 7-12” x 10-1/2” x 1”

Weight: 36 lbs (unit), 41 lbs (in carton)

Shipping Dimensions: 28-1/2” L x 21-1/2” W x 14-3/4” H

Options (controls for TR90, not compatible with TR90G):
- SPTL - Percentage Timer Control
- SPBL - Push Button Point-of-Use Control
- SFM Percentage Timer Control with Furnace Interlock
- SHW-20 - Dehumidistat Control

Performance

<table>
<thead>
<tr>
<th>Airflow CFM</th>
<th>Temp EFF%</th>
<th>Temp Winter%*</th>
<th>Total EFF% Summer*</th>
</tr>
</thead>
<tbody>
<tr>
<td>113</td>
<td>61</td>
<td>55</td>
<td>42</td>
</tr>
<tr>
<td>98</td>
<td>64</td>
<td>58</td>
<td>46</td>
</tr>
<tr>
<td>85</td>
<td>67</td>
<td>61</td>
<td>49</td>
</tr>
<tr>
<td>73</td>
<td>69</td>
<td>33</td>
<td>53</td>
</tr>
<tr>
<td>58</td>
<td>72</td>
<td>66</td>
<td>57</td>
</tr>
<tr>
<td>40</td>
<td>76</td>
<td>70</td>
<td>61</td>
</tr>
</tbody>
</table>

* Contact Factory for HVI certification report for complete certified rating.

Dimensions

<table>
<thead>
<tr>
<th>34” LINE CORD (TR90 ONLY)</th>
<th>INTERLOCK SWITCH</th>
<th>32 3/8” SERVICE ACCESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>FILTERS</td>
<td>6 1/4”</td>
<td>Ø 6” NOMINAL</td>
</tr>
<tr>
<td>OA</td>
<td>2 7/8”</td>
<td>Ø 8” NOMINAL</td>
</tr>
<tr>
<td>EA</td>
<td>11 3/4”</td>
<td>FORMED INLET RING</td>
</tr>
<tr>
<td>BLOWERS</td>
<td>11 5/8”</td>
<td>26V AC CONTROL TERMINAL</td>
</tr>
<tr>
<td>ENERGY TRANSFER CORE</td>
<td>5 3/4”</td>
<td>22 1/2”</td>
</tr>
</tbody>
</table>

EA: Exhaust Air to outdoors
OA: Outdoor Air intake
RA: Room Air to be exhausted
FA: Fresh Air to inside

10-YEAR Core Warranty

UL Listed

89S5

Residential/Light Commercial ERVs
Model TR130

Residential/Light Commercial Energy Recovery Ventilators (ERVs)

Specifications

Ventilation Type: Static Plate, Heat and Humidity Transfer

Typical Airflow Range: 50-140 CFM

Unit may be mounted in any orientation

Number Motors: One, 0.1 hp

<table>
<thead>
<tr>
<th>Airflow CFM</th>
<th>ESP in H₂O</th>
<th>Temp EFF%</th>
<th>Total EFF% Winter/Summer*</th>
</tr>
</thead>
<tbody>
<tr>
<td>79</td>
<td>0.60</td>
<td>78</td>
<td>73/60</td>
</tr>
<tr>
<td>104</td>
<td>0.50</td>
<td>75</td>
<td>69/55</td>
</tr>
<tr>
<td>126</td>
<td>0.40</td>
<td>72</td>
<td>66/50</td>
</tr>
<tr>
<td>137</td>
<td>0.30</td>
<td>71</td>
<td>64/48</td>
</tr>
<tr>
<td>153</td>
<td>0.20</td>
<td>68</td>
<td>61/45</td>
</tr>
<tr>
<td>165</td>
<td>0.10</td>
<td>67</td>
<td>59/43</td>
</tr>
</tbody>
</table>

Control Voltage: 24 VAC transformer / relay package with switched dry contacts

Filters: MERV 8, spun polyester media. 10-1/2" x 10-1/2" x 1"

Weight: 49 lbs (unit), 60 lbs (in carton)

Shipping Dimensions: 32" L x 21" W x 17-1/2" H (in carton)

Options:

- SPTL - Percentage Timer Control
- SPBL - Push Button Point-of-Use Control
- SFM - Percentage Timer Control with Furnace Interlock
- SHW-20 - Dehumidistat Control

Performance

Dimensions

Residential/Light Commercial Energy Recovery Ventilators (ERVs)

* Contact Factory for HVI certification report for complete certified rating.
Model TR200

Residential/Light Commercial Energy Recovery Ventilators (ERVs)

Specifications

Ventilation Type: Static Plate, Heat and Humidity Transfer

Typical Airflow Range: 100-200 CFM

Unit may be mounted in any orientation

Number Motors: One, 0.1 hp

<table>
<thead>
<tr>
<th>V</th>
<th>Hz</th>
<th>Phase</th>
<th>Input Watts</th>
<th>FLA</th>
</tr>
</thead>
<tbody>
<tr>
<td>120</td>
<td>60</td>
<td>Single</td>
<td>157 @ 181 CFM</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Control Voltage: 24 VAC transformer / relay package with switched dry contacts

Filters: MERV 8, spun polyester media. 10-1/2" x 21-3/4" x 1"

Weight: 70 lbs (unit), 82 lbs (in carton)

Shipping Dimensions: 32" L x 21-1/2" W x 29" H (in carton)

Options:

- SPTL - Percentage Timer Control
- SPBL - Push Button Point-of-Use Control
- SFM - Percentage Timer Control with Furnace Interlock
- SHW-20 - Dehumidistat Control

Dimensions

Performance

<table>
<thead>
<tr>
<th>Airflow CFM</th>
<th>ESP in H₂O</th>
<th>Temp EFF%</th>
<th>Total EFF% Winter/Summer*</th>
</tr>
</thead>
<tbody>
<tr>
<td>122</td>
<td>0.70</td>
<td>81</td>
<td>77/64</td>
</tr>
<tr>
<td>149</td>
<td>0.60</td>
<td>79</td>
<td>75/61</td>
</tr>
<tr>
<td>168</td>
<td>0.50</td>
<td>78</td>
<td>73/59</td>
</tr>
<tr>
<td>176</td>
<td>0.40</td>
<td>78</td>
<td>72/59</td>
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<tr>
<td>186</td>
<td>0.30</td>
<td>77</td>
<td>72/58</td>
</tr>
<tr>
<td>192</td>
<td>0.20</td>
<td>77</td>
<td>71/57</td>
</tr>
<tr>
<td>207</td>
<td>0.10</td>
<td>76</td>
<td>70/56</td>
</tr>
</tbody>
</table>

* Contact Factory for HVI certification report for complete certified rating.

Airflow CFM: 122, 149, 168, 176, 186, 192, 207

ESP in H₂O: 0.70, 0.60, 0.50, 0.40, 0.30, 0.20, 0.10

Temp EFF%: 81, 79, 78, 78, 77, 77, 76

Total EFF% Winter/Summer*: 77/64, 75/61, 73/59, 72/59, 72/58, 71/57, 70/56

Airflow CFM: 122, 149, 168, 176, 186, 192, 207

ESP in H₂O: 0.70, 0.60, 0.50, 0.40, 0.30, 0.20, 0.10

Temp EFF%: 81, 79, 78, 78, 77, 77, 76

Total EFF% Winter/Summer*: 77/64, 75/61, 73/59, 72/59, 72/58, 71/57, 70/56

Options:

- SPTL - Percentage Timer Control
- SPBL - Push Button Point-of-Use Control
- SFM - Percentage Timer Control with Furnace Interlock
- SHW-20 - Dehumidistat Control

Airflow CFM: 122, 149, 168, 176, 186, 192, 207

ESP in H₂O: 0.70, 0.60, 0.50, 0.40, 0.30, 0.20, 0.10

Temp EFF%: 81, 79, 78, 78, 77, 77, 76

Total EFF% Winter/Summer*: 77/64, 75/61, 73/59, 72/59, 72/58, 71/57, 70/56

* Contact Factory for HVI certification report for complete certified rating.
Model TR300

Residential/Light Commercial Energy Recovery Ventilators (ERVs)

Specifications

Ventilation Type: Static Plate, Heat and Humidity Transfer
Typical Airflow Range: 150-300 CFM
Unit may be mounted in any orientation
Number Motors: One, 0.2 hp

<table>
<thead>
<tr>
<th>V</th>
<th>Hz</th>
<th>Phase</th>
<th>Input Watts</th>
<th>FLA</th>
</tr>
</thead>
<tbody>
<tr>
<td>120</td>
<td>60</td>
<td>Single</td>
<td>315 @ 297 CFM</td>
<td>3.3</td>
</tr>
</tbody>
</table>

Control Voltage: 24 VAC transformer / relay package with switched dry contacts
Filters: MERV 8, spun polyester media. 10-1/2” x 21-3/4” x 1”
Weight: 72 lbs (unit), 85 lbs (in carton)
Shipping Dimensions: 32” L x 21-1/2” W x 29” H (in carton)

Options:
- SPTL - Percentage Timer Control
- SPBL - Push Button Point-of-Use Control
- SFM Percentage Timer Control with Furnace Interlock
- SHW-20 - Dehumidistat Control

Performance

<table>
<thead>
<tr>
<th>Airflow CFM</th>
<th>ESP in H₂O</th>
<th>Temp EFF%</th>
<th>Total EFF% Winter/Summer*</th>
</tr>
</thead>
<tbody>
<tr>
<td>170</td>
<td>1.0</td>
<td>78</td>
<td>73/59</td>
</tr>
<tr>
<td>191</td>
<td>0.9</td>
<td>77</td>
<td>71/57</td>
</tr>
<tr>
<td>215</td>
<td>0.8</td>
<td>75</td>
<td>69/55</td>
</tr>
<tr>
<td>256</td>
<td>0.7</td>
<td>73</td>
<td>66/51</td>
</tr>
<tr>
<td>277</td>
<td>0.6</td>
<td>71</td>
<td>65/49</td>
</tr>
<tr>
<td>295</td>
<td>0.5</td>
<td>70</td>
<td>63/47</td>
</tr>
<tr>
<td>311</td>
<td>0.4</td>
<td>69</td>
<td>62/46</td>
</tr>
</tbody>
</table>

* Contact Factory for HVI certification report for complete certified rating.

Dimensions

EA: Exhaust Air to outdoors
OA: Outdoor Air intake
RA: Room Air to be exhausted
FA: Fresh Air to inside

10-YEAR Core Warranty

Residential/Light Commercial Energy Recovery Ventilators (ERVs)
Series TR Controls

Residential/Light Commercial Energy Recovery Ventilators (ERVs)

**SPTL - Percentage Timer Control**
- Primary control for TR90, TR130, TR200 and TR300
- Runs unit an adjustable amount of time each hour
- Two wire, low voltage connection to TR
- Meets ASHRAE 62.2 continuous ventilation standards

**SPBL - Push Button Point-of-Use Control**
- Push button control turns on unit from bathrooms or other intermittent exhaust locations
- 20 minute run-time with one touch
- Push 2x for 40 or 3x for 60 minutes
- Two wire, low voltage connection to SPTL

**SFM - Percentage Timer Control with Furnace Interlock**
- Alternate primary control for TR90, TR130, TR200 and TR300
- Wires to TR unit and either thermostat or furnace control to turn on furnace blower
- Six wire, low voltage connection
- Meets ASHRAE 62.2 continuous ventilation standards

**SHW-20 - Dehumidistat**
- Rotary dial dehumidistat
- Turn the dial to set desired humidity level
- Designed for convenient installation in bathrooms, kitchen or laundry room
- Dehumidifies when inside air is more humid than the set point
- **Caution:** the outside air must be less humid than the indoor air for this to work.

**FT247 - Programmable Fan Timer**
- Provides 7 ON and 7 OFF events per day
- LCD display
- Rechargeable battery back-up
- Push button activation
TRC Series Specifics

Commercial Energy Recovery Ventilators (ERVs)

Models TRC

Standard Specifications and Features
- AHRI certified performance data for efficiency and cross leakage.
- UL tested flammability and smoke generation that meets NFPA 90A and 90B test standards for commercial applications.
- Easy installation and service.
- Easiest maintenance of any ERV
- 2 MERV-8 filters
- Non-Fused disconnect
- Transformer/relay package allowing simple on/off control
- Access doors for easy access to blowers, core and filters
- Integral mounting flange and hanging bracket system
- 2 Direct Drive, TEFC, Premium Efficient blower motors
- Fully insulated case
- Large cores for high efficiency
- No condensate pan or drain required
- 10-year industry best core warranty
- 2-year warranty on balance of unit

Heat and/or AC unitary product (furnace, air handler, fancoil, geothermal heat pump)

From interior spaces or scheduled exhaust, such as bathroom or locker rooms

EA: Exhaust Air to outdoors
OA: Outdoor Air intake
RA: Room Air to be exhausted
FA: Fresh Air to inside
Model TRC500

Commercial Energy Recovery Ventilators (ERVs)

Performance

<table>
<thead>
<tr>
<th>Airflow CFM</th>
<th>ESP in H₂O</th>
<th>Watts</th>
<th>Temp EFF%</th>
<th>Total EFF% Winter/Summer*</th>
</tr>
</thead>
<tbody>
<tr>
<td>225</td>
<td>1.25</td>
<td>335</td>
<td>81</td>
<td>76/66</td>
</tr>
<tr>
<td>338</td>
<td>1.00</td>
<td>420</td>
<td>77</td>
<td>71/61</td>
</tr>
<tr>
<td>380</td>
<td>0.90</td>
<td>470</td>
<td>75</td>
<td>69/59</td>
</tr>
<tr>
<td>450</td>
<td>0.65</td>
<td>550</td>
<td>73</td>
<td>66/56</td>
</tr>
<tr>
<td>540</td>
<td>0.25</td>
<td>640</td>
<td>70</td>
<td>62/52</td>
</tr>
<tr>
<td>575</td>
<td>0.00</td>
<td>690</td>
<td>69</td>
<td>61/51</td>
</tr>
<tr>
<td>600</td>
<td>-0.25</td>
<td>735</td>
<td>68</td>
<td>60/50</td>
</tr>
</tbody>
</table>

* At AHRI 1060 standard conditions
(see certified data on page 24 for core components.)
Note: Watts is for the entire unit.

Specifications

- Ventilation Type: Static Plate, Heat and Humidity Transfer
- Typical Airflow Range: 200-540 CFM
- AHRI 1060 Certified Core: One L85
- Airflow Rating Points (for AHRI): 450 CFM and 338 CFM
- Motors: One, 0.6 hp (Single Phase)

<table>
<thead>
<tr>
<th>V</th>
<th>Hz</th>
<th>Phase</th>
<th>FLA</th>
<th>Min. Cir. Amps</th>
<th>Max. Overcurrent Protection Device</th>
</tr>
</thead>
<tbody>
<tr>
<td>115</td>
<td>60</td>
<td>Single</td>
<td>7.0</td>
<td>8.8</td>
<td>15</td>
</tr>
<tr>
<td>208-230</td>
<td>60</td>
<td>Single</td>
<td>3.5</td>
<td>4.4</td>
<td>15</td>
</tr>
</tbody>
</table>

- Standard Features: Non-Fused Disconnect
- 24 VAC Transformer/Relay Package
- Filters: Two total, MERV 8, 2” pleated, 14” x 20” nominal size
- Weight: 141 lbs (unit), 160 lbs (in carton)
- 200 lbs (on pallet), up to 3 units on 40 lb pallet
- Shipping Dimensions: 48” L x 41” W x 18” H (in carton)
- 55” L x 42” W x 22” H (on pallet)
Model TRC500

Commercial Energy Recovery Ventilators (ERVs)

Dimensions

<table>
<thead>
<tr>
<th>View</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRONT VIEW WITH DOOR ON</td>
<td>33 7/8&quot; x 36 3/8&quot; x 16 3/8&quot;</td>
</tr>
<tr>
<td>TOP VIEW</td>
<td>34 1/8&quot; x 36 3/8&quot; x 16 3/8&quot;</td>
</tr>
<tr>
<td>LEFT VIEW</td>
<td>35 1/4&quot; x 36 3/8&quot; x 16 3/8&quot;</td>
</tr>
<tr>
<td>RIGHT VIEW</td>
<td>33 7/8&quot; x 36 3/8&quot; x 16 3/8&quot;</td>
</tr>
</tbody>
</table>

1.5" clearance required to remove door

POWER WIRING

- Inlet: 7/8" dia.

CONTROL WIRING

- Inlet: 7/8" dia.

INLET: 7/8" dia.

EA: Exhaust Air to outdoors
OA: Outdoor Air intake
RA: Room Air to be exhausted
FA: Fresh Air to inside

Scale: 1" = 24"

Do not scale drawing

RenewAire LLC

Customer Approvals
TRC500 DIMS OCT12

SHEET 1 OF 1
Model TRC800

Commercial Energy Recovery Ventilators (ERVs)

Specifications

Ventilation Type: Static Plate, Heat and Humidity Transfer

Typical Airflow Range: 250-925 CFM

AHRI 1060 Certified Core: One L125-00

Airflow Rating Points (for AHRI): 750 CFM and 563 CFM

Number Motors: Two direct drive blower/motor packages

<table>
<thead>
<tr>
<th>V</th>
<th>Hz</th>
<th>Phase</th>
<th>FLA (per motor)</th>
<th>Min. Cir. Amps</th>
<th>Max. Overcurrent Protection Device</th>
</tr>
</thead>
<tbody>
<tr>
<td>115</td>
<td>60</td>
<td>Single</td>
<td>9.0</td>
<td>20.3</td>
<td>25</td>
</tr>
<tr>
<td>208-230</td>
<td>60</td>
<td>Single</td>
<td>4.5</td>
<td>10.1</td>
<td>15</td>
</tr>
</tbody>
</table>

Standard Features: Non-Fused Disconnect

24 VAC Transformer/Relay Package

Filters: Two total, MERV 8, 2" pleated, 20" x 20" nominal size

Weight: 211 lbs (unit), 300 lbs (shipping weight, on pallet)

Shipping Dimensions: 62" L x 48" W x 40" H

Performance

![Performance Graph]

(see certified data on page 24 for core components.)

Airflow Performance

<table>
<thead>
<tr>
<th>Motor HP</th>
<th>0.0</th>
<th>0.25</th>
<th>0.5</th>
<th>0.75</th>
<th>0.9</th>
<th>1.25</th>
<th>1.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase</td>
<td>CFM</td>
<td>CFM</td>
<td>CFM</td>
<td>CFM</td>
<td>CFM</td>
<td>CFM</td>
<td>CFM</td>
</tr>
<tr>
<td>0.75</td>
<td>970</td>
<td>925</td>
<td>860</td>
<td>795</td>
<td>750</td>
<td>635</td>
<td>480</td>
</tr>
<tr>
<td>Single</td>
<td>1,490</td>
<td>1,375</td>
<td>1,270</td>
<td>1,160</td>
<td>1,090</td>
<td>950</td>
<td>825</td>
</tr>
</tbody>
</table>

Note: Watts is for the entire unit (two motors).
Model TRC800

Commercial Energy Recovery Ventilators (ERVs)

Dimensions

- **EA:** Exhaust Air to outdoors
- **OA:** Outdoor Air intake
- **RA:** Room Air to be exhausted
- **FA:** Fresh Air to inside

**Overall Dimensions:**
- **Overall:** 27 3/4" x 35 7/8" x 9 3/8"
- **Minimum Service Area:** 49 1/8" Case x 54 3/4" Overall

**Service Area:**
- 1.5" clearance required to remove door

**Control Wiring Inlet:**
- 7/8" dia.
- Control Wiring Inlet 7/8" dia.

**Power Wiring Inlet:**
- 7/8" dia.
- Power Wiring Inlet 7/8" dia.

**Alt. Power Wiring Inlet:**
- 7/8" Dia.
- Alt. Power Wiring Inlet 7/8" Dia.

**Alt. Control Wiring Inlet:**
- 7/8" Dia.
- Alt. Control Wiring Inlet 7/8" Dia.

**Other Dimensions:**
- **LEFT VIEW:**
  - 12" Dia. typical
  - 27 7/16" x 9" x 8 5/8"
- **RIGHT VIEW:**
  - 10 3/8" x 9 1/8" x 35 7/8"
- **TOP VIEW:**
  - 40 5/8" Minimum Service Area
  - 49 1/8" Case

**Front View with Door On:**
- 12 7/8" x 8 5/8" x 9"
TRC1600

Specifications

Ventilation Type: Static Plate, Heat and Humidity Transfer

Typical Airflow Range: 500-2,025 CFM

AHRI 1060 Certified Core: Two L125-00

Airflow Rating Points (for AHRI): 1,500 CFM and 1,126 CFM

Number Motors: Two belt drive blower/motor packages with adjustable sheaves

<table>
<thead>
<tr>
<th>Drive HP</th>
<th>V</th>
<th>Hz</th>
<th>Phase</th>
<th>FLA (per motor)</th>
<th>Min. Cir. Amps</th>
<th>Max. Overcurrent Protection Device</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5</td>
<td>115</td>
<td>60</td>
<td>Single</td>
<td>15.2</td>
<td>34.2</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>208-230</td>
<td>60</td>
<td>Single</td>
<td>8.2-7.6</td>
<td>18.5</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>208-230</td>
<td>60</td>
<td>Three</td>
<td>4.6-4.8</td>
<td>10.8</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>460</td>
<td>60</td>
<td>Three</td>
<td>2.4</td>
<td>5.4</td>
<td>15</td>
</tr>
</tbody>
</table>

Standard Features: Totally Enclosed Premium Efficiency Motors

Motor Starters, Non-fused Disconnect

24 VAC Transformer/Relay Package

Filters: Four total, MERV 8, 2” pleated, 20” x 20” nominal size

Weight: 414 lbs (unit), 505 lbs (shipping weight, on pallet)

Shipping Dimensions: 72” L x 48” W x 40” H

Airflow Performance

<table>
<thead>
<tr>
<th>Motor HP</th>
<th>Blower RPM</th>
<th>Turns Open</th>
<th>External Static Pressure (in w.g.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>SCFM</td>
<td>BHP</td>
<td>SCFM</td>
</tr>
<tr>
<td>1.5</td>
<td>1148</td>
<td>4</td>
<td>1592</td>
</tr>
<tr>
<td></td>
<td>1009</td>
<td>2</td>
<td>1809</td>
</tr>
<tr>
<td></td>
<td>1460</td>
<td>0</td>
<td>2025</td>
</tr>
</tbody>
</table>

Note: Brake Horse Power (BHP) is for one blower motor package only.
Model TRC1600

Commercial Energy Recovery Ventilators (ERVs)

**Dimensions**

- EA: Exhaust Air to outdoors
- OA: Outdoor Air intake
- RA: Room Air to be exhausted
- FA: Fresh Air to inside

**Front View Right View**

- EA: Exhaust Air to outdoors
- FA: Fresh Air to inside
- OA: Outdoor Air intake
- RA: Room Air to be exhausted

**Isometric View**

- 14" X 24" Inlets
- 36 3/4" Case

**Top View**

- 50 1/2" Mounting Holes
- 41 3/4" Case
- 37 3/8" Mounting Holes

**Left View**

- 14" X 24" Outlets
- Ø 7/8" Power Wiring

**Front View**

- 51 3/8" Case

**Right View**

- 34 3/4" Case
- 14" X 24" Inlets

**Power Wiring**

- Ø 7/8" Control Wiring

---

26
These controls are intended to turn S&P commercial energy recovery ventilation systems on and off at appropriate times. Specification, installation and set-up is an easy process. The TRC units come standard with a 24 volt transformer/relay package for easy interface with all TR controls, and any others that provide dry contact outputs.

It is not necessary that S&P controls be used to operate S&P units. A wide range of controls or building automation systems may be used. Additionally, TRC800 units are “VFD Ready” as a standard feature.

The S&P residential (TR) units have their own line of compatible controls that are not intended to operate S&P commercial (TRC) units.

**STC7D-W - Digital Time Clock - Wall Mount**
- Up to 8 on/off cycles per day or 56 per week
- 24 VAC power requirement
- Battery back-up
- Fits any 4” x 4” electrical box

**SMC-C - Motion (Occupancy) Control - Ceiling Mount**
- Passive infrared sensor
- Adjustable time-off delay to 30 minutes
- 24 VAC power requirement
- Covers up to 1500 sq. ft. floor space
  *walking motion coverage up to 22 foot radius*

**SCO2-W - Carbon Dioxide Control - Wall Mount**
- Adjustable control from 600-2000 PPM
- Digital display
- 24 VAC power requirement
- Computer/BAS interface for information and control
- Self calibrates during periods of low occupancy

**SHW-20 - Dehumidistat**
- Rotary dial dehumidistat
- Turn the dial to set desired humidity level
- Designed for convenient installation in bathrooms, kitchen or laundry room
- Dehumidifies when inside air is more humid than the set point
- **Caution**: the outside air must be less humid than the indoor air for this to work.

**FT247 - Programmable Fan Timer**
- Provides 7 ON and 7 OFF events per day
- LCD display
- Rechargeable battery back-up
- Push button activation
When to Use a TR or HR*

Heat Recovery and Energy Recovery Ventilators

Cold / Very Cold
Marine
Hot-Dry / Mixed-Dry
Mixed-Humid
Hot-Humid

Models HR100V, HR160H, and HR220H

Models TR90/TR90G
Models TR130, TR200, and TR300
Model TRC500
Model TRC800
Model TRC1600

Cold/Very Cold = HR/TR/TRC
Marine = HR/TR/TRC
Hot-Dry/Mixed-Dry = HR/TR/TRC
Mixed-Humid = HR/TR/TRC
Hot-Humid = TR/TRC

*These are S&P’s suggestions for our models HR, TR and TRC.
ERV/HRV Summary

Heat Recovery and Energy Recovery Ventilators

Q: Energy Recovery Ventilators (ERV) and Heat Recovery Ventilators (HRV) both moderate extremes in ventilation air temperature so what is the difference?

A: ERVs
• Transfer BOTH heat AND humidity
• Use enthalpic core
• S&P’s TR and TRC are ERVs

HRVs
• Transfer ONLY heat
• Use aluminum core or simple plastic cores

Q: Can ERVs be used in climates subject to cold winters?

A: Yes! Because ERVs transfer both heat and humidity they are the perfect choice for any climate. In the winter ERVs:
  • Warm outdoor air close to room temperature
  • Use heat that would otherwise be lost with the exhaust air.
  • Transfer water vapor to moderate extremes in humidity levels
  • Help prevent moisture damage or over-drying of the home.

Q: Why are ERVs better than HRVs?

A: HRVs and ERVs are similar in that they both:
  • Improve Indoor Air Quality
  • Moderate extremes in ventilation temperature
  • Use heat that would otherwise be lost with the exhaust air in the winter
  • Provide necessary fresh air while pre-cooling in the summer

ONLY ERVs have the ability to transfer water vapors or moisture so they:
  • Help prevent over-drying of the home in colder seasons
  • Lessen the demand on the air-conditioning system in warmer seasons
  • Are typically 3x more energy efficient in the summer than products (or units) that transfer only heat (HRVs)

Q: Why are S&P’s TR and TRC the Ultimate ERVs?

A: S&P’s TR and TRCs provide the same benefits as other ERVs on the market. Major advantages include:
  • More heat transfer than most HRVs
  • More humidity control than other plate exchangers
  • Simplicity and positive airstream separation not offered by wheel type ERVs
  • 10-year core warranty
About S&P

S&P was founded in the locality of Ripoll (Spain) in 1951 by the engineers Eduard Soler and Josep Palau. From the beginning they had the clear vision that the future would depend on the expansion abroad, at first towards Europe, then to continue in the rest of the world markets.

Philosophy
The principle philosophy on which S&P was based on and continues to base its projects are:

Own technology: Key to any S&P projects, the concept has to be strong and consolidated over time. It is necessary that it is based on creativity and innovation to provide products, that offer benefits to the market. S&P has registered, throughout its history, over 140 patents, on more than 20 industrial models and some 120 on utility models.

Internationalization and Growth: It was clear that the guarantee of the future of the company was to open up to the world and to enter into new markets with high levels of competitiveness. This requires both a constant improvement of the existing products and development of new innovative designs. At present S&P is a world leader in ventilation, with production centers in Europe, America and Asia. A powerful distribution structure, through subsidiaries and exclusive distributors, allows S&P to be present in all the world markets, giving coverage and excellent service.

Self-financing: One of the strengths of S&P has been the constant growth and the policy of reinvestment of profits in a continuous technology improvement in the field of research & development, production and commercialization. This has allowed S&P to be a self-financed company with total independence in the decision making.

Research: In the R+D+I department, more than 60 engineers and technicians, equipped with the most modern design systems, work to obtain products with the best features. Sophisticated software allows the simulation of the behavior of the equipment already in the process of design. The goal is clear: A commitment to our customers to achieve the quality levels they expect from us.

Basic Pillars
On the philosophical principles of the project of S&P, there are some basic pillars on which the company is sustained:

Personal development: At S&P we promote the human factor encouraging teamwork, the contribution of ideas, internal promotion and training. We encourage the delegation of responsibilities, giving confidence and full respect of the individual with the aim of ensuring that people feel part of a common project and are reflected by the Company’s values.

Excellence in the management: Factors we consider fundamental are dedication, honesty, self demand, and determination to do all things well, to achieve the levels of quality and service required by our customers.

Product: Today the S&P catalog offers a range of ventilation products, both commercial and residential, with solutions for every need. With constant development work to ensure our customers and end users, not only the choice of the best model, but also the required design for ease of installation, and a full guarantee.

Quality: At S&P the contribution to the final quality begins in the design of the products. From that point on, quality remains at the center of the development throughout the company, finishing in the after-sales service. For this reason, our company is recognized all over the world for its high level of reliability of all the products offered in our catalog.

Respect for the environment: A policy that was not respectful with the environment would be incompatible with the S&P philosophy. Our actions today implicates us deeply in the legacy that we are going to leave our children.
About S&P

Customer Focus

In a market as competitive as the current one it is simply not enough to produce excellent quality. A company should offer products and a wide range of services for its customers and consultants. At S&P this principle is very clear. This is why we have salesmen with high technical skills, a highly trained and motivated customer service team, and a range of technologically advanced tools available to our customers to make finding, purchasing and servicing S&P fans as easy as possible.

Industry Leading Online Fan Selection Program
Optisizer2 is a state-of-the art fan selection program designed by S&P to help professionals choose the most suitable product for every case. Optisizer2 allows our customers to obtain product information including submittal drawings, detailed fan performance and typical specifications.

The program allows a user to follow a project from the initial fan selection, through the bidding and submittal phases, after which they can place their order in the program, and finally track their order all the way to the delivery of the project to the final destination. As an online based program our customers can complete their fan projects from anywhere in the world.

Mobile App to Find Fan Information On-The-Go
S&P’s Fans to Go mobile app was designed to let you easily find the S&P Fan you need anytime, anywhere. In the app you can use the Model Search by entering either a competitor’s model or S&P model to get the best possible results for your search. Once you find the model you need you can link to the catalog pages, installation instructions and product videos.

If you are ready to find out more information, get a quote, or purchase a fan, you can use the Distributor Locator to find the closest S&P distributor based on your current location.

The S&P Fans to Go mobile app is available for both Apple iOS and Android OS. Search “S&P Fans to Go” in the App Store or Google Play.

Comprehensive Websites for Everything S&P
The S&P websites (www.solerpalau-usa.com & www.solerpalaucanada.com) were designed to make finding fan information as quick as possible. You can easily find the fan model you are looking for and download catalog pages, installation instructions and product videos directly from the sites.

Our websites are your source for the latest code and application information and we have detailed explanations for how S&P products can help solve your ventilation problems.

The website also has a wide range of product resources such as product comparisons, warranty information, white papers and links to outside sources for both residential and commercial products.