

# CARNES®

## ENERGY RECOVERY



**Green Energy Around the Globe**  
*Your Source for Energy Recovery Solutions.*

## Carnes Energy Recovery

Carnes, as leader in providing HVAC solutions, recognized over 50 years ago that energy conservation and equipment efficiency via Energy Recovery technology is the key to providing acceptable indoor air quality through outside air ventilation. A pioneer of energy Recovery wheels, no other manufacturer can boast a record of over 50 years of continuously providing Energy Recovery solutions to the commercial work place.

### Benefits of Energy Recovery Technology:

**Energy Savings:** The energy recovery unit preconditions the outside air by exchanging heat and moisture from the outside air with the exhaust air at an efficiency that can approach 80%, saving significant energy for the building owner. In addition, the outside air cooling and heating equipment can be downsized resulting in a project cost reductions. Enthalpy wheels provide the maximum benefit in climates where the outside moisture load is a significant portion of the cooling load. The recovery core units typically are used in installations where reduced operational attention is desired and the outside air heating load predominates. The payback of using energy recovery is usually 2 years or less, and often results in instant payback.

**LEED Credits:** Energy Recovery can provide credits in the EA and EQ Categories toward LEED certification.

**ASHRAE Guidelines:** Carnes Energy Recovery equipment allows the design engineer to meet ASHRAE Guidelines for energy and ventilation. ASHRAE Standard 90.1 recommends when to use energy recovery, and recommends a minimum recovery total effectiveness of 50% or more. ASHRAE Standard 189.1 for high performance buildings targets a 30% energy reduction over 90.1, and recommends a minimum total recovery effectiveness of 60%. Energy Recovery equipment also minimizes the energy impact of complying with the ventilation requirements of ASHRAE Standard 62.1.

**Certifications:** Carnes Energy Recovery Equipment is AHRI 1060 certified for your assurance of energy recovery performance. This is often required for utility and tax rebates offered in the various states and municipalities. UL listing assures electrical safety on these units. Energy exchangers are tested and conform to NFPA-90A requirements for flame spread and smoke generation.

**Ease of Design:** Carnes Energy-C-Lect Software provides an easy way to select and size the various energy recovery models for the requirements of a particular project. A full submittal is generated by the program.

**Ease of Installation and Maintenance:** Carnes Energy Recovery equipment is designed for easy installation, and is supplied complete with lifting lugs, single point power connection, mounted disconnect, complete electrical protection and controls. Ease of maintenance is assured with high quality design and construction combined with easy access to consumable and adjustable components. Carnes offers standard warranty of 5 years on the recovery wheel, 1 year on the unit, with up to 5 years on both available. The recovery core units offer 3 year to 10 year core warranty, 2 year unit warranty.

**Technology:** Carnes Energy Recovery Wheel units utilize a highly efficient 3 angstrom molecular sieve desiccant that provides very high enthalpy recovery effectiveness and high water selectiveness for minimum cross contamination. Rugged corrugated aluminum media construction with integral corrosion protection and media edge strengthening assures maintenance free operation and long life.

Carnes Energy Recovery Core technology provides minimum moving parts and cross contamination with sensible and optional latent recovery.

**Applications:** Energy Recovery Products may be used as stand-alone equipment to provide fresh air with optional supplemental heating and cooling. Or they may be attached to other air handling equipment to precondition the outside air supply to those units. Typical comfort-to-comfort applications include hospitals, nursing homes, schools, animal laboratories, schools, hotels/motels, offices, and prisons. An extensive list of projects that have successfully used Carnes Energy Recovery products is available.

*Provide your projects with the benefit of Carnes 50 years of Energy Recovery results and performance!*

# ENERGY RECOVERY VENTILATORS

## Model WEHC Enthalpy Wheel

100% Outside Air

300 to 8,000 CFM

1.5 in wg External Static Pressure

### Features/Options

- AHRI 1060 certified for performance assurance
- 4 standard duct arrangements
- Removable lift off hinged access doors
- Outdoor or interior installation
- Belt drive forward curve fans w/vibration isolation
- Single point power connection with NEMA 3R disconnect for ease of installation
- Foil faced 1" insulation

### Control options:

- Economizer controls, temperature or enthalpy
- Variable speed wheel for supply air temperature control and low speed defrost
- Defrost options: preheat, exhaust only
- Variable speed fan drives
- Microprocessor controls with BACnet, LonWorks
- CO2 sensor, smoke detector, rotation detector
- Fan current monitors, airflow gages
- Dirty filter switches, 7 day time clock, remote panel, rotation detector

MERV8 filters, 2", optional MERV13

### Cabinet options:

- Double wall, GFI outlet, duct flanges
- Intake hood w/aluminum moisture eliminators
- Motorized dampers, low leakage and insulated
- Exterior paint finish
- Roof curbs, 8" or 14" high
- Transition curbs for retrofit to old model WVB Energy Recovery Ventilators
- LEEDs compliant packaging

### Warranty:

Standard 5 year wheel, 1 year unit  
Optional 5 year wheel and unit



Model WEHC Energy Recovery Ventilators provide affordable outside ventilation by combining an exhaust fan, make-up air handler and Carnes Energy Recovery Wheel into a compact package that minimizes capital investment and maximizes payback for heating and cooling equipment. Units available for both inside and outside mounting.

### Benefits

- Low investment with maximum payback
- Easy to use in new construction or renovation
- Flexible, convenient installation and startup

Size	CFM	DIMENSIONS LISTED IN INCHES (Millimeters)			
		Length	Width	Height	Lbs. (Kg)
01	300-700	49 (1247)	32 (813)	32 (813)	550 (249)
02	600-1700	58 (1473)	46 (1168)	38 (965)	950 (431)
03	1200-2800	70 (1778)	54 (1372)	49 (1247)	1200 (544)
04	1550-4100	72 (1829)	54 (1372)	55-1/2 (1410)	2000 (907)
06	2450-6500	80 (2032)	72 (1829)	67-1/2 (1715)	2400 (1089)
08	3000-8000	87-1/2 (2223)	78 (1981)	72-1/2 (1842)	2500 (1134)



## ENERGY RECOVERY PLATE VENTILATORS

### Model WPDB

Direct Drive 200 to 1,200 CFM

### Model WPBB

Belt Drive 500 to 4,000 CFM

1.5 in wg External Static Pressure  
Commercial Institutional

**AHRI 1060 Certified for Performance Assurance!**

Now you can offer ERV's with Energy Recovery cores optimized for all climates with fewer moving parts.

- Low profile sizes for airflows 200 to 4,000 CFM
- Indoor and outdoor models
- High efficiency enthalpy cores for humidity recovery
- Complete air stream separation
- Reduced maintenance from no moving parts

#### Features/Options

##### WPDB Direct Drive:

- Prepainted steel cabinet/foil faced insulation
- Direct drive backward curved fans
- For indoor installation only
- 120 VAC power/24 VAC control voltage
- 1" filter options: washable aluminum, MERV8, charcoal, MERV13
- Defrost options: exhaust only, recirculation damper
- Compatible with various control options

**Model C Series:** semicustom units up to 10,500 CFM are available with optional bypass, recirculation, electric or hot water preheat, DX or chilled water cooling, hot water or electric post-heat, BACnet controls, fan VFD's, BI fans.



#### WPBB Belt Drive:

- Galvanized steel 1" double wall, lift off access doors, optional paint
- Belt drive forward curved fans with vibration isolation
- Indoor or outdoor installation
  - Horizontal or vertical duct connections
  - Optional insulated motorized dampers
- Full electrical protection with non-fused NEMA 4 disconnect, optional fused
  - Optional TEFC motors and fan VFD's
- 2 inch MERV8 supply and exhaust filters
  - Optional MERV13 supply filters
  - Optional dirty filter contacts
- Defrost options: exhaust only defrost, electric preheat
  - Pool option for additional corrosion protection

#### Warranty:

Core - limited 3 to 10 year

Unit - limited 2 year

DIMENSIONAL CHART					
Model	Airflow (CFM)	Length	Width	Height	Wt. (Lbs.)
WPDB07	200-700	41-3/4	32-1/8	23-7/8	150
WPDB11	300-1200	47-1/4	41-3/4	23-7/8	185
WPBB10	500-1000	62	30-5/8	40-3/8	550
WPBB20	1000-2000	68	39	40-3/8	625
WPBB30	2000-3000	68	63	40-3/8	875
WPBB40	3000-4000	62	82-1/2	40-3/8	1075



## ENERGY RECOVERY MINI SYSTEM

### Model WM\_A

700 to 11,000 CFM

3 in wg External Static Pressure

Optional Heating/Cooling



#### Features/Options

- AHRI 1060 certified for performance assurance.
- Painted galvanized steel cabinet for indoor or outdoor installation.
- 6 standard duct arrangements with custom arrangements available.
- Belt drive forward curved fans w/vibration isolation.

#### Cooling options:

- Split DX • Chilled water

#### Heating options:

- Electric heat - SCR • Hot water
- Indirect gas furnace - modulating control

#### Control options:

- Economizer controls, temperature or enthalpy
- Variable speed wheel for supply air temp control and low speed defrost
- Defrost options including preheat, exhaust only
- Variable speed fan drives
- Microprocessor controls w/BACnet, LonWorks
- CO2 sensor, smoke detector, rotation detector
- Fan current monitors, airflow gages
- Dirty filter switches, time clock, remote panel

#### MERV8 filters

- Option: MERV13

#### Cabinet options:

- Double wall, 1" or 2"
- Intake hood w/aluminum moisture eliminators
- Motorized dampers, low leakage & insulated
- Recirculation damper for unoccupied mode
- Roof curbs, 8" or 14" high
- Transition curbs for retrofit to old WV ventilators
- LEEDS compliant packaging

Custom sizes up to 13,000 CFM are available

#### Warranty:

- Standard 5 year wheel, 1 year unit
- Optional 5 year unit

Carnes Energy Recovery Mini System provides affordable preconditioned ventilation air, flexible design and multiple supplemental heating/cooling options.

#### Benefits

- Full energy recovery wheel benefits from enthalpy media with 3Å molecular sieve desiccant

Unit Size	CFM Range	DIMENSIONS LISTED IN INCHES (Millimeters)					
		Length		Height	Width	Weight Lbs. (Kg)	
		W/WA w/o Coils	Max.* w/Coils			without Coils	with Coils
WM_A03	700-2900	60 (1524)	108 (2743)	47-1/2 (1206)	44 (1118)	1300 (590)	1550 (703)
WM_A06	1740-5220	72 (1829)	120 (3048)	57-1/2 (1460)	54 (1372)	1600 (726)	1860 (844)
WM_A09	2800-7500	80 (2032)	128 (3251)	69-1/2 (1765)	66 (1676)	2100 (953)	2700 (1225)
WM_A14	4300-11000	102 (2591)	150 (3810)	83-1/2 (2121)	80 (2032)	3300 (1497)	4180 (1896)

\*Gas furnace adds additional length and weight.



**Gas Furnaces now available!**

## Carnes Energy Recovery Wheels

(5,000 to 41,500 CFM)

Carnes Energy Recovery Wheels feature a water selective permanently bonded desiccant coating on self-cleaning corrugated aluminum media.

### AVAILABLE OPTIONS INCLUDE:

- Enthalpy media, sensible only media, and corrosion protection options
- Segmented rotors and cassettes for constrained space installations
- Replacement rotors/media for Carnes, ENRECO, Wing, and others
- Complete wheel variable speed, economizer control, frost control, and accessory options



## Carnes Energy Recovery Systems

(5,000 to 36,000 CFM)

Carnes Energy Recovery Systems incorporate Carnes Energy Recovery Wheel savings of up to 83% recovery with the advantages of a factory assembled walk-in air handler. Features include steel or aluminum insulated double wall cabinets, corrosion protective coatings and a complete selection of filtration, heating, cooling, recirculation, operating modes, dehumidifier heat pipes and integral or microprocessor controls.



## Carnes Programmable Controller

Carnes is happy to release the all new programmable controller for Energy Recovery units. The controller has the capability to operate as a stand alone device or to be integrated with a Building Management System (BMS). The programmable controller has extreme flexibility for optimizing the Energy Recovery Ventilator either at the unit or remotely. Contact Carnes for more information.

### Technical specifications:

- Power supply: 24 Vac ( $\pm 15\%$ ), 50/60 Hz
- Power input: 40 VA or 15 W
- Operating conditions: -13 to 158°F, 90% RH



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