FläktGroup®

SEMCO®

ENERGY EFFICIENT

AIR QUALITY

EP SERIES

PACKAGED ENERGY RECOVERY SYSTEM SALES BROCHURE



ULTIMATE PERFORMANCE IN TRANSFER OF TOTAL ENERGY

PRE-CONDITIONER AND CONDITIONED UNITS

The FläktGroup® SEMCO® Energy Package (EP) system can be used to precondition outdoor air to conventional air handling systems or as an integrated system. With FläktGroup® SEMCO®'s EP, expect quality humidity-controlled heating and cooling that the competition struggles to match.

The FläktGroup® SEMCO® EP system offers the ultimate performance in the transfer of both latent and sensible total energy. Latent energy, often called "hidden energy," is the energy generated, while the temperature is held constant, right before matter changes state—for example liquid (water) to gas (air). As a result, water molecules in the air increase or decrease affecting the amount of moisture held in the air, also known as relative humidity. Relative humidity can affect how cool or warm the air feels to the occupants. The term latent cooling load refers to the wet bulb temperature. Sensible energy is the radiant temperature that occupants are able to feel and can be measured by a thermometer. The term sensible cooling load, refers to the dry bulb temperature. The FläktGroup® SEMCO® EP optimizes both—saving you money.

Core to the EP's performance is FläktGroup® SEMCO®'s exclusive True 3Å® wheel. The technologically advanced True 3Å® is the performance industry leader for energy recovery wheels. This aluminum, desiccant wheel leverages the return air and outside air to provide exceptional indoor air temperature and humidity control—creating a very comfortable, consistent environment. The True 3Å® wheel provides clean, healthy air—rejecting 99.95% airborne contaminants. It is reliable, safe, and low maintenance—lasting years longer than competitors. The EP system featuring the True 3Å® wheel is ideal for critical applications, such as healthcare and laboratory use as well as casinos, schools, public buildings, offices, and more.

FläktGroup® SEMCO®'s EP air treatment system features standard plenum fans which are compact and deliver high air volumes consistently without turbulence. Alternatively available are energy savings EC fans which are quiet and efficient. Both allow for high performance, high comfort environments.

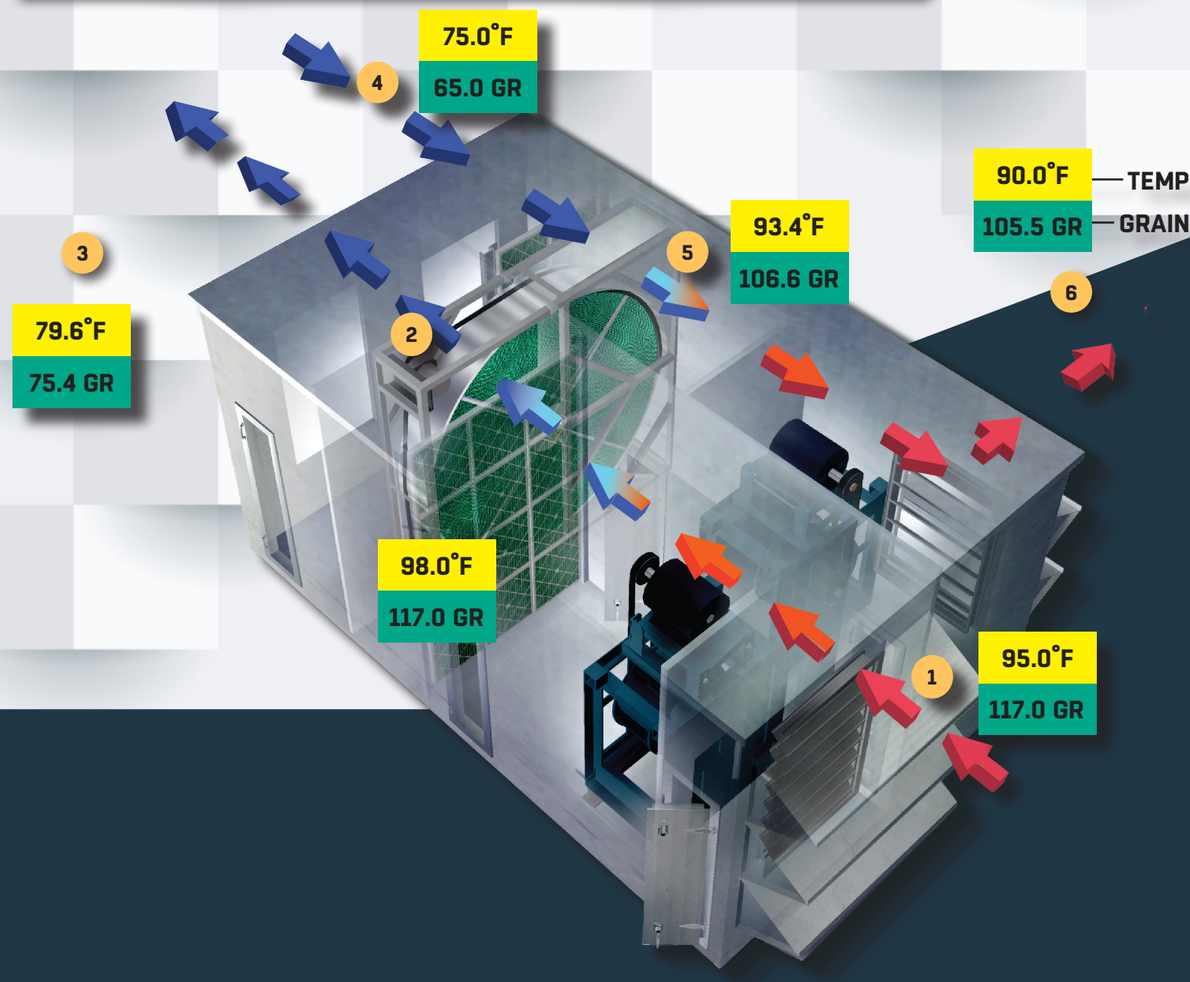
FläktGroup® SEMCO®'s EP is equipped with insulated structural panels which provide a quality construction without compromising on performance. In addition, the EP has an extensive list of high-quality optional components.

FläktGroup® SEMCO®'s EP system is a reliable, low-maintenance unit with a long lifespan, which can save money now and over time. FläktGroup® SEMCO® offers decades of industry expertise and surpasses certified industry standards.



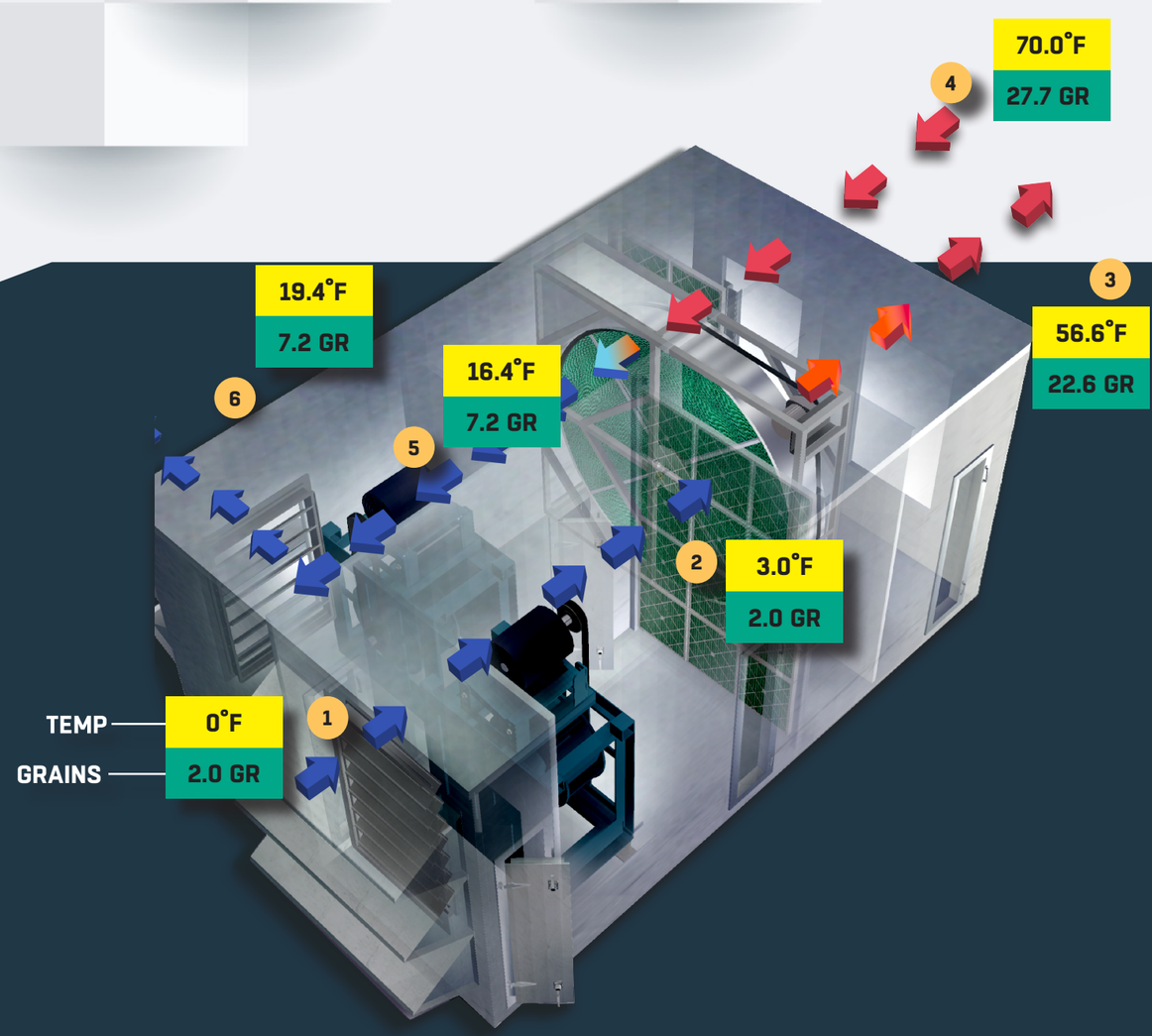
HOW IT WORKS

EP PRE-CONDITIONER



EP - COOLING SEASON

1. Hot and humid outside air is drawn in.
2. Fresh air is blown in through the slowly rotating True 3Å® energy recovery wheel. The desiccant - coated fluted media captures heat and moisture from the outdoor side and transfers it to the exhaust side.
3. The cooled and dehumidified air enters the HVAC system or is delivered directly to the occupied space.
4. Cool, dry return air that is exhausted from the building enters the EP Series energy recovery system.
5. As return air passes through the True 3Å®, it removes the heat and humidity captured by the wheel from the fresh air stream.
6. Warm, humidified exhaust air is blown out.

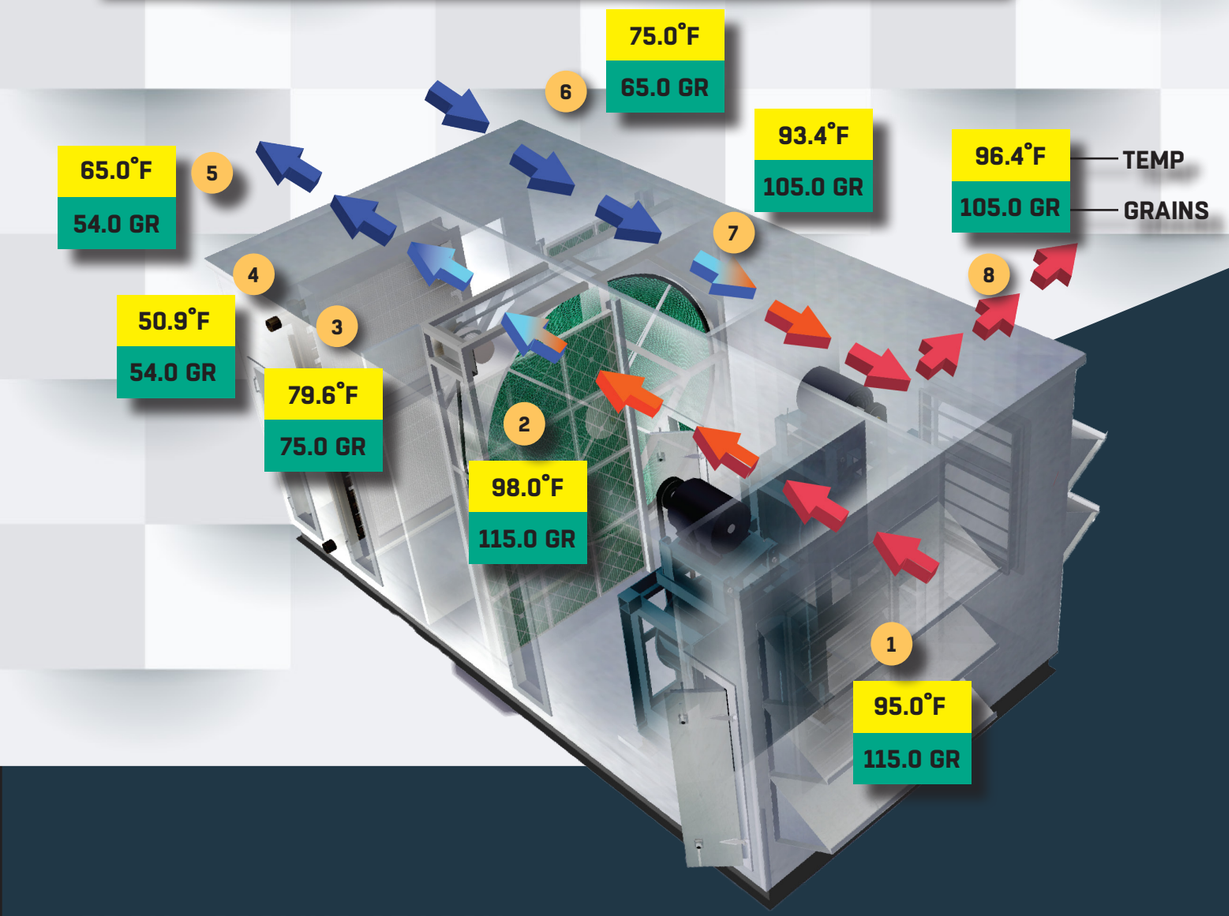


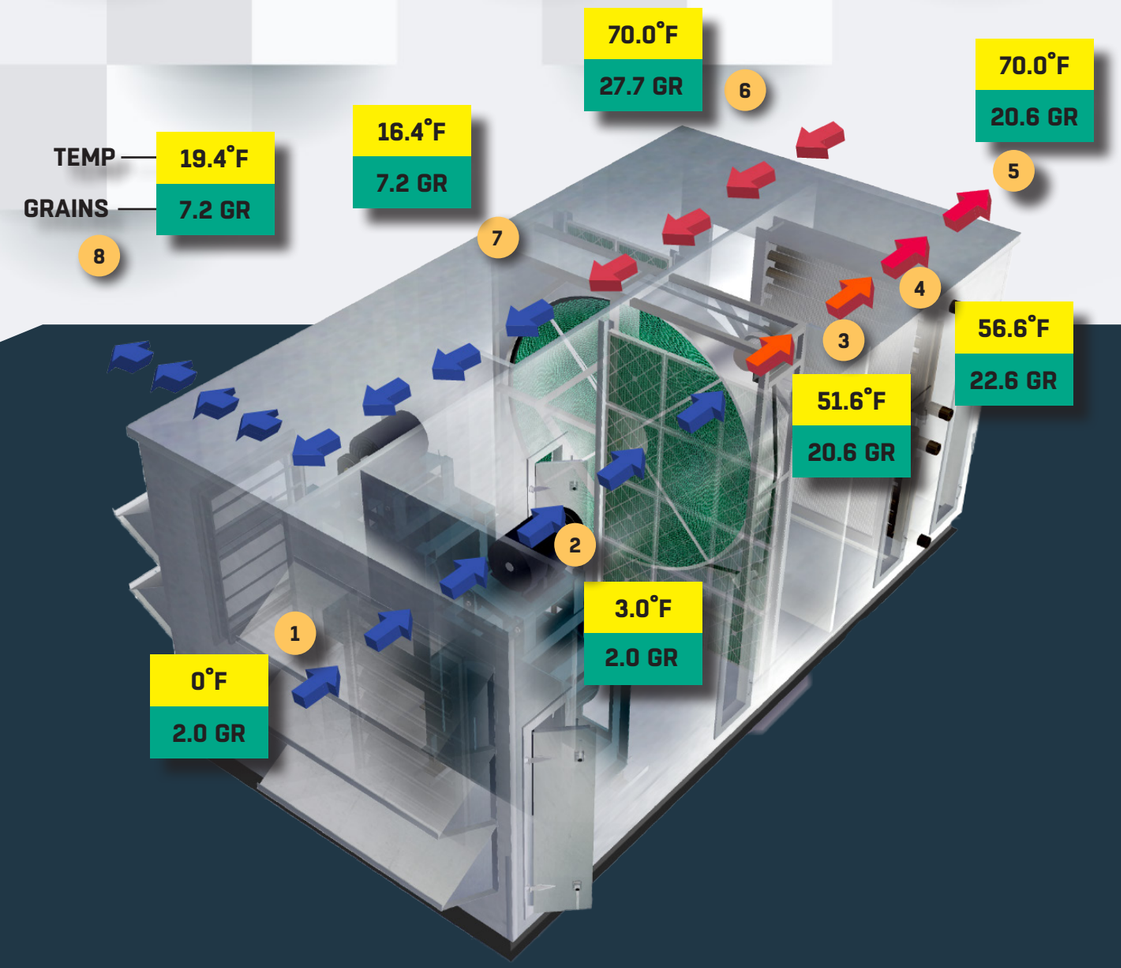
EP - HEATING SEASON

1. Cold and dry outside air is drawn in.
2. Fresh air is blown in through the slowly rotating True 3Å® energy recovery wheel. The desiccant - coated fluted media captures heat and moisture from the return side and transfers it to the supply side.
3. The warmed and humidified air enters the HVAC system or is delivered directly to the occupied space.
4. Warm, humid return air that is exhausted from the building enters the EP Series total energy recovery system.
5. As return air passes through the True 3Å® energy recovery wheel, it captures the heat and moisture to be transferred back to the supply air.
6. Cool, dry exhaust air is blown out.

HOW IT WORKS

EP SERIES SINGLE WHEEL CONDITIONED UNITS
WITH HEATING & COOLING COILS





EPCH - COOLING SEASON

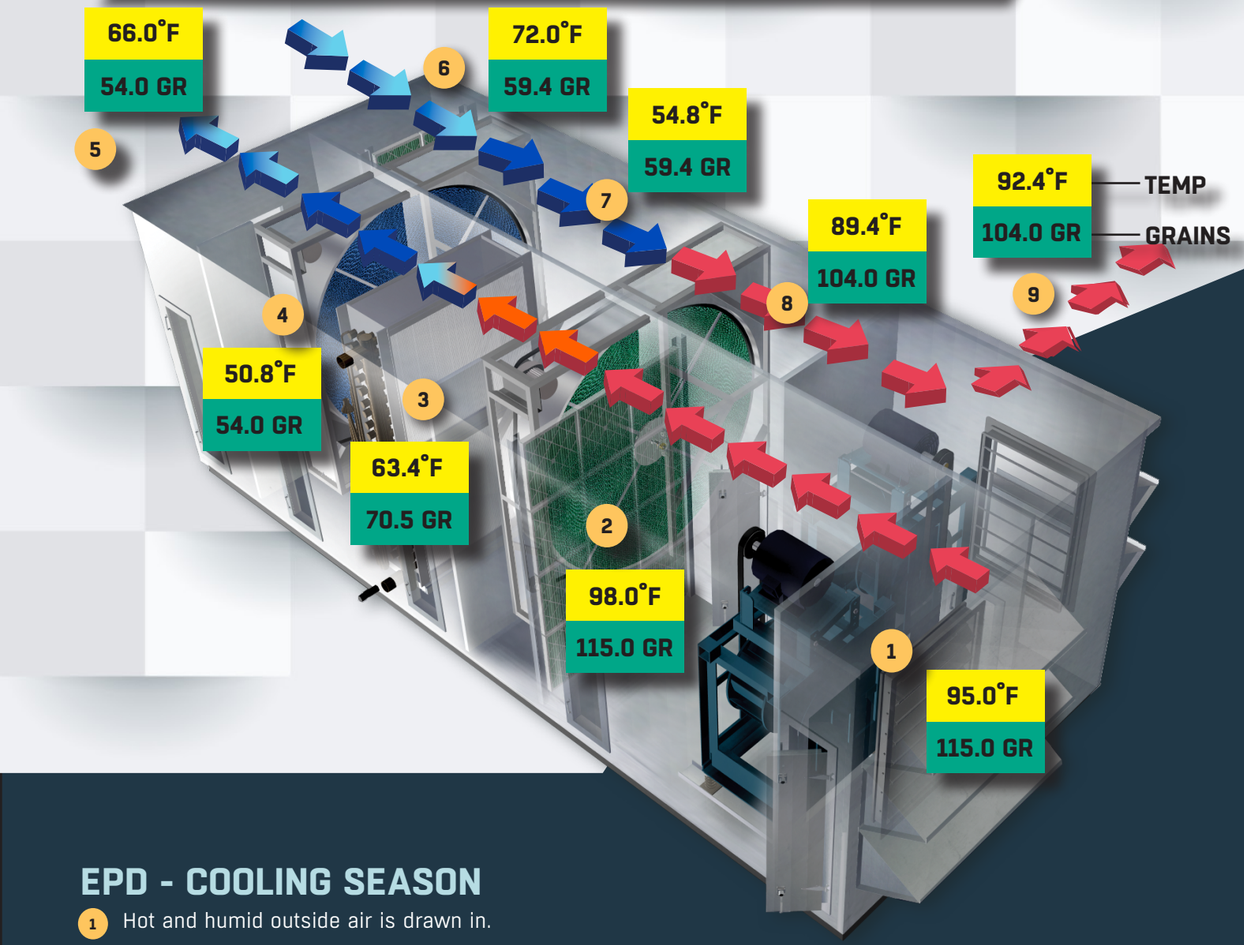
1. Hot and humid outside air is drawn in.
2. Fresh air is blown in through the slowly rotating True 3Å® energy recovery wheel. The desiccant - coated fluted media captures heat and moisture from the outdoor side and transfers it to the exhaust side.
3. The supply air passes through cooling coils to cool air further
4. Cooled supply air passes through the heating coils to warm it to a comfortable temperature.
5. The conditioned air is delivered directly to the occupied space.
6. Cool, dry return air that is exhausted from the building enters the EP Series total energy recovery system.
7. As return air passes through the True 3Å® energy recovery wheel, it removes the heat and humidity captured by the wheel from the fresh air stream.
8. Warm, humidified exhaust air is blown out.

EPCH - HEATING SEASON

1. Cold and dry outside air is drawn in.
2. Fresh air is blown in through the slowly rotating True 3Å® energy recovery wheel. The desiccant - coated fluted media captures heat and moisture from the return side and transfers it to the supply side.
3. Supply air passes by the turned off cooling coils.
4. Supply air passes through the heating coils to warm the air further.
5. The conditioned air is delivered directly to the occupied space.
6. Warm, humid return air that is exhausted from the building enters the EP Series total energy recovery system
7. As return air passes through the True 3Å® energy recovery wheel, it captures the heat and moisture to be transferred back to the supply air
8. Cool, dry exhaust air is blown out.

HOW IT WORKS

EP SERIES DUAL WHEEL CONDITIONED UNITS



EPD - COOLING SEASON

1. Hot and humid outside air is drawn in.
2. Fresh air is blown in through the slowly rotating True 3Å® energy recovery wheel. The desiccant - coated fluted media captures heat and moisture from the outdoor side and transfers it to the exhaust side.
3. The supply air passes through cooling coils to cool air further
4. Cooled supply air passes through the heating coils to warm it to a comfortable temperature.
5. The cooled air passes through the sensible energy wheel and is reheated slightly. The conditioned air is then delivered directly to the occupied space.
6. Cool, dry return air that is exhausted from the building enters the EP Series total energy recovery system.
7. Return air passes through the sensible energy wheel and heat and humidity are removed.
8. As return air passes through the True 3Å® energy recovery wheel, it removes the heat and humidity captured by the wheel from the fresh air stream.
9. Warm, humidified exhaust air is blown out.

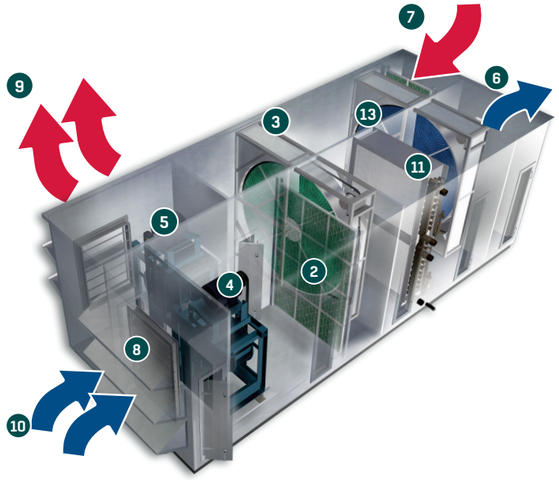


EPD - HEATING SEASON

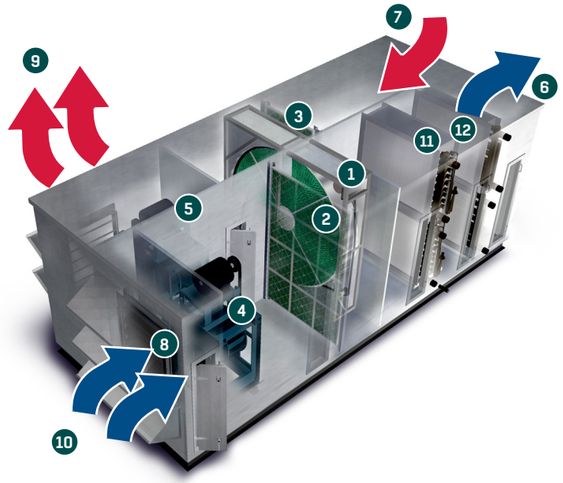
1. Cold and dry outside air is drawn in.
2. Fresh air is blown in through the slowly rotating True 3Å® energy recovery wheel. The desiccant - coated fluted media captures heat and moisture from the return side and transfers it to the supply side.
3. Supply air passes by the turned off cooling coils.
4. Supply air exits the turned off cooling coils and enters the sensible energy wheel to warm the air further.
5. The conditioned air is delivered directly to the occupied space.
6. Warm, humid return air that is exhausted from the building enters the EP Series total energy recovery system
7. As return air passes through the sensible energy wheel, maintaining it's heat and moisture.
8. As return air passes through the True 3Å® energy recovery wheel, it removes the heat and humidity captured by the wheel from the fresh air stream.
9. Cold, dry exhaust air is blown out.

COMPARISONS

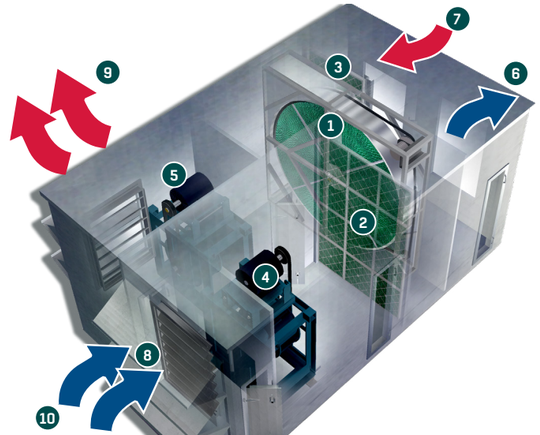
EP DUAL WHEEL, SINGLE WHEEL, & PRE-CONDITIONER



DUAL WHEEL CONDITIONED UNIT
EPD



SINGLE WHEEL CONDITIONED UNIT
EPH, EPC, EPHC, EPCH



PRE-CONDITIONER
EP

1. **ENTHALPY WHEEL** - a rotating, wheel-shaped heat transfer device that exchanges sensible (temperature) and latent (water vapor) energy from one air-stream to another.

2. **SUPPLY AIR FILTER BANK** - 2" MERV 8 or MERV 13 air filters.

3. **RETURN AIR FILTER BANK** - 2" MERV 8 or MERV 13 air filters.

4. **SUPPLY AIR EC FANS** - high efficiency, single-sided intake EC fans equipped with rear-curved motor impellers and vaneless diffusers.

5. **EXHAUST AIR EC FANS** - high efficiency, single-sided intake EC fans equipped with rear-curved motor impellers and vaneless diffusers.

6. **SUPPLY AIR** - Air provided to the indoor space. Outside air that passes through the energy recovery wheel becomes supply air.

7. **RETURN AIR** - air from the indoor space that is pulled through the energy recovery wheel. Once it passes through the wheel it is referred to as exhaust air.

8. **OUTSIDE AIR DAMPER** - a set of blades used to regulate the outside air flow into the unit.

9. **EXHAUST AIR** - the air from indoors that passed through the energy recovery wheel and is being ducted outdoors.

10. **OUTDOOR AIR** - the fresh outside air being drawn in through the energy recovery wheel. Once it passes through the wheel it becomes the supply air.

11. **COOLING COILS -** chilled water, DX cooling coils, allowing for a full integration of cooling options.

12. **HEATING COILS -** hot water coil or indirect gas burner, which allows for a full integration of heating options.

13. **SENSIBLE ENERGY WHEEL -** provides free reheat of outside air.

PRE-CONDITIONER EP

The EP pre-conditioner features the FläktGroup® SEMCO® True 3Å® energy recovery wheel, a dual-wall system, backwards curved supply and exhaust plenum fans, outdoor and return air filtration, as well as an optional full electrical package with a single-point electrical connection. All EPs are designed for either indoor or outdoor mounting.|

The EP pre-cools and dehumidifies outdoor air during cooling season and during heating season it pre-heats and humidifies outdoor air. The pre-conditioned air can then be supplied to conventional HVAC systems, allowing them to effectively increase outdoor air percentages. Pre-conditioned air can also be supplied directly to a conditioned space, due to the EP's energy recovery efficiency being between 74 and 85% (in balanced flow operation).

SINGLE WHEEL CONDITIONED UNITS EPH, EPC, EPHC, EPCH

The single wheel conditioned units build on the EP pre-conditioner, by integrating full heating and cooling options. Cooling options include either chilled water or direct expansion (DX) cooling coils, with options regarding the number of fins per inch and the number of row options. The heating options include either hot water, steam, or electric coils.

The EPH, EPC, EPHC, and EPCH units are typically used in applications where there is a need for 100% outdoor air. These units are intended to be the primary source for temperature and/or humidity control. Popular applications include: hospitals, manufacturing areas, laboratories, and casinos. The EP single wheel conditioned units can also be used to pre-condition buildings where outdoor air goes directly to a space, but requires additional post heating or cooling to supplement the heat transferred by the energy recovery wheel.

DUAL WHEEL CONDITIONED UNITS EPD

The EPD, dual wheel conditioned units, differ from the single wheel conditioned units, due to the fact that the EPD is able to offer full cooling and humidity control with its sensible energy wheel. The sensible energy wheel provides free reheat. In addition to the sensible energy wheel, the EPD dual-wall system contains a True 3Å® energy recovery wheel, backward curved, supply and exhaust plenum fans, outdoor and return air filters, cooling coils, limited capacity reheat coils, and an optional full electrical package with a single-point connection.

The EPD is often used in applications which require a high amount of humidity control and a large percentage of outdoor air. The most common applications include data centers, classrooms, hotels, dormitories, casinos and laboratories.

SELECTING THE RIGHT UNIT

MATCHING TECHNOLOGY WITH APPLICATIONS

REQUIREMENT	PRE-CONDITIONER	ERU	ERU	ERU	ERU	ERU
	EP	EPC	EPH	EPHC	EPCH	EPD
NEW & RETROFIT PROJECTS	X	X	X	X	X	X
INDOOR/OUTDOOR MOUNTING	X	X	X	X	X	X
PRE-COOLS & DEHUMIDIFIES IN COOLING SEASON	X	X	X	X	X	X
PRE-HEATS & HUMIDIFIES DURING HEATING SEASON	X	X	X	X	X	X
CAN BE USED WITH A CENTRAL HVAC SYSTEM	X	X	X	X	X	X
APPLICATIONS NEEDING A HIGH % OF OUTDOOR AIR	—	X	X	X	X	X
APPLICATIONS NEEDING 100% OUTDOOR AIR	—	X	X	X	—	—
PRIMARY SOURCE FOR WINTER TEMPERATURE CONTROL	—	—	X	X	X	X
PRIMARY SOURCE FOR SUMMER TEMPERATURE CONTROL	—	X	—	X	X	X
PRIMARY SOURCE FOR CONTROLLING SUPPLY AIR HUMIDITY	—	X	—	X	X	X
VARIOUS POST HEATING SOURCES AVAILABLE	—	—	X	—	X	—
VARIOUS POST COOLING SOURCES AVAILABLE	—	X	—	X	—	—
PROVIDES A PRECISE HUMIDITY CONTROLLED ENVIRONMENT	—	—	—	—	—	X
INTEGRATED FULL COOLING AND RE-HEATING	—	—	—	—	X	X
PROVIDES A FREE RE-HEAT	—	—	—	—	—	X
CONTROLS LATENT LOADS	—	—	—	—	—	X



FEATURES & BENEFITS

EFFICIENCY STANDARD WITH OPTIONAL UPGRADES

THE **ULTIMATE PERFORMANCE** IN THE TRANSFER OF BOTH **LATENT** AND **SENSIBLE** ENERGY.







THE TRUE 3Å® TOTAL ENERGY RECOVERY WHEEL

- Certified total energy recovery performance (sensible and latent) up to 90% efficient.
- The True 3Å® wheel has a contaminant carry-over of 0.45%
- 3Å molecular sieve-desiccant coating to avoid cross-contamination.
- Uniquely designed fluted media generates highest certified heat transfer efficiency and simultaneously reduces pressure loss parameters.
- Independently certified wheel performance in accordance with ASHRAE Standard 84 and AHRI Standard 1060.
- Media crafted from aluminum coated with a corrosion resistant desiccant. Coating extends the life of the aluminum media substrate and enhances its structural integrity, hybrid brush/barrier perimeter and face contact seals to minimize air leakage and wheel bypass.
- All aluminum, structural spoke system eliminates mechanical fatigue and allows media replacement sizes 13 and up.
- Non-wearing labyrinth seal.

SENSIBLE ENERGY WHEEL — EPD ONLY

- Sensible only wheel is polymer coated to avoid oxidation and future transferring of moisture.

OPTIONAL WHEEL CONTROL PACKAGE

- Variable speed wheel control
- Proportional heating control
- Automatic summer/winter changeover

ELECTRICAL PACKAGE

- Single point connection
- Power distribution panel with non-fused disconnect and branch circuit protection for each motor and transformer. Motors are wired to starters of VFDs.
- Custom control packages available.
- 208V or 480V single-point connections available

SMOKE & FLAME SPREAD SAFETY RATINGS

- Wheel media independently certified to pass NFA 90A requirements for flame spread and smoke generation based upon ASTM E84 fire test method.

FILTER SECTIONS

- Filters that are 30% MERV 8 efficient are provided for the indoor and return air streams.
- Optional 65, 85, or 95% MERV 11, 13, 14 cartridge filters can be provided in addition to standard 30% filters.

FLÄKTGROUP® SEMCO® PANEL SYSTEMS

- Dual-wall panel construction (2 inches thick with 18-gauge outer skin) eliminates exposed insulation (R-13) and the associated risk of bacterial growth.
- Dual-wall removable panels provided for large internal components.
- Gasketed dual-wall access doors for compartments.
- Secondary roof of continuous standing-seam panels standard on units designed for outdoor installation.
- Welded cabinet floor with integrated drain pan.

HOODS & DAMPERS

- Low-leakage motorized fresh air damper and gravity exhaust air damper.
- Outdoor units are provided with intake and exhaust hoods with bird screen.
- Optional motorized exhaust damper available.

COOLING COILS

- Fully integrated cooling option with either chilled water or DX coils.

REHEAT OPTIONS

- Fully integrated heating options with hot water.
- Steam coil, non-freeze type
- Electric coil (requires a separate electrical connection point)

SUPPLY & EXHAUST AIR FANS

- AMCA rated fans, sized for quiet and efficient operation, backward inclined (up to 16 inch diameter) and airfoil (18 inch diameter and greater.)
- Mounted, balanced, tested, and internally isolated for vibration.
- Motors are NEMA frame, high efficiency with a 1.5 service factor.

EXTENDED SERVICE WARRANTY

- 18 month standard warranty
- 3 and 5 year wheel warranty options

FläktGroup® SEMCO® delivers smart, energy-efficient, air-quality solutions to support every building application. We offer our customers innovative technologies, high-quality products and outstanding performance supported by more than fifty years of accumulated industry experience. The broadest offering on the market and a strong market presence in 65 countries worldwide guarantees that we are always by your side, ready to deliver: Excellence in Solutions.

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To learn more about FläktGroup® SEMCO® offerings and to contact your nearest representative please visit

www.semcohvac.com



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