

# PINNACLE™

## The Pinnacle™ System

The Pinnacle System economically provides high quantities of outdoor air and controls indoor humidity levels at the same time. It accomplishes this by dehumidifying the supply air to very low dew points in an energy efficient manner, without the use of a regeneration heating source. It continuously delivers the outdoor air to the occupied space while simultaneously controlling humidity levels at the conditions recommended by ASHRAE, even at part-load conditions. The Pinnacle system is capable of providing a very high degree of latent cooling using only a minimum amount of conventional cooling input.

The Pinnacle approach utilizes the strengths of passive total energy recovery, conventional cooling technology and a new class of desiccant product, the passive dehumidification wheel, to provide the best possible outdoor air preconditioning system.

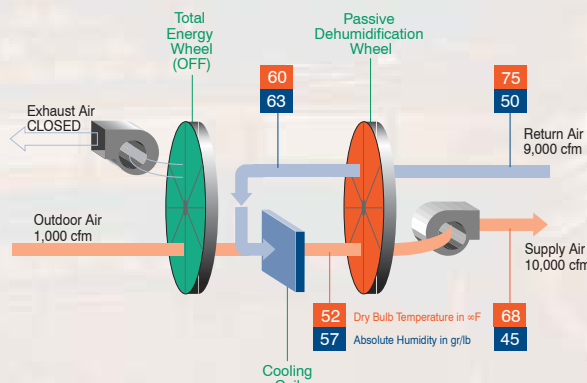
The system is comprised of a supply fan, an exhaust fan, a total energy wheel, a cooling coil and a passive dehumidification wheel. The total energy wheel is used to precondition fresh air using the exhausted building air. The cooling coil and passive dehumidification wheel then work in concert to further treat this fresh air stream to produce room temperature air at a much reduced humidity level.

The key to providing the exceptional dehumidification capability provided by the Pinnacle system is the development of a new class of product, the passive

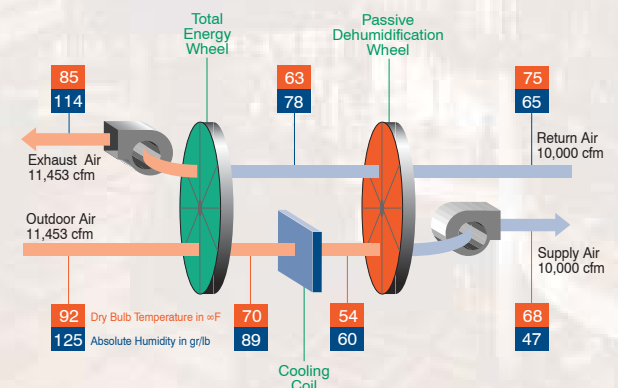
dehumidification wheel. This wheel uses a desiccant material that is optimized to remove moisture from a saturated air stream without an active regeneration source.

The Pinnacle system can provide dry outdoor air in an extremely energy efficient manner. All the components, the refrigeration coil, the total energy recovery wheel, and the passive dehumidification wheel, are optimized to operate in their most efficient respective envelopes. The result is minimal cooling energy input and maximum latent cooling output. As importantly, by changing the rotational speed of the “passive” dehumidification wheel, the amount of dehumidification capacity and the amount of reheat energy available can be optimized to meet the requirements of varying space temperatures and humidities.

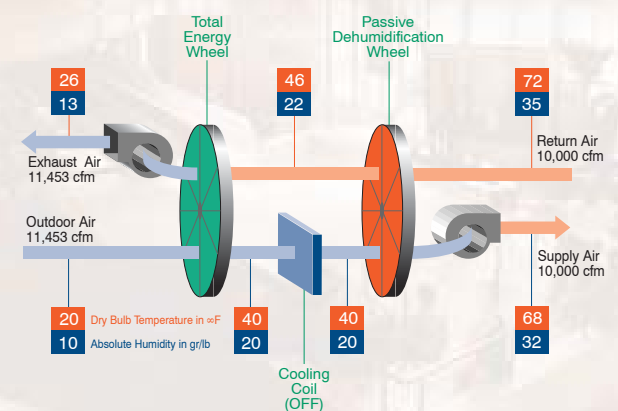
### Unoccupied Mode



### Latent Cooling Mode



### Heating Mode



## Standard Features

### EXCLU-SIEVE® Total Energy Wheel

- Certified total energy recovery performance (sensible and latent) up to 90 percent efficient.
- Patented 3Å molecular sieve-desiccant coating to avoid desiccant cross-contamination.
- Wheel faces are coated to ensure long lasting corrosion protection.
- Passive dehumidification wheel is polymer coated to avoid oxidation and future transferring of moisture.
- All aluminum, structural spoke system eliminates mechanical fatigue and allows media replacement for wheels greater than size TE3-9.
- Non-wearing labyrinth seals.

### SEMCO Panel System

- Double-wall panel construction (2 inches thick with 18-gauge outer skin) eliminates exposed insulation and the associated risk of bacterial growth.
- Double-wall removable panels provided for large internal components.
- Gasketed double-wall access doors for all compartments.
- Secondary galvanized sheet metal roof standard on units designed for outdoor installation.
- Welded cabinet floor with integrated drain pan.

### Supply and Exhaust Air Fans

- AMCA rated fans sized for quiet and efficient operation, backward curve (up to 16 inches diameter) and airfoil (18 inches diameter and greater).
- Mounted, balanced, tested and internally isolated for vibration.
- Motors are NEMA frame, high-efficiency with a 1.15 service factor.

### Filter Sections

- Filters that are 30 percent efficient are provided for the outdoor air and return airstreams.
- Sixty-five, 85 and 95 percent cartridge filters can be provided in addition to the standard 30 percent filters.

### Cooling Options Available

- Chilled water or direct expansion coil.

### Hoods and Dampers

- Low-leakage motorized fresh air damper and gravity exhaust air damper.
- Outdoor units are provided with an intake and exhaust hood with bird screen.

### Electrical Package with Single Point Connection

- All motors wired to starters, disconnects and a main start/stop control center.
- Start/stop panel has hand/off/auto positions.
- Control center integrates limit switches on damper motors.
- 208, 240 or 480 volt single-point connections are available.

### Variable Speed Wheel Control Package

- Digital reading of temperatures.
- Proportional heating control.
- Automatic summer/winter changeover.

### Automated Logic Controls

- The I/O Controller comes with a built-in open protocol port which can speak multiple communication languages.
- Units can have standalone or network controls.
- Built in capability to communicate via BACNET, MODBUS, or Johnson N2 without the need for expensive and complicated gateways.
- Local and remote communications via key pad or modem.
- Guaranteed interoperability with the most popular Building Automation Systems (BAS) today.

## Optional Features

### Reheat Options

- Hot water coil.
- Steam coil, non-freeze type.
- Electric coil, wiring and controls for the electric heater to a separate electrical connection point.

## Key Benefits

- Standard, catalogued energy wheel products and wheel systems.
- Independently certified wheel performance in accordance with ASHRAE and ARI Standards with regard to:
  - latent heat transfer efficiency;
  - sensible heat transfer efficiency;
  - pressure loss across wheel.
- Equal latent and sensible energy transfer.
- Highest performing wheel on the market.
- Independently certified cross-contamination of less than 0.04 percent.
- Field adjustable purge section.
- Wheel media independently certified to pass NFPA 90A requirements for flame spread and smoke generation based upon ASTM E84 fire test method.
- Reliable operation.
- Minimal maintenance.
- Many successful installations.
- Extended 3 and 5-year service contract available for wheel.
- Highest engineering expertise in the industry.
- Suitable for new construction and can be retrofitted to most existing facilities.
- Precools and dehumidifies outdoor air during the cooling season.
- Preheats and pre-humidifies the outdoor air during the heating season.
- Supplies preconditioned outdoor air to conventional HVAC systems, allowing them to effectively increase outdoor air percentages.
- Preconditioned outdoor air can be introduced to the return air plenum serving a central HVAC system.
- It can also be supplied directly to the conditioned space since the system's recovery efficiency ranges between 74 and 85% (in balanced flow operation).