

# Comparison by Features

	Conventional Rooftop Unit <sup>(1)</sup>	Customized DX Outdoor Air Unit <sup>(2)</sup>	All Electric Active Desiccant	SEMCO Revolution	Key Advantages Offered by the Revolution Technology
<b>Operational Options</b>					
Dedicated outdoor system	N	Y	Y	Y	Designed specifically for 100% outdoor air Can cool and dehumidify a space independently Can operate as a true VAV system Handles any percentage of outdoor air Cooling and dehumidification separate Reduces energy & avoids over-cooling space Allows advanced control & energy monitoring
Total Conditioning system (0% - 100% OA)	Y	N	N	Y	
VAV system	N	N	N	Y	
Maximum design percentage of OA	25%	100%	100%	100%	
Independent Temperature and Humidity Modulation	N	N	N	Y	
Dehumidification at part load conditions without cooling	N	N	N	Y	
Integrated Direct Digital Controls	N	N	Y	Y	
<b>Refrigeration Capacity Control</b>					
Type	Cycling 2 compressors	Cycling 3 compressors	Cycling 2 compressors	Variable Speed Compressor	Only system that can modulate the cooling to match the space load requirements, resulting in substantial energy savings
Modulating range	One with hot gas bypass	100%, 69%, 53% and 21%	50% or 100%	15% thru 100%	
<b>Integral Heating Options</b>					Dual fuel design can use the heat pump under most conditions to reduce energy cost and the indirect gas as backup during the defrost cycle or simply use gas under all conditions
Indirect gas	Y	Y	Optional	Y	
Heat Pump	Y	Y	N	Y	
Dual fuel	N	N	N	Y	
<b>Standard Integration of Total Energy Recovery</b> (ASHRAE 90.1 Compliance) <sup>(4)</sup>	Y	N	N	Y	Only system with standard integrated total energy recovery, including controls
<b>Combined Cooling, Heating and Power (CHP) Compatibility</b>	N	N	N	Y	Low power input and regeneration energy are an excellent match with CHP systems

Footnotes:

- (1) Conventional rooftop is provided for comparison only and should not be used as shown. The manufactures recommend against use as a high percentage outdoor air or low dew point system.
- (2) Typical of a refrigeration based outdoor air dehumidification system. Analysis is based upon the Trane FADA unit. This type of unit over-cools to reach the desired dew point. The supply dew point attainable is limited by leaving coil temperature. Reheat is provided by condenser heat, as available, but is not easily varied or controlled.
- (3) Hot gas bypass is available as a field installed capacity control option. Cooling output is reduced but energy consumption remains high.
- (4) The ASHRAE Energy Standard 90.1 requires the use of total enthalpy recovery having an efficiency of at least 50% for systems greater than 5,000 cfm with more than 70% outdoor air.
- (5) This analysis used the nominal airflow rating set by the manufacturer, assumes outdoor air conditions of 95°F and 120 grains and supply air at 65°F/47°F dew point/48 grains
- (6) This analysis used the nominal airflow rating set by the manufacturer, assumes outdoor air conditions of 95°F and 120 grains and a supply dew point mentioned.
- (7) Operating below about 300 cfm/ton is not recommended by the manufactures of conventional packaged equipment and can result in serious equipment failure.
- (8) This system pre-cools air then passes all of it through the active desiccant wheel. The leaving air temperature at a given humidity level can not be controlled and is often hotter than desired.
- (9) Energy cost estimates assume the delivery of air in accordance with note 5 during the cooling season. Energy costs used were \$.07/KWH and gas at \$7.00/million BTU.
- (10) Continuous operation is assumed for this analysis and is provided per 1,000 cfm of supply air
- (11) Cost/cfm based on flow required to reach conditions listed in note 5. Unit cost is based upon the best available data obtained in the marketplace and is provided for comparison only.