



# Rebel<sup>®</sup> commercial packaged rooftop systems



## Advanced technologies propel performance and energy savings to uncommon levels

Producing an extreme 20.6 IEER and an astounding 41% energy savings above ASHRAE's 90.1-2013 standard, Rebel generates efficiencies previously unheard of for a commercial rooftop system.

Rebel achieves this by incorporating sustainable, reliable, industry leading technologies that increase energy savings while reducing fuel dependency, CO<sub>2</sub> emissions, network power grid demand, and noise:

- Variable speed inverter compressor
- Variable speed heat pump operation with supplemental (gas, electric, hot water) heat options
- Direct-drive fans with variable speed ECM or VFD motors
- Energy recovery wheel
- Outdoor air monitor
- Modulating hot gas reheat
- MicroTech<sup>®</sup> III controls
- Intelligent Equipment<sup>™</sup>

### Variable speed inverter scroll vs. digital scroll compressor performance

At the core of Rebel's phenomenal energy savings is an advanced, variable speed inverter scroll compressor that draws substantially less power than traditional on/off digital scroll compressors. How?

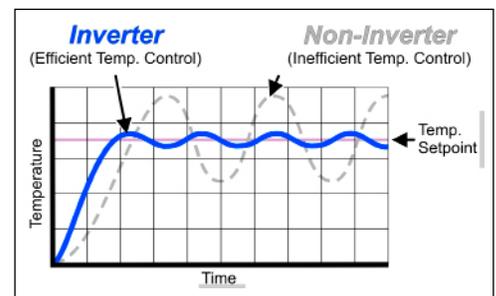
Most HVAC systems experience part-load conditions almost all the time. Rooftop units with multiple steps of compressor capacity on a given refrigerant circuit or modulating capacity operate with relatively over-sized, more efficient heat evaporators and condensers at part-load conditions.

Alternative step-control and other modulation methods cause excessive cycling, erratic economizer control, and over-cooling, all of which compromise energy efficiency and add to operational costs.



Conversely, a variable speed inverter scroll compressor is able to achieve superior efficiencies by reducing compressor unload—operating and adjusting room temperature only when needed, which:

- Reduces energy consumption
- Reduces noise
- Increases efficiency
- Increases comfort
- Avoids cycling and voltage peaks
- Prevents fluctuating temperatures
- Saves you money

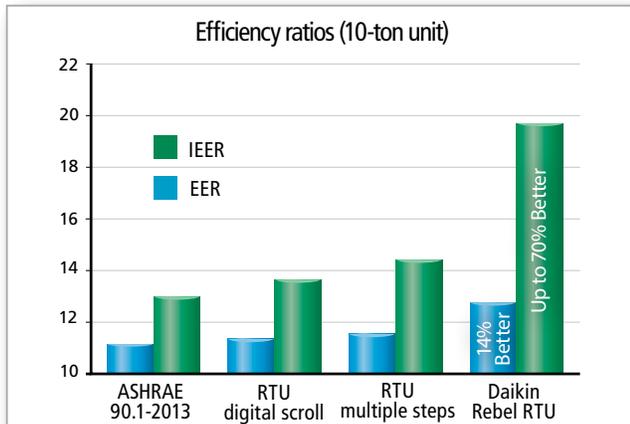


# Measuring rooftop efficiencies

## Rebel vs. ASHRAE 90.1

Rooftop efficiency is measured by two rating metrics—IEER (integrated energy efficiency ratio) for part-load operation where compressorized equipment operates at (in cooling mode) 98% of the time, and EER (energy efficiency ratio) for full-load operation where the equipment operates at 2% of the time. Part-load efficiencies that occur during 98% of equipment operating time are the best measure of efficiency and this is where Rebel rooftop systems excel.

Compared to ASHRAE's 90.1-2013 efficiency standard, Rebel delivers far superior performance in both cooling and heating mode.



## Cooling mode efficiency

- Amazing part-load efficiency ratings of up to 20.6 IEER (70% better than ASHRAE 90.1 that equates to 41% energy savings)
- Incredible full-load efficiency ratings of up to 12.8 EER (14% better than ASHRAE 90.1)

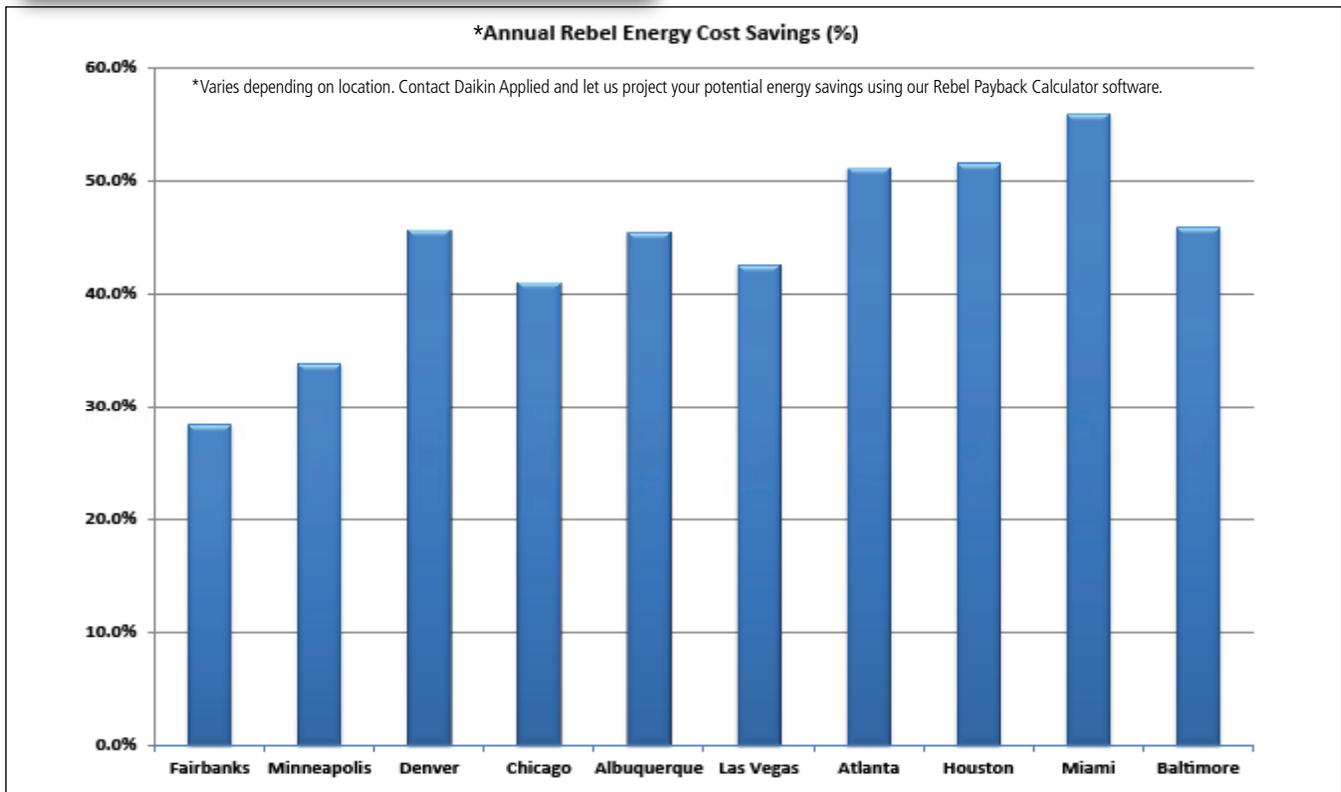
## Heating mode efficiency

- Increased COPs of up to 3.8 (10% better than ASHRAE 90.1)

## Lowest cost of ownership

Rebel's advanced technologies provide staggering efficiencies and lowest cost of ownership for any rooftop system in the industry. To illustrate yearly percentages of Rebel's energy cost savings, the graph below depicts a 12-ton Rebel single-zone VAV gas heat unit set in a 7-day retail application in climates where annual energy costs often exceed \$5000.

It's easy to see Rebel saves significantly. Depending on your application, you can expect complete energy-saving payback in as little as two years. Call your Daikin Representative to model your potential savings using our enhanced Rebel payback calculator.



For more information about our complete line of energy saving products and solutions, contact your local Daikin Applied Sales office or visit [www.DaikinApplied.com](http://www.DaikinApplied.com) to find an office near you.