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“THE DUCT-FREE ZONE”

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HOW HIGH IS HIGH? I started in this wonderful industry of ours helping my father who was in the boiler manufacturing business his entire career. Dad and I had a joke that said you would “never install a heat pump north of Richmond Virginia”... back in the ‘70s heat pumps in the northern markets were a bit of a joke...especially to us “boiler guys”.

Heat pumps back in the day weren't good heat sources, in fact, they weren't so good at cooling either!

Seasonal Energy Efficiency Rating SEER was not even an established measurement back in the '70s...it didn't come into play until the late '80s, early '90s...but if I were to guess, the heat pumps my father and I joked about were probably somewhere in the 8 – 9 range.

Lets turn the flux capacitor to 2011 when SEER ratings in ductless heat pumps soared into the high twenties...much due to the advent of the inverter compressor. The inverter compressor, in my opinion, is one of the greatest advancements in HVACR in my lifetime. It took heat pump performance from the single digit SEER basement of the 1970's to, what at the time seemed like unimaginable SEER numbers, in the high twenties of the early 2000's.

Modulation...that's what its all about you know...MODULATION! My father and I were building modulating boilers as early as the late '70s so when inverter compressors came around touting

their ability to modulate the RPM of the compressor based on both indoor air AND outdoor air temperature, well I got it right away!

Imagine if a car only had one speed...pedal to the metal no matter what the speed limit, no matter what the weather, no matter where you were...crazy right?

Well, that is exactly the scenario with non-inverter compressors...its pedal to the metal no matter what the mode, not matter what the load.

I just got back from the 2018 AHR EXPO in Chicago where I saw products like the GREE Sapphire ductless mini split heat pump boasting 38 SEER and Carrier, who introduced a 42 SEER ductless product earlier at the 2018 Consumer Electronics Show CES in Las Vegas. These are SEER numbers that just 8 years ago we couldn't imagine and 40 years ago would have seemed like science fiction.

Throw this into the mix...

Consider how the Air conditioning, Heating & Refrigeration Institute AHRI, the governing body of our industry, tests HVAC equipment and SEER of 38 and 42 might actually seem low...that's right...LOW!

AHRI tests all HVAC equipment the same... non-inverter and inverter alike. They test performance at four unloading points...25%, 50%, 75% and 100% of rated capacity. This testing was de-

signed long before the advent of inverter technology and frankly, puts inverter based systems at a distinct disadvantage because inverter compressor can essentially unload anywhere from 1 RPM to 3600 RPM or in other words, they can unload at a significantly higher number than four points!

A 38 SEER GREE Sapphire system, if tested in a manner which considered it's inverter technology could...and I stress COULD, actually be significantly higher.

So...how high is high? Where are the numbers going to be in another 8 years? I think we find ourselves at one of the most interesting times in our industry's history...in the span of my own lifetime I have seen technological advances that still take my breath away!

...and the joke about the heat pump north of Richmond Virginia, well, you might say the joke was on pops and I because that same 38 SEER heat pump will give you 90% of rated heat capacity down to -22°F.

WOW! Really...WOW!

ABOUT THE AUTHOR: Gerry Wagner is the Vice President of HVAC Technical Training at Tradewinds Climate Systems. He has 38 years in the HVACR industry working in manufacturing, contracting and now training. You can contact Gerry by email: gwagner@twclimate.com and also please visit our website: www.twclimate.com



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