

Feedback For The Week: December 10, 2001

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Corrosion, Aging Units, And SEER Standards

I just completed reading the excellent article entitled "Debating 12 vs. 13 SEER" [Oct. 8]. All the points brought out by the speakers mentioned were quite valid. The relative points can be applied to homeowner and commercial accounts. Having more efficient equipment available could help curb energy use. Wrong! Just having 13-SEER equipment does not mean efficiency. Consider the high population areas of the Eastern Seaboard, Gulf Coast, and West Coast. Where are the high energy users living?

In coastal, industrial, and assorted environments, corrosion is an expensive reality. Corrosion, as a whole, accounts for more than a billion dollars in corrective action yearly. While some merely view corrosion as an aesthetic problem, it's much more serious than that. Corrosion affects the integrity of metals, plastics, and even concrete.

In air conditioning systems, corrosion not only affects longevity, but also affects the energy required to operate the system. A U.S. Navy test done in the 1980s deduced that the corrosion process on aluminum fin copper tube coils begins in as little as 30 to 60 days. This is evident by the appearance of a grayish-looking powder and salt crystals, which lead to fin embrittlement. As embrittlement progresses, the heat transfer capability of the fin stock deteriorates, increasing operating costs. NASA studies have also proven that air salt can blow inland off the coast as much as 50 miles. Now consider all the residential homes and exposed equipment within 50 miles of saltwater.

Navy tests revealed that the operating efficiency loss of an air conditioning coil could be as much as 55% within the first two years. In addition to higher costs of operation, the compressors are overworked. That means corrosion leads to excessive operation and compressor failure. Add it up! Higher energy costs, early repair or replacement costs, and inconvenience. In the initial year, 13-SEER equipment would be great, but consider the fact you will lose efficiency in subsequent years. Where is the documentation and long-term testing to support the requirement?

In the development of higher-efficient equipment, typical changes have included increasing the fins per inch, increasing the face area of a coil, and adding configured, lanced, or enhanced fins to increase airflow through the coil surface. All of these properties contribute to better and increased heat transfer capabilities. Some design changes have drawbacks when it comes to coil life.

In most cases, fins are made of much thinner aluminum stock, fins have enhancements and more fins per inch, tending to entrap more particulate matter, making the unit susceptible to corrosion and abrasion damage at a much quicker rate. Do you remember how coils were constructed 10 years ago?

Being in the field of corrosion protection for hvacr equipment, we have seen all types of installations and all types of corrosive environments. The most frustrating applications are those of residential homeowners at beachfront locations. We all want to talk about the upfront cost savings of high-SEER equipment, but no one is tracking the effect or efficiency level of equipment 2 to 5 years in operation. I have a question for the readership. What is the actual true life expectancy of a residential a/c system installed at a beachfront location? How about a commercial package system? We're better off mandating coil cleaning maintenance programs than inadvertently changing requirements for SEER ratings.

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