



Home Energy Magazine Online May/June
1995

Bigger is Not Better: Sizing Air Conditioners Properly

by John Proctor • Zinoviy Katsnelson • Brad Wilson

It is generally accepted that "the right way" to specify an air conditioning system is to calculate the loads and select a piece of equipment that will provide comfort to the customer in a wide variety of conditions. Unfortunately this is rarely practiced.

A colleague of ours (we will call him Bill) approached us at a conference seeking advice on selecting an air conditioner for his renovated home. Our recommendations included, "Be sure that the cooling load is calculated and that the air conditioner is sized to that load." When Bill attempted to follow these instructions, only one of the four contractors would submit a sizing calculation (two others just wanted to know how many square feet there were in the house). Bill hired the contractor who did the calculation and installed a high-efficiency four-ton unit. Is this a success story? Not really.

The contractor calculated a total cooling load of 37,580 Btus per hour at 105°F outside and 70°F inside. While the cooling load he calculated could have been met by a three-and-a-half ton air conditioner, the contractor convinced Bill to buy a four-ton unit "because then you will always have plenty of cooling."

Bill's air conditioner short-cycles (cycles on and off more often and for shorter periods of time than it should) even during the hottest weather and removes very little moisture from the air. What went wrong? Four things: