

Comparative Energy and Cost Analysis Between Conventional HVAC Systems and Geothermal Heat Pump Systems

David D. Vanderburg

Download now

Click here if your download doesn"t start automatically

Comparative Energy and Cost Analysis Between Conventional HVAC Systems and Geothermal Heat Pump Systems

David D. Vanderburg

Comparative Energy and Cost Analysis Between Conventional HVAC Systems and Geothermal Heat Pump Systems David D. Vanderburg

This is a AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH SCHOOL OF ENGINEERING AND MANAGEMENT report procured by the Pentagon and made available for public release. It has been reproduced in the best form available to the Pentagon. It is not spiral-bound, but rather assembled with Velobinding in a soft, white linen cover. The Storming Media report number is A797004. The abstract provided by the Pentagon follows: To sustain the United States current affluence and strength, the U.S. Government has encouraged energy conservation through executive orders, federal and local laws, and consumer education. A substantial reduction in U.S. energy consumption could be realized by using geothermal heat pumps to heat and cool buildings throughout the U.S., though initial installation cost are a deterrent. This thesis uses Monte Carlo simulation to predict energy consumption, life cycle cost and payback period for the vertical closed-loop ground source heat pump (GSHP) relative to conventional heating ventilation and air conditioning (HVAC) systems: air-source heat pumps (ASHP), air-cooled air conditioning with either natural gas, fuel oil, or liquid petroleum gas furnaces, or with electrical resistance heating. The Monte Carlo simulation is performed for a standard commercial office building within each of the 48 continental states. Regardless of the conventional HVAC system chosen, the simulation shows that for each state the GSHP has the highest probability of using less energy and having a lower operating and life cycle cost than conventional HVAC systems; however, initial installation cost are typically twice that of conventional HVAC systems and payback periods vary greatly depending on site conditions. The average 50th percentile GSHP payback period in the U.S. was 7.5 years compared against the ASHP and 9.2 years compared against the air-cooled air conditioning with natural gas furnace.



Download Comparative Energy and Cost Analysis Between Conve ...pdf



Read Online Comparative Energy and Cost Analysis Between Con ...pdf

Download and Read Free Online Comparative Energy and Cost Analysis Between Conventional HVAC Systems and Geothermal Heat Pump Systems David D. Vanderburg

From reader reviews:

Olga Noone:

What do you regarding book? It is not important together with you? Or just adding material when you require something to explain what the ones you have problem? How about your extra time? Or are you busy man? If you don't have spare time to perform others business, it is make one feel bored faster. And you have free time? What did you do? Every individual has many questions above. They need to answer that question simply because just their can do this. It said that about guide. Book is familiar in each person. Yes, it is suitable. Because start from on kindergarten until university need this kind of Comparative Energy and Cost Analysis Between Conventional HVAC Systems and Geothermal Heat Pump Systems to read.

Eileen Vaughan:

In this 21st millennium, people become competitive in each and every way. By being competitive right now, people have do something to make these survives, being in the middle of the particular crowded place and notice by surrounding. One thing that often many people have underestimated it for a while is reading. Yep, by reading a reserve your ability to survive improve then having chance to stay than other is high. For you who want to start reading some sort of book, we give you this Comparative Energy and Cost Analysis Between Conventional HVAC Systems and Geothermal Heat Pump Systems book as starter and daily reading reserve. Why, because this book is greater than just a book.

Bernard Taylor:

The feeling that you get from Comparative Energy and Cost Analysis Between Conventional HVAC Systems and Geothermal Heat Pump Systems will be the more deep you excavating the information that hide within the words the more you get enthusiastic about reading it. It does not mean that this book is hard to recognise but Comparative Energy and Cost Analysis Between Conventional HVAC Systems and Geothermal Heat Pump Systems giving you thrill feeling of reading. The article writer conveys their point in certain way that can be understood through anyone who read it because the author of this publication is well-known enough. This kind of book also makes your own vocabulary increase well. So it is easy to understand then can go together with you, both in printed or e-book style are available. We advise you for having this particular Comparative Energy and Cost Analysis Between Conventional HVAC Systems and Geothermal Heat Pump Systems instantly.

Patty Scheuerman:

Beside this specific Comparative Energy and Cost Analysis Between Conventional HVAC Systems and Geothermal Heat Pump Systems in your phone, it may give you a way to get closer to the new knowledge or info. The information and the knowledge you will got here is fresh from your oven so don't possibly be worry if you feel like an aged people live in narrow community. It is good thing to have Comparative Energy and Cost Analysis Between Conventional HVAC Systems and Geothermal Heat Pump Systems because this

book offers for you readable information. Do you at times have book but you would not get what it's about. Oh come on, that won't happen if you have this within your hand. The Enjoyable agreement here cannot be questionable, such as treasuring beautiful island. Techniques you still want to miss this? Find this book and also read it from now!

Download and Read Online Comparative Energy and Cost Analysis Between Conventional HVAC Systems and Geothermal Heat Pump Systems David D. Vanderburg #XYOZTLBS67M

Read Comparative Energy and Cost Analysis Between Conventional HVAC Systems and Geothermal Heat Pump Systems by David D. Vanderburg for online ebook

Comparative Energy and Cost Analysis Between Conventional HVAC Systems and Geothermal Heat Pump Systems by David D. Vanderburg Free PDF d0wnl0ad, audio books, books to read, good books to read, cheap books, good books, online books, books online, book reviews epub, read books online, books to read online, online library, greatbooks to read, PDF best books to read, top books to read Comparative Energy and Cost Analysis Between Conventional HVAC Systems and Geothermal Heat Pump Systems by David D. Vanderburg books to read online.

Online Comparative Energy and Cost Analysis Between Conventional HVAC Systems and Geothermal Heat Pump Systems by David D. Vanderburg ebook PDF download

Comparative Energy and Cost Analysis Between Conventional HVAC Systems and Geothermal Heat Pump Systems by David D. Vanderburg Doc

Comparative Energy and Cost Analysis Between Conventional HVAC Systems and Geothermal Heat Pump Systems by David D. Vanderburg Mobipocket

Comparative Energy and Cost Analysis Between Conventional HVAC Systems and Geothermal Heat Pump Systems by David D. Vanderburg EPub