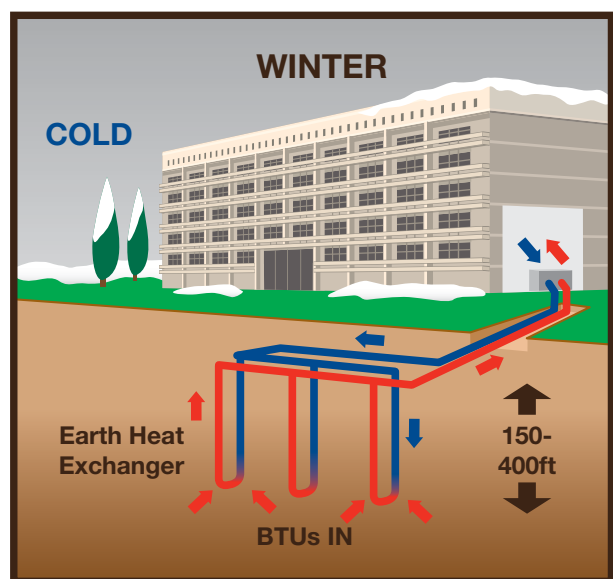
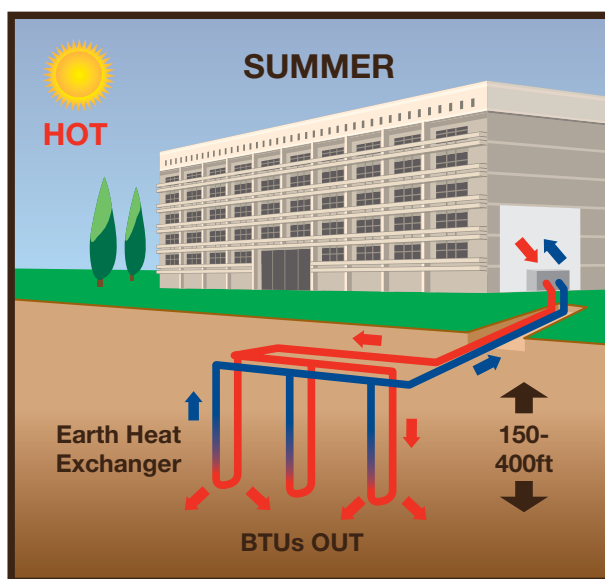


The Large Potential of Geothermal Heat Pump Systems

December 3, 2010 in Clean Energy, Other Technology

This special guest post comes to us from Mark Mizrahi, CEO and President of EnLink Geoenergy Services, Inc.



Recently, we have seen an increase in new construction aiming to achieve LEED certification and even Net Zero Energy buildings. Although market trends for construction have seen a decline in recent years, the U.S. Green Building Council estimates the growth in LEED certified buildings is continuing and will have doubled from 2009 to 2013.

In California, the California Energy Commission and California Public Utilities Commission are advancing efforts to mandate that all new construction for the residential sector be Net Zero by 2030 and for the commercial sector by 2050. With Renewable Energy Portfolio Standards now policy for utility companies, other states are sure to follow California's lead.

Inevitably all buildings will become Net Zero Energy. It is a necessity. Net Zero Energy building means a building is not a net user of energy; that is, it produces as much as it uses. As buildings currently account for approximately 40% of all primary energy use in the U.S., and are responsible for a corresponding 40% of all CO₂ emissions, the beneficial consequences of Net Zero Energy buildings are immense.

If Net Zero is the solution the question becomes, "how can we achieve this?"

Simple applications of specific technologies could easily reduce the energy loads required for a building's operation dramatically. Geothermal Heat Pump Systems (also referred to as ground source heat pump systems) could be the most effective of these technologies. On average, 65% of a building's energy load is consumed for heating and cooling purposes. The EPA suggests geothermal systems can potentially reduce the amount of energy used for heating and cooling by up to 72%. During cooling periods, GHP systems use excess heat for a building's domestic hot water needs, reducing the amount of energy required by another 5-10%. A conservative estimate of the total reduction in energy consumed by a building would be 40%. In short, a single, existing and proven technology could conservatively cut a building's energy use almost in half.

The concept behind geothermal systems is simple. They utilize the constant temperature of the earth's shallow layers to cool and heat buildings without the need for chillers or boilers. The earth is used as a heat sink in the summer, and a heat source in the winter.

Geothermal systems not only dramatically reduce the amount of energy consumption of buildings, but have other proven benefits as well. These benefits include water conservation, reduced operating, maintenance and replacement costs, no on site use of fossil fuels, and system longevity. Geothermal systems are versatile and can work in combination with any energy management program. The systems are the only demand side renewable that works the same in all regions and is available at all points of use.

Geothermal can also be a major contributor toward LEED certification for buildings. Industry estimates are the systems can provide up to 34 potential LEED points towards certification. It only takes 40 to get basic certification.

With this information on hand, why hasn't there been more effort to increase the frequency of geothermal heat pump system use? One reason is that much of the current policy initiatives are related to supply side renewables, namely solar photovoltaics and wind turbines. While renewable sources of energy are indeed part of the solution, demand side energy efficiency measures are essential. Most energy efficiency efforts are focused on incremental steps like lighting and insulation, not on more far-reaching technologies like geothermal. Notwithstanding, there is an increase in use of these systems and we expect them to grow significantly in the coming years, given the objectives we will be required to work towards.

EnLink Geoenergy Services, Inc., a turnkey full-service geothermal contractor, and a leader in the design and installation of geothermal heat pump systems, has produced significant energy savings on multiple projects throughout the U.S. EnLink is based in Los Angeles County, California.