

A geothermal heat pump uses the heat stored in the earth

Heat and cooling from Earth

Imagine a system that can supply both home heating and cooling. Now consider that it does so using the natural energy of the sun that's stored in the ground beneath the earth's surface. Sound incredible? No, it's an electric technology that's beginning to give home owners economical, energy-efficient, and environmentally friendly temperature control all-year round.

Geothermal systems are the most energy-efficient of all heating and cooling systems. Geothermal systems are typically two- to three-times more efficient and economical than the one Association, two national electric utility trade associations. your home is using now, according to the Edison Electric Institute and the National Rural Electric Cooperative winter air—the performance of the system is affected very little by changing temperature and humidity levels. These temperate operating conditions result in low maintenance and longer life of the system.

The sun is the optimum heat source because it's constant, safe and renewable. The earth, with a large surface area, infinite storage capacity and no maintenance required, is the perfect solar collector. And although the earth air temperatures fluctuate, the ground just below the surface maintains a constant year round temperature.

Conventional heating and cooling systems use energy to "manufacture" heat. Geothermal heating and cooling systems are more economical because two-thirds of the energy used in geothermal systems already exists as solar heat absorbed by the earth. The remaining third is required for the heat pump unit itself to move this heat.

In the summer, the heat pump removes heat from the indoor air and transfers it, via the liquid in the pipe system, to the cooler ground, where it is absorbed. All the time, the earth is either dissipating or replacing the heat that the heat pump system has either rejected or extracted from the building on the earth's surface.

Since the earth's temperature remains nearly constant—cooler than hot summer air, but warmer than cold in the summer air, but warmer than the summer air, but warmer air, but warmer air, but warmer the summer air, but warmer air, but warme During the winter, the fluid circulating through an underground closed loop of durable thermoplastic pipe absorbs heat from the earth and transports it to the heat pump, which extracts and elevates the heat and transfers it in-The underground closed loop pipe system can be installed in three ways, depending on landscaping and underground conditions. A horizontal ground loop is placed in a trench four to six feet deep. A coiled loop (SLINKY) substantially reduces the amount of horizontal trenching required. Vertical systems can be installed when land space is limited. In pond or lake installations, a closed loop is placed in a body of water, which replaces the ground as the heat exchange medium.

More electric utilities are now offering financial incentives to their customers for installing ground source heat pumps. These can lower the purchase or the installation costs. Call your utility's residential marketing department to find out more about ground source heat pumps, and other high-efficient electric heating and cooling systems.

Windows waste most energy

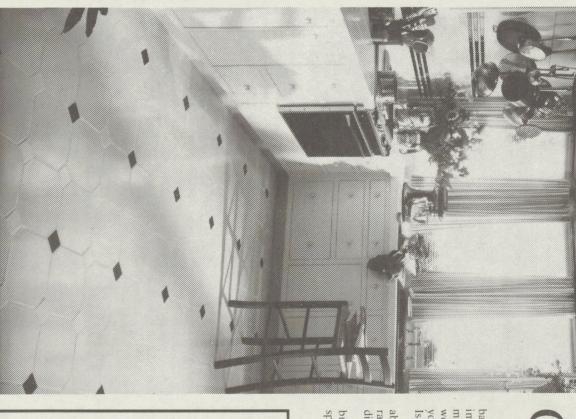
Windows rob heat from your house in the winter, and coolness in the summer. In fact, more heat is lost—or gained—through windows than through any other area of the house.

Conduction is one way heat passes through windows. In this manner, the house's warmth is gradually conveyed through the window pane. A window made of single-pane glass (R-value of approximately 1.0) transfers heat al-

most 14-times faster than a well-insulated wall. Adding a multi-pane window, one with either two- or three-panes of glass, will raise the window's R-value approximately 1.0 for each additional pane of glass used.

Using a gas denser than common air, such as argon or carbon dioxide, between the panes of glass, is another effective way to slow conductive

transfer of heat,



floor and on countertops. Ceramic tile adds a classic touch to kitchens, both on the

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Ceramic tile is still a favorite

The Dallas Post

Spring Home Improvement

Wednesday, April 20, 1994

When planning a new kitchen or bath, remember to ask yourself some important questions, such as how much traffic your floors will endure. Is wear an important consideration? Do you spend a lot of time in the kitchen? Is ease of maintenance a factor? If you've answered "yes" to the above, you may want to consider ceramic tile for your new upgrade or addition.

Ceramic tile won't dent, scratch or burn; clean up is easy with a damp sponge or mop and you can customize

your room to your own personal sense of style! No other home furnishing material allows you greater flexibility when decorating your kitchen or bath!

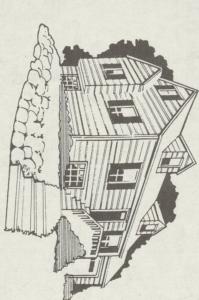
octagons with coordinating or contrasting dots. And remember that many ceramic tile lines now allow you to coordinate your floors and walls! Ceramic floor tile is available in a range of popular sizes, from 8" × 8" to 12" × 12". Choose from textured stone looks in easy care ceramic tile to 10"

Use accent strips with undecorated wall tile for subtle colors and designs. Create a border, surround a tub, a vanity or even a window! For more detail, use the accent strips with decorated tile and create bold, expressive

designs!
For added design possibilities, choose a 10" octagon and select a dot from a wide assortment of colors. For subtle kitchens or baths you may want to coordinate your dot and octagon colors in white or almond or have more fun with a white octagon

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