TECHNOLOGY

Heat Pump For Your House

An electric machine that works like your kitchen refrigerator now promises to give year-'round air conditioning plus heat at costs competitive with coal, gas and oil.

By ALLEN LONG

➤ BEFORE LONG you may want to install an electric machine in your house that will do away with your furnace and its attendant mess and worries.

This machine also will eliminate the great quantities of dust that now settles on top of the piano or on the big oil painting of Uncle Amos.

It also will transform a muggy day into "seashore comfort" within the four walls of your dwelling, providing welcome asylum to businessmen after a sticky day at the office. And when the hot summer sun pushes the temperature up in your neighbor's house, your electric machine will go to work automatically to keep your own house cool.

The machine is relatively new, although engineers have been experimenting with it for 20 years. But despite its newness, you probably already have one machine in your kitchen that works just like it—a refrigerator. Maybe you have a food freezer, too.

Electricity as Power Source

Within technical circles, the machine is called a heat pump. You might call it a "weatherstat," for the package unit will do its best to keep your house comfortable regardless of howling winter gales or scorching summer sun.

The heat pump runs on electricity generated in modern power plants that burn fuel far more efficiently than your own furnace. The machine is controlled automatically by a thermostat that tells it when to heat and when to cool your house.

House-sized machines cost $2,000 and up, depending upon the size. The power bill will vary according to the rates of the utility serving your area. But one 12-story office building in Portland, Ore., was warmed by a heat pump during the particularly severe winter of 1948-49 at half the cost of coal.

Heat pumps wring heat out of air, water or earth. They deposit this heat either inside or outside of your house.

In mild-climate areas, the machine can extract warmth from the winter air, releasing it in your house. Even when the mercury dips to below-freezing temperatures, this process goes on because air still contains great amounts of heat—even if it does not feel that way to your frostbitten cheek.

When summer comes, the machine begins gathering its heat from the inside of your house. It releases the heat outside. In this way, the heat pump provides year-'round air conditioning. This includes squeezing moisture out of the air to provide a more comfortable humidity inside your house on sultry summer days.

Although experimental models have been in operation for a decade or more, heat pumps have not been generally available until recent years. The machines had the usual mechanical "bugs" that engineers wanted to exterminate with better designs. Furthermore, the war economy was taxing power company facilities to the limit.

One-Room Model Developed

However, now the machines have been vastly improved, and rapidly expanding electric utilities can handle the extra load that would be imposed on their lines by great numbers of heat pumps.

At least six manufacturers now are turning out the devices in sizes ranging from two to 20 horsepower. One company even makes a small, ¾-horsepower install-it-in-your-bedroom-window model.

It now seems likely that the heat pump will grow more and more imposing as a competitior of coal, gas and oil-fired furnaces. This is particularly true in the South where winters are mild.

The power bill at first probably will be higher than the fuel bill you now pay, but engineers justify that by pointing out that you get air conditioning in the summer as well as heating in the winter. They say that if you install an air-conditioning machine in your house in addition to your present furnace, the totalled power and fuel bills will exceed that of the heat pump's in a 12-month run.

Consider in Designing Home

Young couples now planning to build their own houses should seriously consider the heat pump as the heating plant. The whole design of the house can be made even better if the device is worked into the architect's plan from scratch.

For instance, your house would not need a chimney, a coal bin, oil storage tanks, attic fan, porches or breezeways. Furthermore, your windows could be of the permanently sealed type. This eliminates a need for screens.

The heat pumps yield indirect household operating benefits also. Since the windows would be kept closed, less dirt, dust and objectionable noise would come in. Cleaning and redecorating costs would be reduced, yet you could enjoy fresh air. Sudden rain squalls would not drench your furniture at noon because your windows would be closed when you left for town on a sunny summer morning.

If you do not intend to build in the next few years, you can equip your present house with a heat pump. The least expensive installation probably would be the air-to-air system previously described. If you live in a severe climate, however, you may want to put in a ground-type system.

Earth-Stored Heat

These heat pumps are connected to big coils through which the refrigerant circulates. The coils are buried in your lawn beneath the frost line, or they run to a water well. Earth and water yield and absorb heat just as air does.

Heat pump manufacturers believe the device is "catching on" with the American public. General Electric's vice-president of engineering, Clarence H. Linder, predicts that 200,000 of the machines will be sold annually by 1960. He estimates that the installed price will be less than $2,000.

Westinghouse, one of the heat pump manufacturers, declares that the cost of heat pump installations will vary with the type of machine and the house. An overall average now runs $2,300 for the three-horsepower model, $3,300 for the five-horsepower model. If the house already has a hot-air heating system, the heat-pump installation costs probably will be lower since engineers can capitalize on the existing ductwork.

Efficiency Pushed Up

Philip Sporn, president of the vast American Gas and Electric Service Corporation, believes that 2,000,000 residences will have year-'round air conditioning by 1960. If manufacturers, electric utilities and architects work toward improving the device, about 100,000 residential heat pumps should be in operation by then, he said.

Electrical engineers have continued to push up the efficiency of electric power generation stations. These new engineering conquests have, in some cases, offset the continued rise in labor, construction and operating costs. Consumer power rates have remained low when one considers the great rise in the cost of living over the last 30 years.

It may be that future economies and further advances within the power-generating field will permit many electric utilities to offer special rates to heat-pump users. Some companies already extend reduced rates to owners of electric water heaters.

If this comes about, it will make the machine all the more attractive as a heating and air-conditioning plant for residences and office buildings.

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