

Active Solar System Retrofit

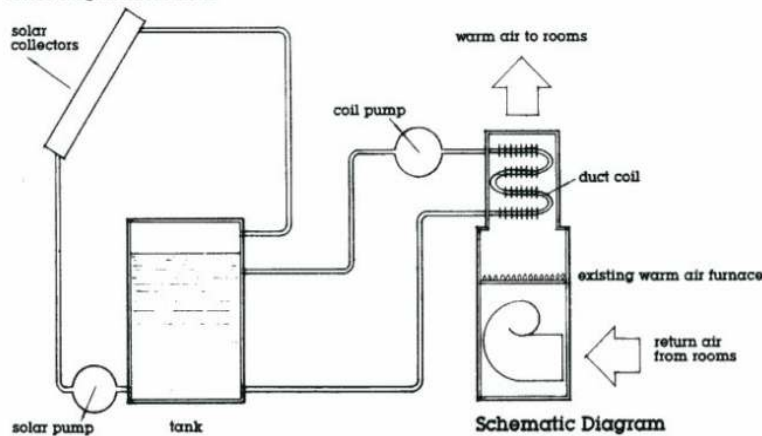
In 1977 a 12 year old subdivision home in Boulder was converted to solar heating by Colorado Sunworks



Active solar collectors installed on this house are integrated into the existing warm air furnace. The schematic diagram shows how the system works. 216 sq ft of collector panels, manufactured in our shop, were installed in a 70 ft south-facing arc on the house and garage roof. The drain-down system allows the use of plain water which drains into an insulated wood frame tank lined with thick vinyl sheet. The tank is placed in the garage directly beneath the collectors.

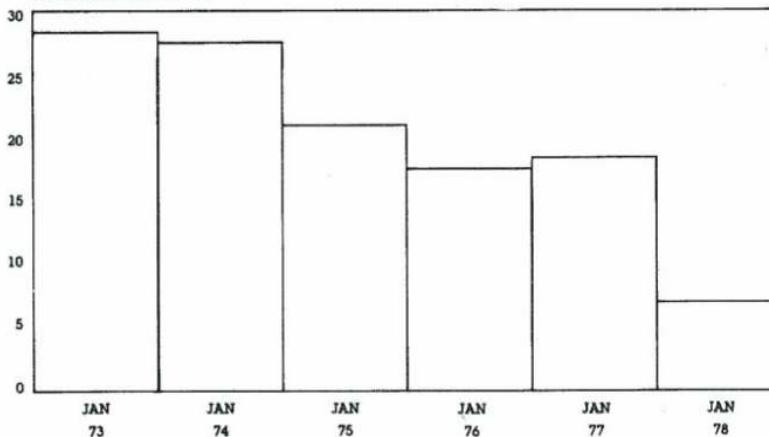
Martin Acres Subdivision Home

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The coil pump circulates low temperature water (90F-140F) from the solar tank through a finned duct coil placed in the top of the warm air furnace. The house thermostat controls this pump and the furnace fan at the same time. When heat in the solar tank is depleted a second stage control turns on the gas flame and turns off the pump, leaving the fan on. A copper coil placed in the tank also preheats the domestic hot water.

Natural gas consumption
In thousands cu. ft.



This chart shows natural gas consumption at the Martin Acres home since 1973. Energy use was cut in half by retrofitting insulation in walls and ceiling, then cut in half again by the small active solar system.