



### **Geothermal Hydronic Integration**

**Geothermal systems in the US are typically water to air or air to air systems. These types are not candidate for hydronic integration. Water to water Geothermal systems are the correct choice for low temperature hot water integration.**

**In Western Europe the vast majority of Geothermal systems are water to water due to the fact that the majority of the heating systems are circulating hot water. It is very common to see an aggressive photovoltaic array installed on the roof to operate the Geothermal system with free energy from the sun. When the sun sets then they will then use a high efficiency fossil fuel boiler to back up their Geothermal system.**

**The majority of water to water Geothermal systems in the US have a limiting delivery water temperature of 120F. This makes these types of systems the best choice for low temperature hydronics.**

**If you are looking to get the maximum benefit from your water to water Geothermal system; we can assist in the design. It could be radiant floor, flat steel panel radiator, towel warmers or designer radiators. These will all emit heat at low temperatures and provide the comfort and economy of operation you want from your Geothermal system.**

**Contact us at Hydronic Alternative and we can show you how to get maximum mileage out of your water to water Geothermal heating system.**



## **Solar Thermal**

**Solar Thermal systems differ from solar photovoltaic systems which generate electricity from the sun. Solar thermal utilizes the same solar energy but heats a fluid. In the colder climates the fluid is some form of anti-freeze. Most solar thermal installations are used to heat domestic hot water. A properly sized system can provide upwards of 70% of families hot water requirements.**

**Most solar thermal designers are concerned about system overheating which is called stagnation in the industry. Fluid that stays dormant in the solar collectors can reach temperatures over 400 F and cause damage to the collector and ruin the anti-freeze mix. The Western Europeans found ways to utilize this surplus solar energy into what they call “support heating” Any additional energy available after the domestic hot water load has been satisfied can then be directed back into your heating system.**

**Since Western Europe has 99% circulating hot water systems designed around low temperature this is an easily accomplished goal. In the United States where 93% of our heating systems are direct fired warm air, support heating in this manner is not possible.**

**At Hydronic Alternatives we promote low temperature circulating hot water systems and we have found that properly designed solar systems will not only cut your domestic hot water energy use by 70% but can also reduce your heating energy usage by 10 to 15%.**

**Breaking down the math as simple as possible if you spend \$ 300.00 a year for domestic hot water production and install a solar system it can save you \$ 210.00. If your space heating cost you \$ 2,500.00 a year and you save 10% with solar support heating you save \$ 250.00 a year. The combination of the two integrated systems makes solar thermal more attractive.**

**To take advantage of this technology you need a low temperature hot water system. How can your heating system become low temperature, contact us at Hydronic Alternatives and we can explain.**