Solar Hot Water – 20 panel Solar Pool and Radiant Heat

We installed this **20 collector solar hot water drain back system** to provide pool heat, radiant floor heating, and domestic hot water pre-heat. It featured a 700 gallon storage tank, primary and secondary circulators, and motorized mixing valves to optimize the use of collected solar energy.

Because the solar collectors were recessed into the roof line to make them flush with the roof, successful design of the piping and collector support was critical. **The panels would grow and shrink by 1" over the course of the day** from thermal expansion and we had to accomodate for that movement.

After the first few collectors were in place, we could move forward with confidence that our approach worked.

Once all the panels were in place, we had to make the piping connections to the end collectors.

Roof boots were custom assembled out of copper to permit expansion of copper pipes carrying hot solar water without letting in the elements from outside.

The **20 collectors** fit nicely in their recess in the roof line.

In the mechanical room in the basement, we installed the **700 gallon storage tank and the copper coils** that were dedicated for pool heat, radiant heat, and domestic hot water pre-heat.

A **primary-secondary circulator pump setup** was installed – when the system started up, both of the pumps would run to lift the water up to the top of the solar collectors. Once a siphon was established, we only needed to maintain enough pressure on the bottom of the pipes going to the roof to prevent the siphon from failing. We could do this with just one pump so the other pump was de-energized.

Motorized valves were installed to direct solar hot water to the house for domestic hot water pre-heat or to the radiant system for heating the pool house floor.

Finally, a **DDC (direct digital control) system** was installed to control and monitor all features of this solar hot water system. It monitored solar collector temperature, storage tank temperature, motorized valve position, circulator status, and domestic hot water, pool, and radiant setpoints.

Our goal is to be **Martha's Vineyard's premier plumbing and HVAC shop –** we appreciate the opportunity to show you some of our work.