Larger Water Temperature Drops

The design water temperature drop through traditional hydronic heating equipment is typically figured at a 20°F drop (20°F ΔT). This is because traditional heating equipment utilizes round water tubes in its design. At water temperature drops greater than 20°F ΔT, the water flow rate is so low that it produces laminar flow through the round tube. With laminar flow, there is little or no heat transfer between the water and the round tube, and the heating equipment does not produce heat.

Runtal, on the other hand, utilizes flattened water tubes for our designs. The water flow through flattened water tubes is turbulent, even at extremely low flow rates; assuring excellent heat transfer between the water and the flattened tubes. Water temperature drops of 40°F ΔT, or even 60°F ΔT, are possible with Runtal.

Designing with larger design water temperature drops can lead to great savings in the overall cost of a heating system. For example, designing with a 40°F ΔT in lieu of a 20°F ΔT means that the required flow rate is cut in half, to provide the same heat output:

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\text{Flow Rate} = \frac{\text{Heating Capacity}}{\Delta T \times 500}
\]

Half the flow rate means smaller piping, less insulation, smaller pumps, smaller expansion tanks, etc – all leading to a lower cost for the heating system.

In Europe (where energy costs are much higher) almost all hydronic heating systems are designed around water temperature drops of 40°F ΔT or more to save pumping energy costs.