



# OUR STORY, OUR TECHNOLOGY

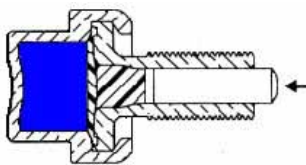
Therm-Omega-Tech was established in 1983 when owner Fred Pirkle developed a highly reliable and cost effective freeze valve for the railroad industry. This freeze valve has now become the industry standard for the North America Railroads.

Therm-Omega-Tech has taken the same technology that is utilized in our railroad freeze valves (GURU) and developed valves and systems for the industrial market. These include valves for freeze protection, scald protection, steam traps, ambient sensing, surface sensing as well as many other applications. We have mixing valves for both water/water and steam/water applications. These valves have been incorporated into Hosedown Stations for warm water wash down and Instantaneous Hot Water Heaters to provide tempered water for safety showers/eyewashes.

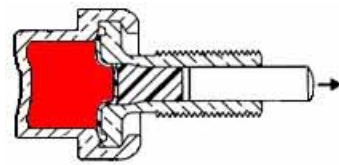
The technology utilized in our products is referred to as phase change technology. It dates back to the 1930's when a particular paraffin wax that changed phases from a solid to a liquid at a very specific temperature was discovered. The temperature at which this wax changed phases was so repeatable and reliable that to this day the ASTM utilizes this wax to calibrate temperature instrumentation.

Therm-Omega-Tech incorporates this wax into our Thermoloid material. This Thermoloid material is sealed in our actuators by a diaphragm. When the Thermoloid material is heated above its melting point it begins to expand and push on the diaphragm, which in turn pushes on a piston. This piston acts as a valve stem, opening or closing a valve. As the Thermoloid material cools below its melting point it compresses and a spring returns the piston and diaphragm to its Cold Position. Please see pictures below:

**COLD POSITION**

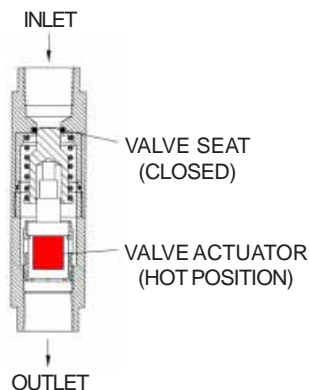


**HOT POSITION**



The shaded area in the above pictures, represent the Thermoloid material. Because of the gradual transition from solid to liquid of this Thermoloid material, these valves act more like modulating valves rather than quick opening/closing valves. Direct acting valves are designed to be open when the actuator is in the Cold Position while Reverse acting valves are open in the Hot Position. Please see an example of both the Direct and Reverse acting valves below:

**DIRECT ACTING**



**REVERSE ACTING**

