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## Hydronic heating, controlled non-electrically

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THE USE of non-electric controls in the field of hydronic heating technology are as old as hydronic heating itself. Long before electrical or electronic control devices were available, wax-filled draft regulators were used to control boiler temperatures on coal-or wood-fired boilers. These were immersed on top of the boiler. They mechanically operated air dampers at the fire box to control the burning rate of the fuel and subsequently the boiler temperature.

Even before electric actuators and electronic outdoor reset controls were invented to modulate mixing valves and subsequently heating medium supply temperatures, capillary sensors attached to self contained hydraulic actuators would perform this task.

Long before electronic or bimetallic thermostats opened and closed electronic motor driven zone control valves for individual room temperature control, wall-mounted sensors filled with acetone like liquids would reliably control radiator and zone valves.

**What role do non-electric controls play in today's heating business?**

Even today, in an area of high tech electronics, non-electric controls are still indispensable and above all more reliable for long term operation, especially where safety is the prime concern.

Not a single boiler manufacturer worldwide hangs his hat on electronic controls when it comes to final safety shut down of a heating plant. Only non-electric controls have been able to perform this crucial task safely for decades, preventing boilers from blowing up and furnaces from melting down, saving many lives and properties over the years. Even sophisticated high tech microprocessors could not be safely utilized on a heating boiler without non-electric high-limit safety aquastats. High tech provides the thinking;

low-tech non-electrics provide the safety. Both must work hand in hand. Without "Fred Flintstone" safety devices, sophisticated computer operating controls could not have a place in our business today.

Non-electrics play a similar role in the automotive industry, industrial processing and many other industries where safety must be the number one priority. Think of all the legendary 4000 and 6000 Series Honeywell capillary type non-electric aquastats which allow you to safely leave the job even when the wiring isn't completed or the elec-

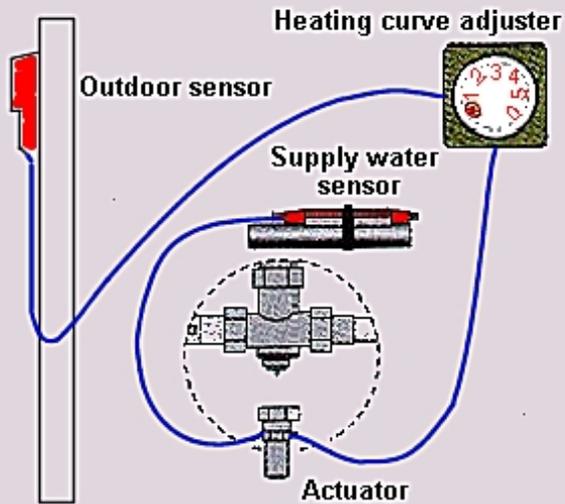
trician has wired every terminal to the electronic controls incorrectly. Without those innocent looking little gray boxes and the safety shield they provide, many of us would not be in business today, simply because of liability reasons.

Look at the billions of non-electric radiator valves in operation worldwide, performing reliably for decades, never seeming to peter out, an ability electrical controls can never provide.

In the field of radiant hydronic heating, non-electrics are more and more playing an important role. They provide the control we are looking for, they are simple of installation, they are reliable, cost effective and forgiving.

The last property is an especially important one. There are many installations where even the experts have made hydraulic piping design mistakes, especially in relation with three-way mixing valves. Non-electric modulating mixing valve controls seem to have this magic ability to overcome the lack of understanding of just how mixing valves work and how they fit hydraulically into a system. They compensate for sudden set point deviations more gradually, and prevent rapid mixing valve hunting, which typically happens with electronic controls. Mixing valve hunting is usually due to improperly balanced hydraulics within the system, such as other system pumps trying to back feed through the valve's by-pass, which can result in premature failure of the actuators and controls. Non-

## Non-Electric outdoor reset control with a three-way mixing valve



electrics keep doing the job without your ever knowing that the hydraulics of the system are not in balance, even if there are piping mistakes which normally would cause the system to malfunction.

Non-electrics are truly a wonderful invention and can make the small installation piping mistakes of a hydronic system disappear.

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