



INDUSTRIES LIMITED

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One-Pipe Gravity Heating

In the early days of hot water heating, they didn't use circulating pumps. Flow was achieved by gravity – buoyant hot water flowed up through large pipes into large radiators. There it was cooled, became more dense, and dropped back to the boiler in the basement. No moving parts!

We don't design gravity circulation systems anymore, but it is possible to get unwanted heat transfer in modern systems because of gravity flow. In fact, this can happen within a single pipe. Buoyant hot water can flow in one direction along the top of the pipe, with cooler water flowing in the opposite direction along the bottom of the pipe. If this happens, heat transfer will continue from a terminal even if the control valve is closed – very mysterious.

Prime conditions for this are high water volume terminal units at the same or higher elevation than the mains, with large diameter feed pipes and the control valve on the return. Example – a run of 1-1/4" wallfin element. It can usually be prevented by installing a check valve in the vertical riser to the terminal, or by moving the control valve to the supply side.

Axiom Industries Ltd. – Specialty Products for Hydronic Systems