

STEAM WATER MIXING ~ PRECISE MIXING PROVIDES SAVINGS**BACKGROUND**

Direct mixing of steam into water has been a process used in multiple industries for a long time to heat water often to temperatures higher than that normally seen using other typical heat exchanger processes.

Brands such as Pick™ and HydroHeater™ are popular in these applications with many years of experience in deploying 50 year old technology to achieve a result. Little appears to have been done to achieve any fundamental advance in performance in these systems over time.

The accurate mixing of water to maintain process variables as near to optimum set point provides companies the opportunity to maximize profitability through reduced utility and energy consumption combined with increased product yield.

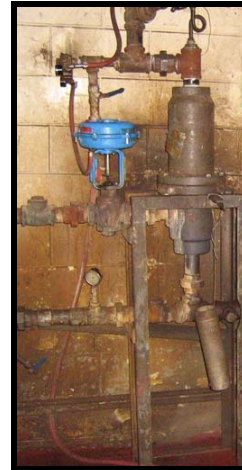
PROBLEM

Traditional steam water mixing systems such as Pick and HydroHeater rely on the steam entering the unit to be controlled via a pneumatically actuated valve. Pneumatic plug valves are maintenance intensive around the sliding gland packed seal and rely on constant high quality air to deliver a reasonable level of control.

The mixing chambers of the units typically use a “cage” to collapse the steam across into the water stream. The sudden pressure drop across this cage can often cause calcium to precipitate out, effectively blinding the cage with scale, and further affecting the performance of the units.

The actual control of these units is either via thermostatic temperature elements, or more recently via an external RTD temperature probe connected to a PLC and I to P converter to drive the position of the steam control valve. This consumes a large amount of space, and external equipment with a degree of control / response latency to achieve any degree of accuracy.

Plants typically operate these systems with a set point 5 – 10 deg °F above what is actually required to cope with the high degree of variance that is delivered, therefore wasting large amounts of space and energy.



Traditional Pick™ and Emech Steam Water Mixing Stations

SOLUTION

The Emech F5 system presents a unique “Out of the Box” control solution ensuring that temperature accuracy of +/- 0.9 deg °F can be maintained even during unequal pressure differentials

Increased accuracy of mixing has provided significant savings to customers in the form of reduced energy cost.

A reduction in temperature set point of 5 deg °F, to still achieve consistent temperature output, at 70 gpm provided one customer with energy savings of more than US\$100,000 per year on gas to run his boiler.

The patented swirl mix design of the Emech F5 minimizes scale build up, and Emech have developed a Teflon lining available to eliminate build up within the valve.

Customers have experienced payback intervals measured in weeks and months as a result of the deployment of Emech technology, and have led to the redefinition of what is acceptable in process performance.

Contact Emech directly or your local distribution representative for more information