

# BREWERY CLEAN-IN-PLACE FILLER LINES



## SUMMARY

### GOAL:

- Meet temperature rise requirements under variable conditions
- Simplify system design
- Eliminate or reduce hammering
- Reduce maintenance and downtime

### ACCOMPLISHMENTS:

- Smooth operation over entire temperature rise range
- Eliminated hammer
- Simplified design with complete package with temperature controller

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A major US Brewer needed an efficient and reliable method to precisely heat circulated water/solutions for a CIP application of beer filler lines. The application presented a variable heating load of 35°F [19.4°C] temperature rise requirement. To simplify system design and accomplish the degree of control necessary under the variable conditions, the decision was made to use direct contact steam heaters. The original installation utilized a competitive heater that proved incapable of operating smoothly over the entire temperature requirements range. Excessive hammering during operation necessitated frequent disassembly to repair internal components. Consequently, minimizing maintenance costs and downtime became important considerations in selecting a heater for subsequent installations.

## CONDITIONS

Fluid:	Recirculated Water
Flow Rate:	175 GPM [40 m <sup>3</sup> /hr]
Inlet Temperature:	Variable, 60-185°F [16-85°C]
Discharge Temperature:	185°F [85°C]
Temperature Rise per Pass:	35°F [19.4°C]
Steam Supply Pressure:	70 PSIG [7 barg]

## SOLUTIONS

The engineering team evaluated the K411AS Hydroheater® as a replacement heater for the CIP application. The final decision to purchase the Hydroheater was based on simple geometry and internal steam modulation's unique feature. This enables the Hydroheater to operate smoothly over the entire range of steam flow (temperature) requirements without hammer or instability. To simplify installation, the Hydroheater was supplied as a complete package with a temperature controller.

The Hydroheater was installed in early 1989 and has met performance expectations by providing smooth, hammer-free operation with precise control of loop temperature. The successful performance of the Hydroheater has resulted in the installation of Hydroheaters on two other CIP systems.