

SOLARIS®

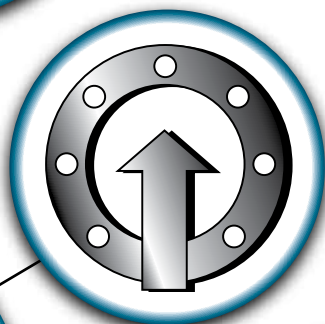


hydro 
THERMAL®
SINCE 1934
A HERITAGE OF STEAM INNOVATION

EXPECT • EVALUATE • ENGINEER • SUSTAIN •



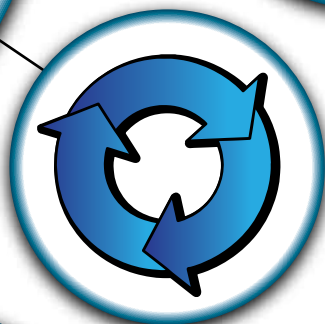
**Precise Temperature Control
 $\pm 1^{\circ}\text{F}$ [$.5^{\circ}\text{C}$]**



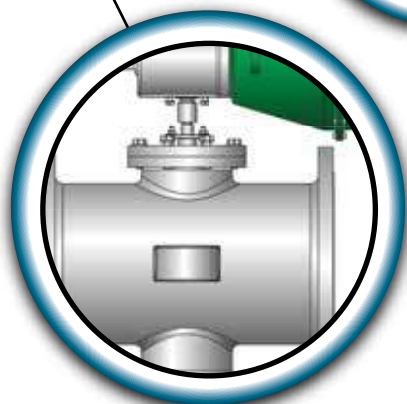
**Straight-Through
Design**



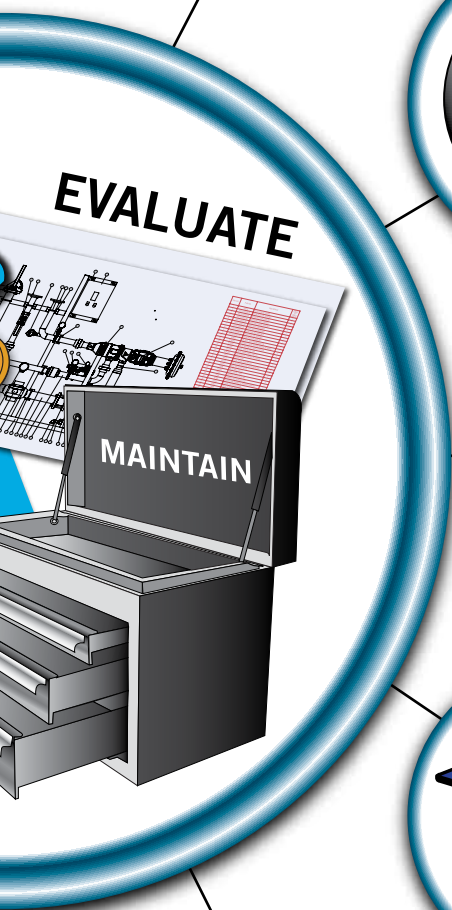
**Low Pressure Drop
Through the Valve**



**Ensures Thorough Mixing and
Uniform Temperature**



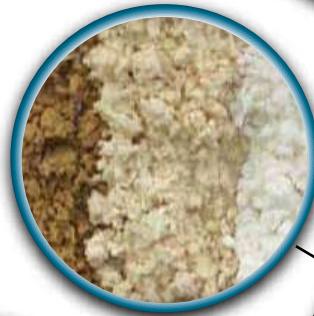
**Low Shear, Maintains Particle Size
Easily Plumbs into Existing Plant Utilities
Available as a Stand-Alone Heater or
Skidded System**



**Handles Viscous, High Solids,
and Fibrous Slurries**
Including cellulosic ethanol



**Bleaching
Medium Consistency Pulp Stock**
Products up to 12% Softwood Pulp Consistency



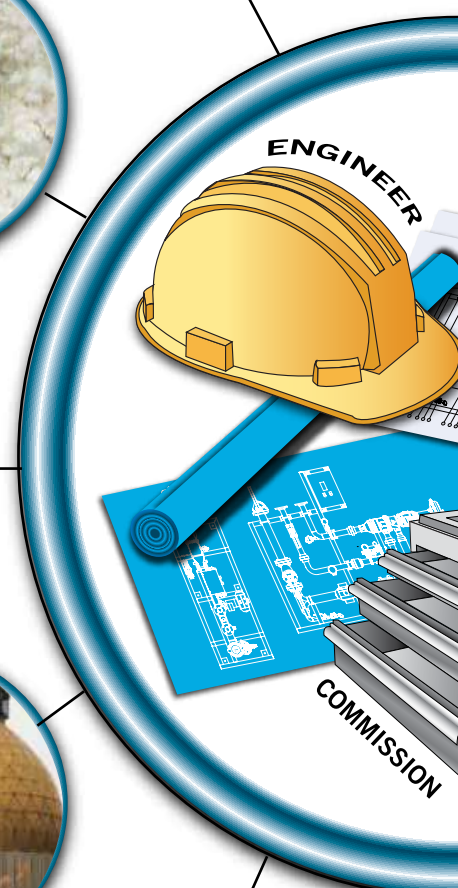
**Boiler Feed Water
Large Water Flow Rates**
(greater than 4,000gpm, 20"
diameter pipes and greater)



**Anaerobic Digestion
Sludge**



Tomato Paste from 10-35 Brix



OUR TECHNOLOGY

The Solaris Hydroheater's internal modulation assures accurate steam control, rapid temperature management, and produces predictable results.

Solaris Hydroheaters control steam flow by employing a rotary stem plug assembly inside the heater. The precise mixing of metered amounts of steam directly with a liquid or slurry provides instantaneous condensation of steam and transfer of heat from steam to the liquid.

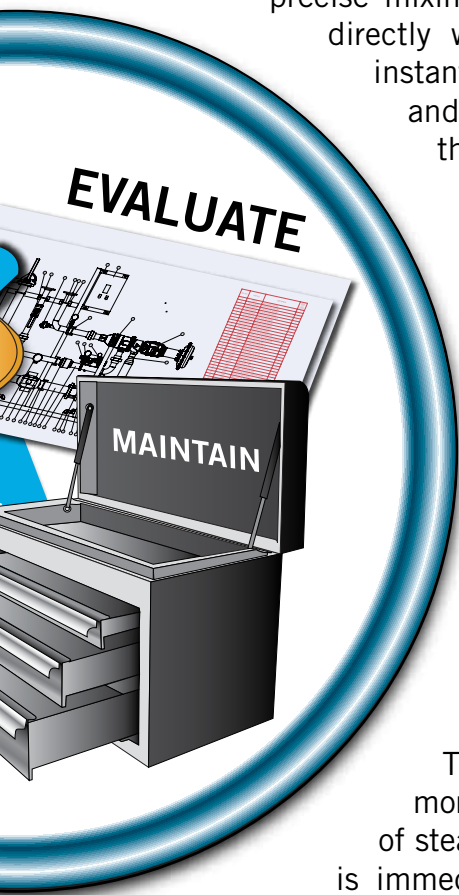
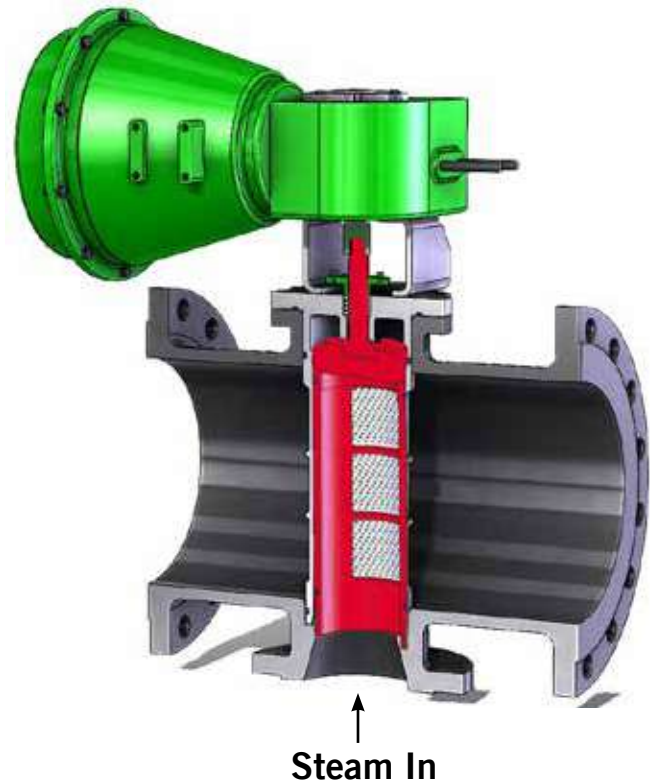
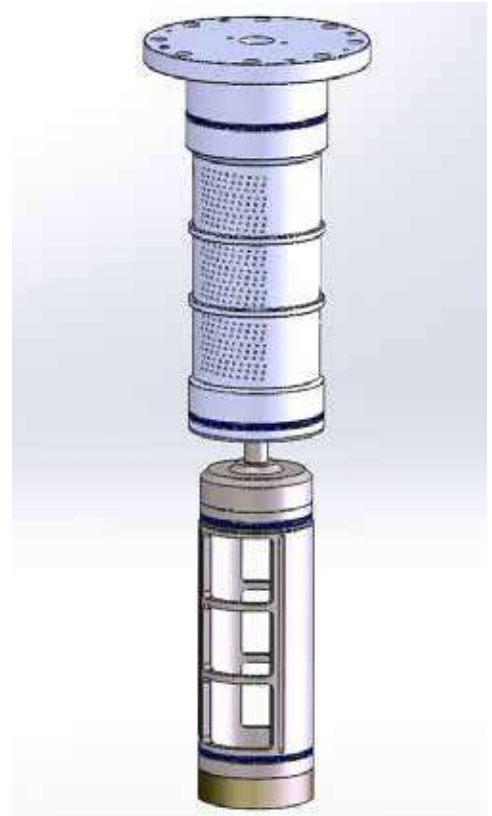
Steam is injected into the liquid through tiny holes in a diffuser.

A precisely engineered, variable-area steam diffuser meters steam flow at the point where steam and liquid first contact and mix.

The diffuser holes generate a steam pressure differential that chokes the mass flow rate of steam and accelerates it to sonic velocity unique to Hydro-Thermal heaters.

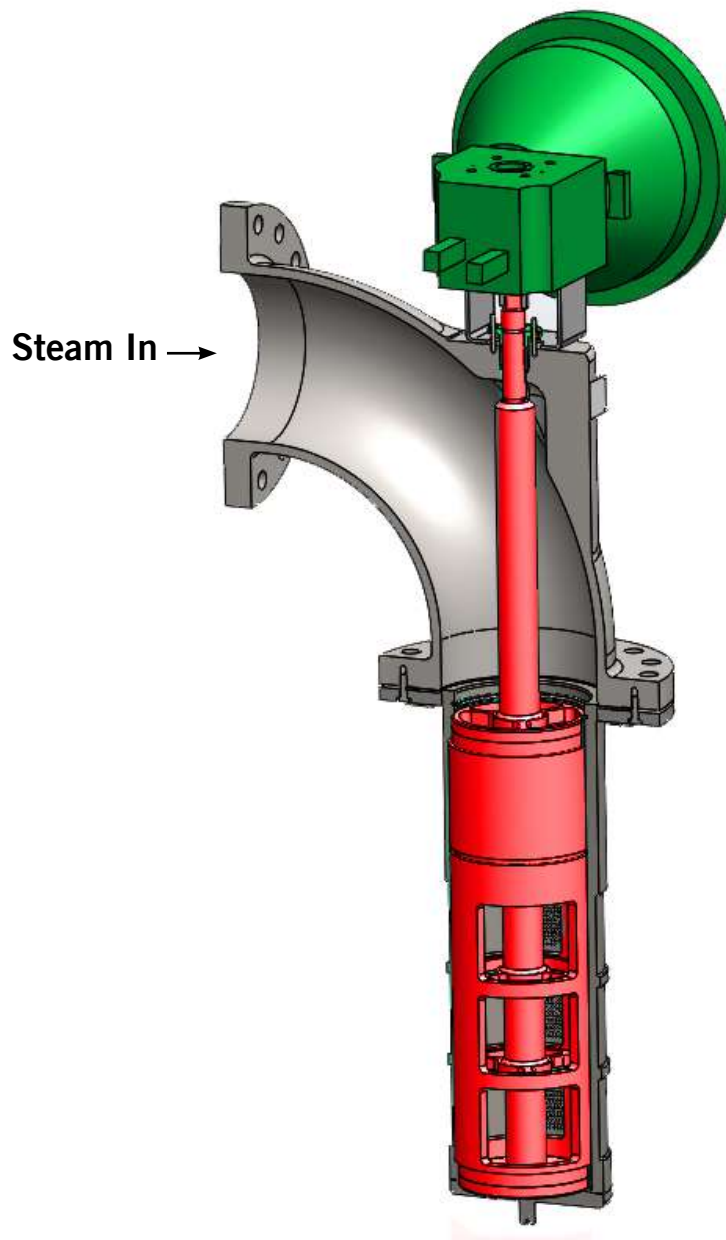
The stem plug rotates to expose more holes based on the mass flow of steam that is required. The response is immediate and precise to changes in steam demand via a modulating control loop.

Only the area of the steam injection changes which provides process stability through a much wider variation of process conditions. As the incoming liquid passes by the diffuser, steam condenses instantaneously, eliminating hammer and vibration, also causing a mixing action that uniformly distributes the heat in the liquid.



SOLARIS ELBOW DESIGN

For large process flows with nominal pipe size greater than 16" diameter utilizes our insertion style Solaris. The range of size for the insertion style includes 20", 24", 28", 32" process piping. Internal modulation and diffuser function are the same as in the standard Solaris, but the steam connection (elbow casting) supports the actuator and both steam and valve stem enter the injection point from the same side (ANSI or DIN style flange). This eliminates the need for a large diameter cast body and rather uses the process piping for the steam-fluid mixing zone. The bottom end of the diffuser is anchored inside the pipe with a support foot. Foot and customer process piping not shown.



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CAPABILITIES

- Up to 16" for the standard design and up to 32" for the elbow design
- Volume capability: flow rates up to 25,000 gpm [5,678 m³/hr]
- Moderate steam capacity, up to 50°F ΔT under most conditions.
- Up to 10:1 liquid turndown
- Viscosities up to 40,000 cP, consult factory for higher values
- Connections: ANSI Class 150; ANSI Class 300; DIN PN16, PN25, PN40, Others upon request



SPECIFICATIONS

- » **Pressure and Temperature Rating:** 300 psig @ 450°F (standard)
- » **Material:** a variety of materials, including 316/316L SS, 254 SMO, 1.4408 Harmonized, Hastelloy; consult factory for other materials.
- » **Compliances:** Designed to ASME Sec. VIII, Div.1, CE/PED and CRN available upon request



PED CRN CE 

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