



ASEPTIC PASTE HEATING

In the California tomato season of 2014, Hydro-Thermal Corporation launched a successful season-long trial of the Solaris heating system for aseptic tomato paste packaging. The system ran for the entire 14 week season while optimizing performance and defining parameters to provide stable operation and a quality product.

The Solaris was customized to meet the hot and cold break paste's unique demands at solids up to 35% NTSS. Once optimized, the system met the following customer requirements:

- Burn-on was eliminated. The Solaris went up to 4 weeks between inspections with no significant deposits or burn-on.
- Steam hammer did not occur in the heating system or downstream piping.
- High frequency vibration was minimized. The system can control and eliminate potentially damaging vibration.
- Seamless transition from recirculation mode to feed-forward was achieved without heater or temperature upset. The pressure swing of up to 100 psi [7 barg] during this transition did not affect heater operation.
- Flow turndown exceeded 2:1 without a change in stable operation.
- Consistent temperature control was achieved during feed-forward production.

The successful solution incorporated a custom-designed Solaris heater built into a supply manifold and steam conditioning system for a 4-inch [DN100] aseptic paste line. Trials also featured these components and design configurations:

- Redundant S204 Solaris heaters for continuous operation and trial flexibility.
- Investment cast 300# Solaris heater body with ANSI flanges, ensure smooth operation even when upset conditions occur outside the system.
- Custom internals designed for optimized paste flow and steam condensation eliminated the vibration observed during previous installations.
- Durable frame support structure dampened and eliminated vibration carrying through the system.
- Schedule 40 pipe used throughout the process line manifold ensured durable service.
- Steam pressure control was used to set a pressure differential to the process of 50-100 psi [3.5- 6.9 barg], allowing for stable operation and minimal vibration or noise.
- Heating capacity of up to 30°F [-1° C] in a single heater pass.

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Hydro-Thermal Heating System Solution

A season of trials resulted in a complete system package designed for 4 and 6 inches [DN100 and DN150] aseptic paste lines. This skidded system incorporates:

- Custom Solaris heaters in either single or dual pass, depending on the total temperature requirement. A single heater can accomplish up to a 30°F [-1° C]rise.
- Frame is constructed of welded square tubing with feet designed for anchoring into concrete. The footprint for the Solaris system is similar to dimple tube designs.
- Schedule 40 piping and flanged connections with braided flexible joints at the inlet and outlet to allow for the minimal transfer of vibration to the rest of the system.
- Steam line includes a drip leg and steam trapping to ensure dry steam supply. Isolation valves and check valves prevent the paste from backing up into the steam line. An additional steam conditioning system will be provided with a pressure control loop and culinary filter unless existing equipment meets the system requirements.
- The system is supplied with wiring required by the site to allow flexibility in control systems. Existing temperature and pressure transmitters can often minimize conversion costs from dimple tubes or other heating methods.



Need more information about Hydro-Thermal products?

Go to www.hydro-thermal.com or
contact us at info@hydro-thermal.com

400 Pilot Court | Waukesha, WI 53188
(262) 548-8900 | (800) 952-0121

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