



Fig. 1 – Typical Tank Car Washing Hot Water Loop

### Application: Tank Car Cleaning

Transportation of liquids and solids via rail car is a critical transportation link for moving raw materials from producers to end customers. Cleaning of the tank cars is important to prevent cross contamination and ensure that the tanks are properly sanitized prior to loading. Figure-1 above shows a typical hot water tank car cleaning loop.

### Issues Associated with Tank Car Cleaning

- On demand hot water and fast system recovery is important to maintain tank car cleaning production.
- Temperature control is critical to issue proper sanitation. Meeting cleaning requirements for both standard applications (180° F) and Kosher (212° F) requirements.
- Equipment reliability to handle intermittent operation, water & steam turn down, & aggressive cleaning solutions.

### ProSonix Direct Steam Injection Heater Solution

The ProSonix (PSX) steam injection heater is well suited for intermittent operation and on-demand hot water required to heat the wash water. Wash water temperatures can range from 180 °F to 220 °F. The key to efficient, safe, and predictable steam injection is the use of Internally Modulated steam control to inject steam at sonic velocity to achieve choked flow. With choked flow, sonic velocity conditions are achieved for steam injection. The ProSonix Heater uses an integral pneumatic actuator to maintain sonic velocity steam injection for good, non-violent mixing across the entire operating range. The PSX heater is an internally modulated heater, with a variable position stem plug, that varies the mass flow rate of steam by changing the area through which the steam may pass. This type of modulation allows the full steam pressure to always be present at the point of injection regardless of plug position.

### Key PSX Heater Steam Injection Heater Benefits

- **Reliable Performance** – Ability to achieve & maintain required wash temps for standard car cleaning (180 deg F) and Kosher requirements (212 deg F)
- **Precise temperature control** – Maintain +/- 1 deg F control for wash temps over 45-minute cleaning cycle
- **System stability** – no surging from single jet eductor style heater impacting pump flow or CIP spray ball performance
- **Quiet Operation** – Elimination of steam hammer & vibration associated with eductor style heater
- **Faster Start-up & Recovery** – PSX Heater came up online at desired wash temps within 1-2 minutes eliminating wash delays & tank wash station from becoming production bottleneck

For additional information, please visit [pro-sonix.com](http://pro-sonix.com)