

Why Low-Pressure Steam for Heating Rail Tank Cars?



There are three main methods to heat a tank rail car for offloading or transloading: 1) hot water from an industrial water heater pumped through the heat lines of the tank car, 2) steam from a high-pressure boiler system, and 3) low-pressure steam from a steam generator. Hot water and high-pressure steam are used for very specific applications and facility layouts. Low-pressure steam from a steam generator is the most versatile when it comes to products to be unloaded and facility layouts.

Hot water works well when you need a lower temperature with a product that is sensitive to exposure to heat for a prolonged timeframe. Some of the disadvantages of using hot water are lower heat transfer capability, more complicated set up and tear down, and large amounts of water consumption.

High pressure steam works well when you need temperatures greater than 250° Fahrenheit (121° Celsius) to heat certain products (such as asphalt). A high-pressure steam boiler also works well when you must transfer the steam longer distances. The higher pressures and temperatures of a high-pressure boiler make them more dangerous to operate. Therefore, there are strict regulations in place that must be followed, including the requirement that a certified boiler operator be onsite during operation.

The third method, low-pressure steam, is the most versatile and efficient. A low-pressure steam generator gives you better heat transfer and faster times to target temperatures. Biodiesel, caustic soda, corn syrup, crude oil, vegetable oil, paraffin, urea, and tallow are some of the products that can be efficiently heated with low-pressure steam. Steam generators are easy to operate and can be fully operational in minutes. Steam generators can use either diesel, natural gas, or propane as their fuel source, and require a simple water source and 115V electricity. A mobile low-pressure steam generator is a great solution for transload facilities. Mobile units are self-contained with water tank, fuel source, and electrical generator.

"We use a trailer mounted low-pressure steam generator for railcar heating and are extremely happy with how it has performed for us. We previously were using a hot water system that was taking an average of 12 hours to heat a car, but now we are heating those cars up in about 8 hours. Also, the increased efficiency of our new system has saved us a significant amount of money in fuel costs as well." **Transload Owner/Operator – West Virginia**

The chart below shows the temperatures needed to off load certain products.

Flowable Temperatures of Common Substances	
Liquids	Flowable Temperature (°F)
Asphalt - NEED HIGH PRESSURE BOILER	320
Caustic Soda (18% NaOH)	80
Corn Syrup	130
Biodiesel (B100)	100
Fish Oil	120
Fuel Oil, Diesel #1, 1-D, Kerosene, JP-8	120
Fuel Oil, Diesel #2, 2-D	120
Fuel Oil, Bunker B, #4, #5	120
Fuel Oil, Bunker C, #6	120
Lard	140
Molasses	120
Oil, Cottonseed	120
Oil, Machine	120
Oil, Olive	120
Oil, Crude	120
Paraffin (melted)	160



Sioux Corporation has been manufacturing Steam-Flo® steam generators since 1939 and can provide different sizes and setups for rail facilities. If you are ready to learn more about the advantages of low-pressure steam for heating rail tank cars, contact us and we can show you what would work best for your operation.

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