

Fireless Steam Locomotives

A fireless steam locomotive is typically a small live steam locomotive most often used for industrial applications such as at a power plant, food manufacturing facility or chemical plant. They were very clean in operation and could be used in cities, factory facilities etc. that had stringent pollution requirements.



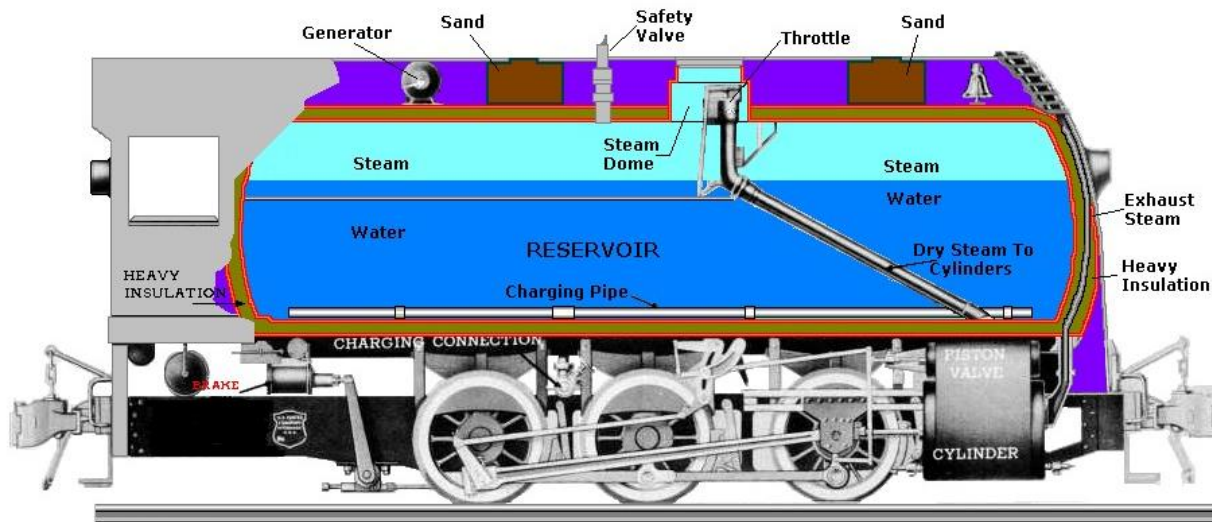
A fireless steam locomotive has no firebox or boiler. In place of these, there is a large very well insulated tank called a steam accumulator. The tank is filled with high pressure hot water from an external source. The energy source (high pressure hot water) could be a stationary boiler or another steam locomotive equipped with a high temperature water exchanger. The hot water level and internal tank pressure will start developing high pressure steam in the upper portion of the tank. Steam is sent to a typical steam locomotive's steam chest via a pressure regulating throttle valve. The steam chest's piston valves move a piston back and forth to push and pull the drive rod linkage connected to the driver wheels. This part of the fireless locomotive is similar to other steam locomotives with on board boilers.

Most fireless locomotives are 0-6-0's and 0-4-0's as they are designed for private yard switching and industrial siding work. A few 0-8-0's were built for more heavy applications. Much smaller versions of the fireless locomotives were designed to run on compressed air in underground mining operations.

Fireless locomotives have no way of regenerating the energy they have consumed to do their assigned work shunting rail cars or very short trains. A short train might be one of a very few cars for shunting coal cars in a power plant or chemical tank cars in chemical plants.

It is interesting that many fireless locomotives made in the U.S.A have their steam chests at the front of the locomotive and many European designed fireless locomotives have their steam chests under the rear cab of the locomotive.

The diagram below provides a visual of how a fireless steam locomotive works.



Fireless Locomotive Diagram

Models of fireless locomotives are not common. There are some vintage models made of brass. The Marklin Co. of Germany has made a couple of models since the mid 1990's and are very detailed and authentic.



Marklin HO Gauge Fireless Locomotive

(Note steam chest location under cab)