

ABSTRACT

Today, a lot of steam is used for people needs. For example, steam is used for healthy like spa therapy. Others, steam is used for powerplant as a power source to work the machine like generator. The one which used a steam for power is locomotive steam. Based on this facts, writer want to design a locomotive boiler which is able to operating a locomotive steam. The pressure of design locomotive boiler is 14 kg/cm^2 , assumed that pressure of inlet water is 1 atm, temperature of inlet water is $27 \text{ }^\circ\text{C}$, temperature of saturated steam is $194,2 \text{ }^\circ\text{C}$, and temperature of superheated steam is $200 \text{ }^\circ\text{C}$

In this design, writer observed a real locomotive steam in Ambarawa Railway Museum, Central of Java in order to know the locomotive boiler. There are main components that designed for a locomotive boiler system : furnace, grate area, fire pipe, superheater, and chimney. Before design the main components, a steam capacity is calculated first. From analysis und calculation, the steam capacity to make 14 kg cm^2 of pressure is 36,6 ton-hours. Then, the main components are selected and calculated depends on the steam capacity.

From the design of locomotive boiler, writer gets technical data for each main component, such as : power for locomotive to work with two full load cars is 2814 HP, diameters of firepipe is 39,6 mm, length of firepipe is 2320 m, length of superheater is 1,47 m. Hopefully, with that data, its can be designed an efficient locomotive boiler.