$$E_e = \frac{m_s (h_2 - h_1)}{h_{fg}} = \frac{1.325475 (2709.34 - 113.1)}{1984.3}$$

$$= 1.73 \text{ Kg/s}$$

DISCUSSION

From the data collected it was observed that with the increase in boiler pressure the temperature the steam increases as well as the exhaust gas temperature. More over it was further shown that the more the operating temperature of the boiler increased the more the steam was produced hence this was shown with the increase in the steam gauge pressure change.

The standard efficiency for boilers is 40%. How ever the efficiency found during the experiment was ... which is the boiler thermal efficiency. The equivalent evaporation value E_e was thus found as

There was a great deal of ~~error~~ observed exhaust gas temperature recordings which is expossed to skin would have caused burns.

Errors would have arose from gas valve that leads the steam to the seperating and throttling calorimeter having leaks. These Leaks for steam and fuel gas observed contributed Also the massive temperatures observed at the exhaust pipe showed that most of the heat was not used to heat the water but escaped with the exhaust gas.

The efficiency of the boiler could be improved by increasing the boiler preasure which increases the average temperature during the heat-addition process whach raises the temperature at which boiling takes place thus raising the energy of the steam.

Another way to improve the efficiency is by passing the flue gas through an air heater which acts as a heat exchanger in which air ~~being~~ burning into boiler furnace is heated. The air reaches the furnace at a high temperature, thereby requiring less heat energy for heating.

More over using the fine gases to heat water as an additional heat source reduces the amount of ~~ene~~ energy ... out which raises the efficiency.