

## Steam Trap Energy Losses

- Failed Open or Blowing Traps, average 10 – 11% of your trap population. Traps that have failed in the open position do not allow steam to condense in the exchanging surface. This results in the need for more steam to do the needed work. This results in added fuel oil expenses. These losses are measurable and can be quantified.
- Failed Closed or Cold Plugged Traps, average around 10% of your trap population. Traps that have failed closed, do not allow condensate to be removed from the exchanging surface. This results in poor system efficiencies, corrosion and water hammer. Although we can not measure their effect of fuel oil costs, there is a hidden loss in maintenance and trouble and complaint calls.



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## Steam Trap Energy Losses

Modified Napier Formula, can be used to estimate steam loss through a trap blowing to atmosphere. The following is the equation used in calculating the approximate loss:

Modified Napier Formula

$$\text{Steam loss in lbs./hr} = (24.24) * (\Delta Pa) * (D * D)$$

Where:

Pa = Pressure in Absolute ex. Gauge Pressure + 14.7

D = Orifice Diameter in Trap in Inches.

Example: Inverted Bucket Trap on main steam drip station on 125-psi steam service 0.75" pipe connection, rated at 125-psi differential. From manufacturers' literature, this trap has a 0.125" orifice. Using the Modified Napier Calculation, the calculated steam blow through this orifice is as follows:

Steam Loss in lbs. /hr = (24.24) \* (Pa) \* (D\*D) or the following:

$$\text{Steam Loss in lbs. /hr} = (24.24) * (139.7) * (0.125 * 0.125) \text{ or } 52.91 \text{ lbs. /hr loss}$$

FW WEBB COMPANY



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