

**Abstract**

Heat exchangers are generally used to exchange heat at an optimum rate. Domestic gas geyser is also an heat exchanger for domestic purpose. But the main aim by using heat exchanger is to transfer heat by an efficient manner i.e. by using minimum input there will be an improvement in output. For this purpose there is a need to improve the design of domestic gas geyser. In this paper, reviews of various researchers on gas geyser design to improve efficiency has been studied. From this study an idea has been implemented for research work on domestic gas geyser in which the twisted tube has used along with an Economizer.

Index Terms: Heat Exchanger, Twisted tube, Economizer,

1. INTRODUCTION**1.1 Gas Geyser**

Gas Geyser make the use of Liquid Petroleum for the purpose of heating. These geyser types have no limited power to heat water. Gas geysers provide incessant flow of heated water and supply immediate heating.

A instant gas geyser or tank less gas geyser required less quantity of water at once. Hence most of the gas geyser manufacturer provides such types of gas Geyser's. For instant bath a bath tube or storage gas Geyser's are used because it provides a large quantity of water at once. This type of gas Geyser's are simple in construction and operation over tankless gas Geyser's. Now the global population are increases and also the energy demand for

heating water or energy demands increases. It is very difficult to fulfill the such huge energy demand at less cost. Water heating is the main source of largest energy consumption in the home and the maximum overall house hold energy consumption, therefore varies kind of domestic hot water heater are exist.

The energy input is responsible for the operational cost and performance of this water heater. Hence their is a need to choose proper design of domestic water heater which required less performance cost with best efficiency of heat transmission for the same energy input which requires for conventional gas Geyser's.

2. LITERATURE REVIEWS

The heat transfer rate can be increased by making minor changes in the heat exchanger of gas geyser. Economizer can successfully installed on the gas geyser which causes the higher output temperature as the amount of heat flow increased due to the used of Economizer. [1]

The shell and tube technology is cost effective, and provides the solution for wide variety of Heat Transfer requirements. But same limitations of technology such as inefficient usage of shell side, pressure drop or low flow zones around the baffles where Fouling and corrosion can occur, and tube vibration etc. May eventually result in equipment failure. To solve this problem of conventional technologies a twisted tube heat exchanger technology developed. Which has been able to provide the solution to almost all mentioned problems and provided the good overall heat transfer coefficient throughout the tube side Enhancement. [2]

Heat Transfer rates of twisted type shell and tube heat exchanger is greater as compared to different tube geometry. [3]

The solar energy is free energy and available in the ample range and solar energy can be used for cooking, heating and power generation purpose. In the solar water heater the water which is heated can be used for bath purposes and to maintain temperature in the winter day is difficult and hence the water stored in the insulated tank of solar water heater will be supplied to gas geyser and as water is pre heated so the gas consumption will decrease in case of gas geyser. [4]

Centrifugal Forces created a high velocity region and acceleration forces on the fluids flow in the pipe creates high pressure regions at the outer side of the hollow helical pipe walls and increasing in turbulence results in decrease of the friction factors.[5]

In the helical coil heat exchanger the temperature and pressure drops are found. This drop occur due to the geometry of coil. It was observed that the variations in tube diameter has greater influence on temperature drops and pressure drops. If the diameter of the tube coil increased the pressure drop occurs and the diameter are decrease the temperature drops are found. The temperature drops is maximum for lower flow rates and pressure drop directly proportional to the flow rate. [6]

The rate of heat transfer is more in helical heat exchanger as compared to the straight heat exchanger. Because of the heat transfer coefficient of the helical pipe is 0.35 of straight pipes, and the effectiveness of pipes in counter flow is more than parallel flow configuration and also heat transfer coefficient depends upon the number of turn in the tube. [7]

Using the CFD find out the causes occur due to the leakage of boiler super heater tube. This tube will be affected by the high temperatures of the flue gases. Where the portion of tube are affected found, the tube portion to be shielded by using SS plates. By providing this shield the transfer of the tube safely occurs, and provides the power production without any plants shut down.[8]

An Experiment carried out on the helical tube with modifying and varying geometrical configuration in the Induction Cooker, with variations of Flow rate. In this experiment selected the one helical coil to all varying water flow rates and found that when water flow rate increases the heat transfer decrease. If the maximum number of turns of helical coil the heat transfer are maximum.[9]

When the pitch of the coil is minimize then the optimization of the coil achieved.[10]

3.CONCLUSION

Different geometrical configuration of tube in domestic type gas geyser are responsible for heat exchange process. These different geometries with different configuration of tube, heat transfer properties can be improved with optimum is focused on optimum design of coil which causes improvements in heat transfer properties.

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