

MODIFIED SHELL & TUBE TYPE HEAT EXCHANGER
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ABSTRACT

Heat exchanger is a device which provides a flow of thermal energy two or more fluids at a different temperature. There are many problems created in the segmental heat exchanger during its working. The main reason of that is construction of shell & tubes, type of fluid used, type of material etc., The purpose of this work is to design the shell and tube heat exchanger is one of the majority type of liquid –to –liquid heat exchanger. Since the important design parameters such as the tube length, and tube layer as well as baffle spacing has a direct result on decrease in pressure and temperature.. The newly designed heat exchanger obtained a maximum heat transfer coefficient and less pressure decreases, the result shows that the performance is increases.

INTRODUCTION

Heat exchanger is devicewhich exchanges the heat from one working fluid to other. The most common type of heat exchangers used in the process is the shell and tube type. This device houses the shell side connections and is the actual structure into which the tube bundle is placed. Where the pressure and temperature is high at that place this is used. There are many problems which are affected to coefficient of heat exchangeVibrational problems, erosion, backflow, fouling, Instabilities, low contact time between the working fluid but in the modified heat exchanger these problems are minimizes and increase the contact time between the working fluid by using the construction of baffle and tubes which are use in these heat exchanger.

MATERIAL

Shell – Mild Steel
Tubes - Aluminum
Buffle - Alloy Steel

DIAGRAM


Fig 1: Modified Shell & Tube Type Heat Exchanger

METHODS

- We are developing a model where we are controlling the heat transfer rate by well designed tubes and baffle.
- Here, we are creating a hardware model where our heat exchanger will be connected with system which will allow max. Heat transfer through the working fluid.



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- Here, tubes & baffles are designed and arranged in such a way that it will increase contact time between working fluid and transfer heat without heat loss and pressure drop.

RESULTS & DISCUSSION

This is research for existing system in the world which would be similar to our project but we couldn't find any. We did find that there is method where we can increase & control heat transfer rate through using the well construction of shell and tube type heat exchanger. A heat exchanger where we need a through which we can control the rate of heat transfer. There is a method where we can use tubes having different cross section due to which contact time between the working fluid is increases & simultaneously resistance to flow is decreases. So we can get desired effect that maximum heat transfer without heat loss and pressure drop.

CONCLUSION

We can increase the heat transfer rate by using the well construction of shell and tube type heat exchanger.

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