

# DESIGN AND FABRICATION OF SHELL AND TUBE COMPACT HEAT EXCHANGER

A project report submitted in partial fulfillment of the requirements  
Award of the Degree of

## BACHELOR OF TECHNOLOGY IN MECHANICAL ENGINEERING

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## DEPARTMENT OF MECHANICAL ENGINEERING

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### CERTIFICATE

This is to certify that the project work entitled "DESIGN AND FABRICATION OF SHELL AND TUBE COMPACT HEAT EXCHANGER" submitted by MATHURTI SIVA (15811A0380), POLA SURESH (15811A03A3), PAILA UDAY KIRAN (15811A0393), KOTTE THARUN (15811A0373) to Avanthi Institute of Engineering and Technology, in partial fulfillment for the award of degree, Bachelor of Technology in Mechanical Engineering, is a bonafide record work carried out by them, under guidance and supervision during 2018-2019. This results embodied in this project work have not been submitted to any other university or institute for the award of any degree.

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## ABSTRACT

A shell and tube compact heat exchanger is generally applied in industrial applications due to its compact structure, larger heat transfer area and higher heat transfer capability. etc. The importance of compact heat exchangers (CHEs) has been recognized in aerospace and automobile, gas turbine power plants, and other industries for the last 60 years or more due to several factors as mentioned above. However flow and heat transfer phenomena related to helically coil-tube heat exchanger are very sophisticated.

In this particular study, an attempt has been made to obtain and study the effect of counter flow of inner hot fluid flow and outer cold fluid flow on the- total heat transfer from the shell and tubes, where the fluid is separated by stainless steel surface in the shell and tube heat exchanger. Stainless steel was used as the base metal for the inner tubes and Copper as the base metal for the outer shell and water, ethanol, methanol was taken as the fluid for inner and outer flow. Different dimensions of the shell, tubes are taken into consideration and length of the heat exchanger is calculated for different flow rates and for different number of stainless tubes inside the copper shell.