

A
Review Report Of
**CFD ANALYSIS OF SHELL AND TUBE HEAT EXCHANGER
WITH HELICAL BAFFLES**

A thesis submitted in the partial fulfillment of the requirement for the award for the degree
of

**BACHELOR OF TECHNOLOGY
IN
MECHANICAL ENGINEERING**

Submitted by

K. Krishna	(18815A0332)
T. Prem kumar	(18815A0362)
G. Jawahar sai mani	(18815A0318)
K. Prem kumar	(18815A0327)
N. Sai kumar	(18815A0342)

Under the guidance of

Mr. K. NAGA RAJU M.tech

Assistant Professor

DEPARTMENT OF MECHANICAL ENGINEERING



AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY

(NBA accredited)

(Affiliated to Jawaharlal Nehru Technological University Kakinada, A.P)

MAKAVARAPALEM, NARSIPATNAM (RD), VISAKHAPATNAM-531113

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AVANTHI INSTITUTE OF ENGINEERING & TECHNOLOGY

(Approved by AICTE, Permanently Affiliated to JNT University, Kakinada)

Tamaram, makavarapalem, Narsipatnam-531113, Visakhapatnam District



DEPARTMENT OF MECHANICAL ENGINEERING

CERTIFICATE

This is to certify that project report is entitled “**CFD ANALYSIS OF SHELL AND TUBE HEAT EXCHANGER WITH HELICAL BAFFLES**” was carried out by **K. KRISHNA(18815A0332), T. PREM KUMAR(18815A0362),G. JAWAHAR SAI MANI(18815A0318),K. PREM KUMAR(18815A0327),N. SAI KUMAR (18815A0342)** in partial fulfilment of requirements for the award of the degree of bachelor of technology in “**MECHANICAL ENGINEERING**” by Jawaharlal Nehru Technological university , Kakinada During the years 2018-2021.


PROJECT GUIDE


HEAD OF THE DEPARTMENT

EXTERNAL EXAMINER

Abstract

Numerical investigation has been done for single pass shell and tube heat exchanger with helical baffles. Heat transfer and flow pattern are numerically studied by varying pitch to length ratio of the baffles. Standard k- ϵ model is used for solving the above problem. Numerical simulation has been done for three different cases of baffle pitch to length ratios with hexa bundle of tubes. Numerical solutions are obtained by solving 3D continuity, momentum, energy and turbulence (k- ϵ) equations using commercial solver CFD. To analyze the phenomenon, number of baffles is taken as primary varying parameter; other parameters like mass flow rate at shell side, wall temperature of the inlet tubes are taken as secondary parameters. Results obtained from numerical solution are analyzed extensively to get the effect of baffle pitch on heat transfer rate, outlet temperature and pressure drop on shell side.

Index Terms— shell and tube heat exchanger, segmental baffle, k- ϵ model.