SIMULATION STUDIES ON WAVY AND CHEVRON-CORRUGATED PLATE HEAT EXCHANGERS USING FLUENT

B. SREEDHARA RAO[1] & R. C. SASTRY[2]

[1]Department of Chemical Engineering, CBIT, Hyderabad, Andhra Pradesh, India

[2]Department of Chemical Engineering, NIT, Warangal, Andhra Pradesh, India

ABSTRACT

Plate heat exchangers are commonly used for heat transfer enhancement at transitional and turbulent Reynolds Numbers. In the present study, numerical simulation is used to investigate the friction factor and Nusselt numbers in plate heat exchangers, for inferring the effect of channel geometry and flow conditions on the heat transfer of the exchangers. Two PHEs, one with wave geometry and another with a chevron geometry are considered with Fluent as a CFD tool. For both exchangers, the temperature of the wall is kept constant and water is used as the fluid and the mass flow rate varied to study the effect of Reynolds number.

KEYWORDS: Chevron Design, Fluent, Mathematical Model, Plate Heat Exchangers, Wave Design