Determination of Fluid Characteristics in Double Pipe Heat Exchanger Using Finite Element Method (F.E.M.)

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Abstract

Due to the growing development of using computers in making designs and in teaching, recent texts for many issues in Chemical and Mechanical Engineering field incorporate computer software to compute the optimum designs. This software is normally written to reinforce fundamental concepts and to allow designer in doing calculations by clear and fast method. The aim of this research is to give the specialists reasonable ideas about simulation software packages to evaluate fluid properties of heat exchangers in an attempt to decrease the effort and cost and to achieve the proper way to select an appropriate design. This work involves a suggested flow case in cross-section double pipe counter-flow heat exchanger. Finite Element Method (F.E.M) simulated by Ansys 5.4 software package to solve the continuity equation is given for the in suggested section and for to evaluating temperature, pressure, and velocity distribution. Results are shown as figures and color contours to guide designer for comprehensive evaluation of the system.