

عنوان مقاله:

Modeling and simulation of coil-wire insert in concentric tubes and evaluation of its effect on heat transfer enhancement

محل انتشار:

ششمین کنگره بین المللی مهندسی شیمی (سال: 1388)

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خلاصه مقاله:

In the present study, the heat transfer characteristics and the pressure drop of the horizontal double pipe with coil-wire insert are investigated with fluent software and results are compared with experimental data. The inner and outer diameters of the inner tube are 8.92 and 9.52 mm, respectively. The coiled wire is fabricated by bending a 1 mm diameter of the iron wire into a coil with a coil diameter of 7.80 mm. Cold and hot water are used as working fluids in the shell side and tube side, respectively. The software's tests are performed at 0.03 kg/s cold water and between 0.04 and 0.08 kg/s hot water flow rate. The inlet cold and hot water temperatures are between 15 °C and 40 °C, respectively. The effect of the coil pitch and relevant parameters on heat transfer characteristics and pressure drop are considered. Coil-wire insert has significant effect on the enhancement of heat transfer especially on laminar flow region. results of simulation for double pipe with coil wire insert and without coil wire insert were compared and reasonable agreement between two case were observed.

کلمات کلیدی:

;coil-wire insert; Simulation; Heat transfer enhancement; double pipe

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