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# Experimental Studies on Grooved Double Pipe Heat Exchanger with Different Groove Space

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## Abstract

Experimental studies were performed on grooved double pipe heat exchanger (DPHE) with different groove space. The objective of this work is to determine optimal heat transfer parameter especially logarithmic mean temperature difference (LMTD). The document in this paper also provides the total heat observed by the cold fluid. The rectangular grooves were incised on outer surface of tube side with circumferential pattern and two different grooves space, namely 1 mm and 2 mm. The distance between grooves and the grooves high were kept constant, 8 mm and 0.3 mm respectively. The tube diameter is 20 mm and its made of aluminium. The shell is made of acrylic which has 28 mm in diameter. Water is used as the working fluid. Using counter flow scheme, the cold fluid flows in the annulus room of DPHE. The cold fluid flowrate of hot fluid remains constant at 15 lpm. The volume flowrate of cold fluid

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were varied from 11 lpm to 15 lpm. Based on logarithmic mean temperature difference analysis, the LMTD of 1 mm grooves space was higher compared to that of 2 mm grooves space. The smaller grooves space has more advantage since the recirculating region are increased which essentially cause larger heat transfer enhancement.

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