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# An empirical correlation for exergy destruction of fluid flow through helical tubes

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**Abstract:** Frictional and thermal characteristics in helically coiled tubes have been abundantly probed in the recent decade. Nonetheless, exergy analysis has not been conducted impressively. Particularly, no empirical correlation has been provided for exergetic parameters of coiled-tubes. Hence, the aim of this research is developing a new empirical correlation to evaluate the non-dimensional exergy destruction of fluid flow through the helical tubes. Exergy gained by cold fluid (coil side), exergy given-out by hot fluid (shell-side), total exergy destruction, NTU and non-dimensional exergy destruction are investigated. Coiled tube is adjusted inside a cylindrical shell and then two fluid streams are flowed toward the both shell-tube side and coiled-tube side. Each side has its own exergetic specifications which are separately calculated and discussed. Finally, an empirical correlation is provided for total non-dimension exergy loss as a function of Number of Thermal Units (NTU).

**Keywords:** Empirical correlation, Exergy destruction, Experiment,

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