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**Enhancement of temperature blending in convective heat transfer by motionless inserts with variable segment length**
(2010) *Journal of Thermal Science and Engineering Applications*, 2 (3), . Cited 1 time.

**Abstract**
Stationary spiral inserts can effectively enhance heat transfer and temperature blending in the heat convection systems. In this paper, the impact of the segment length on the performance of a stationary insert is studied for flow Re numbers from ~80 to ~7900 through numerical simulation of heat transfer in streams of cold and hot gases flowing across it. The segment length to width ratio is from 1.11 to 2.33. The temperature of the studied gas is from 300 K to 1300 K. It is shown that the insert with variable segment length is more effective in temperature blending for two compressible streams compared with an insert with constant segment length, especially for low-Re-number turbulent flows. © 2010 by ASME.

2-s2.0-78651443902
**Document Type:** Article
**Publication Stage:** Final
**Source:** Scopus