

[Aziz, Abdul](#)

**Entropy generation in pressure gradient assisted Couette flow with different thermal boundary conditions.** (English) [Zbl 1135.76307](#)

[Entropy](#) 8, No. 2, 50-62 (2006).

Summary: The present paper is concerned with an analytical study of entropy generation in viscous, incompressible Couette flow between a stationary plate and a moving plate. The flow induced by the moving plate is assisted by a constant pressure gradient along the flow direction. Four different combinations of thermal boundary conditions are investigated: (a) plates at different temperatures, (b) stationary plate at a fixed temperature and moving plate subjected to a constant heat flux, (c) stationary plate at a fixed temperature and convection at the moving plate, and (d) convection at both plates. Besides the velocity and temperature profiles, dimensionless results are presented for the entropy generated due to heat transfer, the entropy generated due to viscous dissipation, and the total entropy generation. These results illustrate the effect of pressure gradient, temperature asymmetry, heat flux, convection Biot numbers, and ambient temperatures. For certain combinations of thermal variables, the total entropy generated is minimized.

**MSC:**

[76A99](#) Foundations, constitutive equations, rheology, hydrodynamical models of non-fluid phenomena

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