

Abstract Submitted  
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**Passively Enhancing Convection Heat Transfer Around Cylinder Using Shrouds.**<sup>1</sup> MOHAMED A. SAMAHA, GHALIB Y. KAHWAJI, Rochester Institute of Technology-Dubai, UAE — Natural convection heat transfer around a horizontal cylinder has received considerable attention through decades since it has been used in several viable applications. However, investigations into passively enhancement of the free convective cooling using external walls and chimney effect are lacking. In this work, a numerical simulation to study natural convection from a horizontal cylinder configured with semicircular shrouds with an expended chimney is employed. The fluid flow and convective heat transfer around the cylinder are modeled. The bare cylinder is also simulated for comparison. The present study are aimed at improving our understanding of the parameters advancing the free convective cooling of the cylinder implemented with the shrouds configuration. For validation, the present results for the bare tube are compared with data reported in the literature. The numerical simulations indicate that applying the shrouds configuration with extended chimney to a tube promotes the convection heat transfer from the cylinder. Such a method is less expensive and simpler in design than other configurations (e.g. utilizing extended surfaces, fins), making the technology more practical for industrial productions, especially for cooling systems.

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