Numerical simulation of natural convection in vertical cylinders partially cooled from above JOSE NUNEZ GONZALEZ, Escuela Nacional de Estudios Superiores, Unidad Morelia,UNAM, ALBERTO BELTRAN MORALES, Instituto de Investigaciones en Materiales, Unidad Morelia, UNAM, SERGIO CUEVAS, Instituto de Energias Renovables, UNAM — Steady natural convection in vertical cylinders heated from below and partially cooled from above is studied from a numerical point of view. The governing equations for natural convection are discretized employing a mixed Fourier - Finite volume method using the SIMPLEC algorithm as velocity decoupling strategy. Calculations are performed for constant Prandtl number, Pr=6.667, and Rayleigh number over a range of $10^3 \leq Ra \leq 10^5$ and cooler size $0.125 \leq \gamma \leq 1$ and for an aspect ratio (height/diameter) $0.5 \leq a \leq 1.25$. Convective complex three-dimensional flow structures are presented.

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