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Investigation of flow characteristics of a single and two-adjacent natural draft dry cooling towers under cross wind condition ABOLGHASEM MEKANIK, MOHSEN SOLEIMANI — Wind effect on natural draught cooling towers has a very complex physics. The fluid flow and temperature distribution around and in a single and two adjacent (tandem and side by side) dry-cooling towers under cross wind are studied numerically in the present work. Cross-wind can significantly reduce cooling efficiency of natural-draft dry-cooling towers, and the adjacent towers can affect the cooling efficiency of both. In this paper we will present a complex computational model involving more than 750,000 finite volume cells under precisely defined boundary condition. Since the flow is turbulent, the standard k-ε turbulence model is used. The numerical results are used to estimate the heat transfer between radiators of the tower and air surrounding it. The numerical simulation explained the main reason for decline of the thermo-dynamical performance of dry-cooling tower under cross wind. In this paper, the incompressible fluid flow is simulated, and the flow is assumed steady and three-dimensional.

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