Performance Comparison of Forced Draft and Induced Draft Air-Cooled Condensers under Adverse Crosswind Conditions

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A numerical analysis was conducted in which the performance of forced and induced draft air-cooled condensers under crosswind conditions were compared using computational fluid dynamics. The investigation included the implementation of an actuator disk model for the axial flow fans, and the use of a high performance cluster for the solution. Reduced fan performance was identified as the primary cause of reductions in ACC performance, and flow recirculation was identified as a secondary cause. The induced draft system was found to be more sensitive to crosswind directions, while the forced draft system was found to be more sensitive to the fan configuration.