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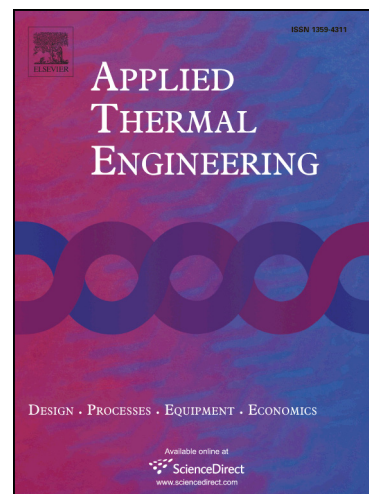
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Anti-freezing of air-cooled heat exchanger by switching off sectors

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ABSTRACT

With the air side huge heat transfer surface, the air-cooled heat exchanger will take a serious freezing risk in cold winter. Therefore, it is of benefit to the safe operation of natural draft dry cooling system to propose the anti-freezing measures. In this work, the flow and heat transfer models of the cooling air coupling with the circulating water, are developed and numerically simulated for the anti-freezing by switching various sectors off. The local thermo-flow fields of cooling air are presented, and the water side heat loads of various sectors are compared for various cases. The anti-freezing turbine back pressure is proposed and obtained for the energy efficiency analysis. The results show that the sector switching off approach can effectively prevent the air-cooled heat exchanger from freezing and improve the

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