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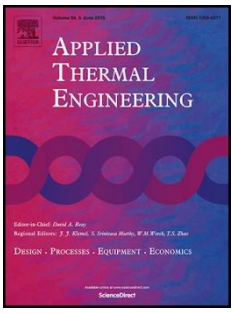

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Analysis of windbreaker combinations on steam power plant natural draft dry cooling towers

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Highlights

- Effects of wind on the thermo-flow characteristics of cooling towers have been revealed.
- Windbreaker types have been studied to decrease the negative effects of wind.
- Results show that it is possible to use the momentum effect of wind.
- Movable windbreakers should be used to change the direction according to the wind.

ABSTRACT

Performance of natural draft dry cooling towers is significantly affected when the wind velocity is higher than a critical level according to their design and geometry. During this type of conditions, global electricity generation of power plants using especially dry type cooling towers is substantially reduced, up to as high as 40%. In order to decrease the reduction in electricity generation of power plants, it is possible to study on the dimensions of the cooling towers. Additionally, using different types of windbreakers can reduce the effects of unfavorable operating conditions. However, the direction of the wind changes with the seasons although the prevailing wind direction is nearly same. In this study, internal flat and