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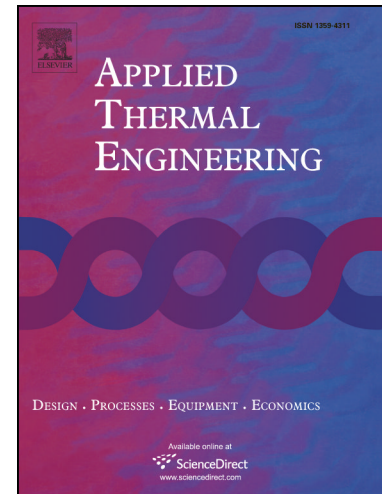
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## Investigations on the influence of nozzle arrangement on the pre-cooling effect for the natural draft dry cooling tower

Yubiao Sun<sup>1</sup>, Zhiqiang Guan, Hal Gurgenci, Kamel Hooman, Xiaoxiao Li

*Queensland Geothermal Energy Centre of Excellence,*

*School of Mechanical and Mining Engineering,*

*The University of Queensland, Brisbane 4072, Australia*

### **Abstract:**

Natural draft dry cooling tower (NDDCT), with little water usage, is a primary choice for power plants in dried regions. However, the increased ambient temperature during summer days decreases the cooling performance of NDDCT. Inlet air pre-cooling is used to alleviate the tower deterioration by making use of water evaporation to remove excess heat from inlet air. To achieve the maximal cooling effect, the injection heights, radial distances and injection directions of employed nozzle LNN1.5 were studied based on the CFD results. The study shows that lower nozzle placement can cool the central part of the radiator while the higher one cools the middle part. Additionally, the increasing extended length can boost the evaporation process of generated spray. Moreover, the upward and co-flow injections have poorer performance than the downward and counter-flow injections. Furthermore, an introduction of wall cover changes the flow field and drives the pre-cooled air flow through

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<sup>1</sup> Corresponding author: [y.sun3@uq.edu.au](mailto:y.sun3@uq.edu.au), [cesyb2013@gmail.com](mailto:cesyb2013@gmail.com)

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