Review of: "Numerical Study of Thermal Performance on Fin and Tube Heat Exchanger with Flat Rectangular and Sinusoidal Winglet Vortex Generators"

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Potential competing interests: No potential competing interests to declare.

Study deals with the enhancement of heat transfer in the air side using conventional rectangular and sinusoidal sine wave vortex generators. The range of Reynolds number is maintained at 400 to 1100. The comparative numerical analysis shows that the sinusoidal and conventional rectangular winglets display good heat transfer enhancement in that they have a large pressure loss penalty. I recommend that this manuscript be accepted for publication after the authors have reviewed the issues presented below.

1. The research works in this area with various designs of vortex generators are available in the literature. Authors should describe the novelty of this work.
2. Please mention the application of the present work in the introduction section.
3. In the introduction section, include some research papers from 2020 onwards, as well as research gaps found throughout the literature assessment.
4. It is unclear whether the study employs a 2D or 3D model. The authors should present the computational geometry with a 5H (height) and 30H extended outlet domain in the model description section. Also provide dimensions of the winglets.
5. Basis of selection for angle of attack as 25˚ and range of Reynolds number of 400 to 1100.
6. Please check the momentum equation (2) and correct it.
7. Please provide the equations of the turbulence model used in the present work.
8. The authors should present the basis on which they decided on the RNG k-epsilon turbulence model without comparing with other turbulence models' results.
9. How have the authors calculated the inlet velocity provided at the inlet of the domain?
10. Please provide the equations for the calculation of heat transfer coefficient, Nusselt number, and hydraulic diameter.
11. The authors should show the generated mesh model and basis of selection of 0.8 million nodes count for numerical simulation. (Any numerical accuracy analysis in fig. 3?)
12. The authors are advised to present validation of the CFD model.
13. Please provide the solution methodology in the manuscript.
14. The authors should present the parametric plot for convergence monitoring.
15. Effects of both vortex generators on temperature distribution by temperature contours are required by temperature

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contours with different Reynolds numbers used for analysis.

1. The friction factor graph has not been given in the manuscript, but the result has been discussed. The authors should provide a graph for the same.
2. Description of section 3.1 is unclear. Explain the comparative analysis of figures 4 (a), (b), and (c) and explain which one is better, along with the reasoning for your decision. Similarly, with section 3.2.
3. How have the authors calculated the London area goodness factor? Also, the calculation of the Colburn factor and friction factor should be described properly in the manuscript for clear understanding.
4. Quality of figures 6(a), (b), and figure (7) should be the same as figure (3).

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