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

Idrish Khan[1]

1 Thiagarajar College of Engineering

Potential competing interests: No potential competing interests to declare.

The manuscript titled “Numerical Study of Thermal Performance on Fin and Tube Heat Exchanger with Flat Rectangular and Sinusoidal Winglet Vortex Generators” is reviewed. The presentation of the manuscript should be improved. **The manuscript has to be revised/rewritten for publication**. The comments made on the manuscript are given below:

1. Introduction, first para – It is about punched and non-punched winglets. Conclude which is better?
2. “A circular cross-section gives the optimum performance, and the non-conventional configuration gives a 14% higher thermal performance when compared to the normal configuration” – Which performance is optimum for a circular cross-section? What about its thermal performance?
3. More types of vortex generators are discussed in the introduction. A figure showing all generators will be useful for visualization and differentiation.
4. Literature shows 50 deg is optimum for a rectangular winglet and more than 30 deg if it has an elliptical tube. How come the angle of attack is chosen as 25 deg ?
5. Introduction should be coherent writing, and the novelty of the work is to be mentioned.
6. Fig. 1 has 5 tubes in a row, and Fig. 2 has 7 tubes. Correct the figures as per the model. Caption each subdivision of fig. 1.
7. What is P, D, and H, and mention the dimensions. State the length and dimensions of the winglet.
8. What is the inlet boundary condition and its value ? Mention the tube wall in the fig.
9. The computation domain is 2D or 3D ? Show the meshed domain for clear understanding.
10. “The values of nodes” or No. of nodes ?. Is the chosen number of nodes 0.8 million, which refers to 858963 ? The legends of Fig. 3 show coarse, fine, and medium, but the explanation paragraph is written with nodes. Follow any one throughout the study.
11. Which solver is used, pressure-based or density-based? The problem is solved with steady or unsteady state?
12. How do you calculate the Nusselt number of the flow ?
13. The study is performed for Re 400 to 1100. How do you calculate Re ? What input variable is changed to achieve different Re ?
14. Are Fig. 4 and Fig. 5 and their subfigures for the same Re or different Re ?
15. Discussion in 3.1 and 3.2 should be improved.

16. “The friction factor also was analyzed for different Reynolds numbers.” How is the friction factor calculated ? How does it differ for different configurations ?
17. What is the reason for decreasing goodness factor with Re ? The normal configuration shows a higher goodness factor than the vortex generator? Then how is it claimed that the sinusoidal vortex generator augments heat transfer ?