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

Sajida Lafta Ghashim[1]

1 University of Baghdad

Potential competing interests: No potential competing interests to declare.

Review of the article:

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

Before the manuscript can be recommended for publication, the authors need to significantly revise their manuscript by taking into account the following comments:

1. Some specific points should be given in the abstract, such as model description, program used to solve the numerical study, and the percentage of improvement.

2. Recommend rewriting the introduction and focusing on the articles related to the project. The main objective of the paper must be written more clearly and concisely at the end of the introduction section.

3. Model description is very weak, and a detailed explanation should be given with dimensions.

4. Figures 1 and 2 are not clear and without any dimensions.

5. Governing equations are for laminar flow because the Reynolds number is 400 to 1100. How the author used a turbulence viscous model K-ϵ (RNG model) !!!!!!

6. Must check the governing equations, more details of the equations must be added and written references.

7. Reference information in Table 1 should be remembered.

8. Figure 3 should be drawn between the Nu number and the number of nodes used in the study to check the grid independence test.

9. What assumptions did the authors make in using the governing equations?

10. Mesh sensitivity analysis is missing.

11. What program is used to solve the numerical study ?

12. More details of the numerical solution are missing .

13. The validation with empirical equations or with any work is not found .

14. All abbreviations must be given in full when first used.

15. What are the equations of the Reynolds number, Nu number, and i/j.

16. How did the authors calculate the values of Nu and i/j ? Give examples with details.

17. Were Figure 4, velocity distribution, and Figure 5, pressure distribution, for any value of Re number?

18. The interpretation of the results is very weak, and a detailed explanation should be given.

19. In the results and discussion section, just the trend of figures is discussed, while it is very important to justify the achieved results too.

20. The results and discussion section should be supported by previously published articles on the subject.

21. The conclusions are very weak and should be rewritten.