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.

This paper discusses the development of numerical models used to assess the heat transfer enhancement obtained through the use of vortex generators in the air-side passages of tube and fin heat exchangers.

After thoroughly reading the manuscript, I recommend a major review of the paper.

I have compiled a list of comments and suggestions that should be addressed:

1. I suggest a full proofread of the work as there are some typos and grammar inconsistencies.
2. The clarity of the introduction should be improved as it is not clear what the aims and motivations of this work are.
3. Section 2.1: The working fluid is supposed to be compressible air, but the governing equations reported below are for an incompressible fluid; in addition, the fluid properties reported in Table 1 appear to be constant with respect to pressure and temperature. Please try to clarify this point by stating that the fluid considered is air, assumed as an incompressible gas.
4. Section 2.1: The governing equations include a couple of mistakes: the vector symbol is not the correct notation for velocity and temperature fluctuations. Generally, velocity and temperature fluctuations are noted as u'_i and T'. In the energy equation, the last term should contain velocity and temperature fluctuations, not the mean values. Please double-check the consistency of the governing equations.
5. A picture of the computational mesh is missing. Such a figure should be included to show the topology of the mesh.
6. The authors mention the use of a turbulence model; however, the Reynolds number values seem quite low (from 400 to 1100). Have laminar simulations been tried for low Re values?
7. Sections 3.1 and 3.2: The generality of results could be improved by reporting them as dimensionless values so that they become independent from the values set as boundary conditions.
8. Section 3.3: Figure 6b reports the values of the pressure difference between inlet and outlet; however, showing the values of the friction factor f would be more significant as the latter is discussed later in the paper.
9. Section 3.3: The equations employed to compute Nu and f from the CFD results should be reported.
10. Section 3.4: Figure 7 is a bit unclear: it should report the values of j/f vs Re, however, the y-axis reads “i/j”. In addition, by looking at the plot, it seems that the baseline is the configuration with the highest j/f values, which is in contrast with the text above. Please double-check the plot and the associated text.

11. Section 4: The first bullet point of the conclusions is unclear; the clarity of this sentence should be improved.