

Review Form 1.7

Journal Name:	Journal of Scientific Research and Reports
Manuscript Number:	Ms_JSRR_113662
Title of the Manuscript:	Numerical Study of a Thermal Plume Developing in a Neutral Environment and in Interaction: Application to Fires Problems
Type of the Article	Original Research Article

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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
<p>Compulsory REVISION comments</p> <ol style="list-style-type: none"> 1. Is the manuscript important for scientific community? (Please write few sentences on this manuscript) 2. Is the title of the article suitable? (If not please suggest an alternative title) 3. Is the abstract of the article comprehensive? 4. Are subsections and structure of the manuscript appropriate? 5. Do you think the manuscript is scientifically correct? 6. Are the references sufficient and recent? If you have suggestion of additional references, please mention in the review form. <p><u>(Apart from above mentioned 6 points, reviewers are free to provide additional suggestions/comments)</u></p>	<p>The manuscript with title “Numerical Study of a Thermal Plume Developing in a Neutral Environment and in Interaction: Application to Fires Problems” if found interesting and the scope of this study is to determine the control parameters affecting this flow, it is imperative to initially analyse the flow through a natural convection consisting of a circular heat source at the inlet of a vertical cylinder using mathematical and numerical methods. Numerical results were obtained through CFD analysis. Velocity–pressure coupling was solved using the SIMPLE algorithm. After introducing the concept of Reynolds averaging and analysis, different RANS turbulence models are evaluated particularly two-equation models, using the Ansys Fluent software. Comparison of the different profiles revealed the ideal flow control parameters. This manuscript cannot be accepted in its present form, please resubmit by considering following feedback</p> <p>Comment 1: In your statement, you mentioned that no theoretical studies were conducted on the development of a thermal plume produced by such a heat source. It would be helpful to explain why this is important and what the potential significance of this finding might be. For example, you could discuss how understanding the behavior of a thermal plume produced by a disc-shaped heat source could have practical applications in various fields, such as environmental engineering or industrial processes. You could also relate this to the research gap mentioned by other researchers and explain how your study contributes to filling this gap.</p> <p>Comment 2: Replace Figure 3 with a simpler representation using points instead of a picture. It would also improve the clarity and readability of the figure, making it more accessible to readers.</p> <p>Comment 3: Justify the assumption of both turbulent and steady flow conditions at the same time. Turbulent and steady flow are two distinct flow conditions that are mutually exclusive. It would be helpful to understand the rationale behind this assumption and how it impacts your study.</p> <p>Comment 4: provide references for the boundary conditions and assumptions mentioned in Section 1. For example, you could consider referencing the following sources: (a) Talluri, Teressa, Tae Hyeong Kim, and Kyoo Jae Shin. "Analysis of a battery pack with a phase change material for the extreme temperature conditions of an electrical vehicle." <i>Energies</i> 13.3 (2020): 507. (b) Angani, Amarnathvarma, Euisong Kim, and Kyoojae Shin. "Improvement of Thermal Performance of Electric Vehicle Battery Pack with Phase-change Material." <i>Sensors & Materials</i> 32 (2020). Providing references will help to support the validity of your study and ensure that readers have access to the relevant literature on this topic.</p> <p>Comment 5: The clear description of the purpose of the equations used in your study is missing. This should include a detailed explanation of the continuity equation, the r-momentum equation, the z-momentum equation, the equation of energy, the k-equation, and the ϵ-equation. For example, you could consider providing a brief overview of each equation, explaining its significance and how it contributes to your study. Additionally, please ensure that you provide correct references for the equations used in your study.</p> <p>Comment 6: Please mention the units of r in Figure 7. This will help readers to better understand the scale of the plot and interpret the results accurately.</p>	
<p>Minor REVISION comments</p> <ol style="list-style-type: none"> 1. Is language/English quality of the article suitable for scholarly communications? 		

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Optional/General comments		
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PART 2:

	Reviewer's comment	Author's comment <i>(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)</i>
Are there ethical issues in this manuscript?	<i>(If yes, Kindly please write down the ethical issues here in details)</i>	

Reviewer Details:

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