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| Journal Name: | Asian Research Journal of Current Science |
| Manuscript Number: | Ms_ARJOCS_1778 |
| Title of the Manuscript: | Replication of Flows in A Pipe Network of Sprinkler Irrigation System Using Ansys-CFD |
| Type of the Article | Original Research Article |

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PART 1: Comments

| | Reviewer's comment | Author's Feedback <i>(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)</i> |
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| Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part. | This manuscript addresses a critical aspect of modern irrigation systems by utilizing ANSYS-CFD to analyze and optimize flow uniformity in sprinkler networks. The findings, particularly the comparative analysis of pipe diameters (50 mm and 25 mm), contribute valuable insights for improving agricultural water efficiency. The inclusion of validation through analytical methods enhances the scientific rigor and reliability of the results. These contributions are significant for researchers and practitioners in fluid dynamics, irrigation engineering, and sustainable agriculture. | We sincerely appreciate the reviewer's acknowledgment of the manuscript's contributions. The comparative analysis of pipe diameters and the validation process were indeed critical in ensuring the scientific accuracy and applicability of the study. |
| Is the title of the article suitable? (If not please suggest an alternative title) | The current title, " <i>Replication of Flows in A Pipe Network of Sprinkler Irrigation System Using Ansys-CFD</i> ," is descriptive but could be improved for clarity and impact. Suggested alternative title: "Optimizing Hydraulic Performance in Sprinkler Irrigation Systems: A Computational Approach Using ANSYS-CFD." | |
| Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here. | The abstract is comprehensive but could benefit from improved focus. Suggestions: <ul style="list-style-type: none">• Avoid including excessive technical details like specific equations in the abstract.• Add a concise statement about the practical implications of the findings. | The abstract has been revised to remove excessive technical details, such as specific equations, and now includes a concise statement highlighting the practical implications of the findings. This adjustment ensures the abstract remains accessible and effectively communicates the study's significance. |
| Is the manuscript scientifically, correct? Please write here. | The manuscript appears to be scientifically correct. However, more details on the methodology, such as the mesh sensitivity analysis and validation process, would enhance its credibility. Addressing minor gaps in the literature review and contextualizing findings more thoroughly will further solidify the work. | Details about the methodology, including the mesh sensitivity analysis and validation process, have already been clearly provided in the relevant sections. Similarly, the literature review adequately covers the necessary references, with all relevant additions and citations appropriately included in the paper. |
| Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form. | The references are sufficient but could be updated with more recent studies in the last 3–5 years, especially in the field of CFD applications in irrigation systems. Suggested additions: <ul style="list-style-type: none">• Papers focusing on real-time data integration for CFD-based irrigation systems.• Recent works on sustainable agricultural practices involving computational modeling. | Literature review adequately covers the necessary references, with all relevant additions and citations appropriately included in the paper. |

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| Is the language/English quality of the article suitable for scholarly communications? | The manuscript's language is generally suitable for scholarly communication. However, minor grammatical refinements and improved sentence structures in some sections (e.g., literature review and discussion) would enhance readability and professionalism. Proofreading is recommended to ensure consistency in technical terminology. | We appreciate the suggestion and have thoroughly proofread the manuscript. Grammatical errors have been corrected, and sentence structures in the literature review and discussion sections have been refined for better readability. Technical terminology, such as "velocity magnitude" and "dynamic pressure," has been consistently applied throughout the manuscript. |
| Optional/General comments | <p>The manuscript demonstrates a strong technical foundation with detailed computational modeling using ANSYS-CFD for sprinkler irrigation systems. However, significant revisions are required to enhance clarity and practical relevance. While the focus on optimizing flow uniformity by varying pipe diameters is relevant, the manuscript needs to better highlight its unique contributions compared to prior studies. Address this in the introduction and conclusion sections.</p> <ol style="list-style-type: none">1. Strengthen the presentation of the research gap by contrasting your study more explicitly with previous CFD and experimental approaches.2. Expand the literature review to include more recent works on sprinkler systems and wastewater treatment integration, particularly those employing CFD or related methodologies.3. Clarify the relevance of certain references (e.g., Zhu et al., 2011) to your study's objectives.4. Elaborate on the rationale behind selecting symmetrical boundary conditions and discuss whether alternate configurations were considered.5. Improve the clarity of figures (e.g., Figs. 7 and 8) by adding annotations to highlight key observations such as regions of high pressure or velocity gradients.6. Add a comparison of your results with existing studies to demonstrate the practical advantages of your approach.7. Expand the discussion on how your findings could be implemented in real-world scenarios, such as irrigation system designs for specific agricultural settings.8. Clearly state the unique contributions of the study, including the advantages of using 25 mm pipes for flow uniformity and recommendations for wastewater.9. Suggest areas for future research, such as incorporating real-time data from sensors or modeling multi-phase flows with particulate matter.10. Proofread the manuscript to correct minor typographical errors, improve sentence structure, and ensure consistent use of technical terms (e.g., "velocity magnitude" and "dynamic pressure").11. Ensure that all equations are formatted consistently and are easy to follow. | <ol style="list-style-type: none">1 The presentation of the research gap has been strengthened by explicitly contrasting this study with prior CFD and experimental approaches/Analytical approach in Abstract.2 The literature review adequately covers the necessary references, with all relevant additions and citations appropriately included in the paper.3 The relevance of Zhu et al. (2011) has been used considering the CFD simulation analysis, here is the clarification in this study.4 A detailed explanation of the rationale for selecting symmetrical boundary conditions has been provided, along with a discussion of alternative configurations considered.5 Figures 7 and 8 have been updated with annotations to highlight key observations such as regions of high pressure and velocity gradients for better clarity.6 A comparison of the results with existing studies has been added to demonstrate the practical advantages of the proposed approach.7 The discussion has been expanded to address how the findings can be implemented in real-world scenarios, particularly in irrigation system designs for agricultural settings.8 The unique contributions of the study, including the benefits of using 25 mm pipes for flow uniformity and wastewater recommendations, have been clearly stated.9 Future research areas, such as incorporating real-time sensor data and modeling multi-phase flows with particulate matter, have been suggested in the conclusion.10 The manuscript has been thoroughly proofread to correct typographical errors, improve sentence structure, and ensure consistent use of technical terms.11 All equations have been reviewed and reformatted for consistency and ease of understanding. |

PART 2:

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| | 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) |
| Are there ethical issues in this manuscript? | (If yes, Kindly please write down the ethical issues here in details) | No |