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| JournalName: | JournalofEngineering ResearchandReports |
| ManuscriptNumber: | Ms_JERR_126304 |
| TitleoftheManuscript: | TomatoSortingMachineDesign |
| Type oftheArticle | |

PART 1: Review Comments

| Compulsory REVISION comments | Reviewer's comment | Author's Feedback (Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here) |
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| Please write a few sentences regarding the importance of this manuscript for the scientific community. Why do you like (or dislike) this manuscript? A minimum of 3-4 sentences may be required for this part. | This manuscript is valuable to the scientific community as it addresses the need for affordable, efficient tomato sorting technology suited to small and medium scale farms. It reduces labour and improves sorting efficiency with a straight forward and low-cost design. However, a limitation is its focus on sorting only by size, which may not meet needs where colour sorting is also essential. | |
| Is the title of the article suitable? (If not please suggest an alternative title) | Can consider the following title: Design of a Cost-Effective and Compact Tomato Sorting Machine for Small-Scale Agriculture | |
| 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. | <p>The abstract gives a basic overview of the tomato sorting machine's design and purpose, but it could be improved by adding a few more details to make it more comprehensive.</p> <p>Background and Problem Statement: Although the abstract mentions the need for a tomato sorting machine, a clearer explanation of why this is necessary is found missing. Adding a sentence on the limitations of current sorting options, which are often expensive and complex, would highlight the specific challenges small farms face. This would strengthen the case for developing a more affordable and accessible solution.</p> <p>Clear Objectives: The abstract could be more direct about the machine's primary goal, which is to sort tomatoes by size in a simple, affordable way. Clearly stating this objective would make the purpose of the machine more apparent to readers.</p> <p>Methodology: The abstract briefly mentions the use of a spiral roller, but it could provide a clearer picture by adding a sentence on how the design process was carried out, such as using SolidWorks for modelling? This would offer the insight into the technical approach taken in the development of the machine.</p> <p>Main Findings and Impact: Finally, the abstract could conclude with a brief note on the machine's benefits, such as its lower production costs, ease of use and suitability for smaller farms. Emphasizing these practical impacts would help to understand the value of the machine in a real-world context, especially for small to medium sized agricultural operations.</p> | |

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| <p>Are subsections and structure of the manuscript appropriate?</p> | <p>Introduction:</p> <ul style="list-style-type: none">- Why there are two introductions? The introduction section presents useful information, but it would be better to have a more streamlined structure to improve clarity and engagement. Currently, there are two headings, "INTRODCUTION" and "1. INTRODUCTION," creating unnecessary redundancy and potentially confusing readers. The authors need to merge these into a single, cohesive section to make the paper more organized and professional appearance.- The background effectively highlights the importance of tomato sorting in agriculture, particularly in China, where demand for efficient sorting solutions is increasing. However, it lacks a clear problem statement. A more focused problem statement should emphasize that current sorting machines are often too expensive and complex for small-scale farms, limiting their accessibility. This would highlight the need for solutions specifically designed to address these constraints.- To further strengthen the introduction, the study's main objectives should be stated clearly early on: to design a low-cost, easy to maintain tomato sorting machine that meets the needs of small and medium sized growers. Emphasizing this objective from the outset will guide readers through the research's purpose and significance.- The review of existing sorting solutions, both domestic and international, provides valuable insights but could be more concise. Briefly summarizing these examples and their limitations would enhance readability and clarify why a simpler, more affordable design is needed. This part of the introduction could then smoothly transition into a discussion of how the proposed design aims to resolve these specific challenges. | |
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- Finally, a brief overview of the new design approach at the end of the introduction would set up the rest of the paper effectively. Mentioning the use of spiral rollers for sorting and the application of SolidWorks for modelling and testing would give readers a sense of the technical focus and innovative aspects of this study. This streamlined approach would make the introduction more cohesive, helping readers understand the study's significance, objectives, and unique contributions.

STRUCTURAL DESIGN AND WORKING PRINCIPLE OF SORTING MACHINE

- The main title, "Structural Design and Working Principle of Sorting Machine," is effective but could be refined to "Structural Design and Operational Principles of the Tomato Sorting Machine." This slight adjustment specifies the focus on tomato sorting and clarifies that both design elements and functional principles will be covered, making the title more descriptive and aligned with the manuscript's purpose.
- In Subtopic 2.1 - Determination of the Type of Sorter, the decision to design a size-based sorter is well-suited to the needs of small and medium scale operations, as it addresses the unique sorting challenges faced by tomato growers. A clearer breakdown of these challenges would improve the understanding of why this approach was chosen. Also, **need to explain** the term "Kun-type sorter", as it may not be widely familiar. Briefly outlining the advantages of this type, such as how the hollow design and spiral structure improve sorting efficiency, would further clarify why it's an ideal choice for small-scale tomato processing.
- In Subtopic 2.2 - Main Structure of Tomato Sorter, the essential components of the sorter, such as the inlet, outlet, spiral drum, motor and frame, are described effectively. Noting the use of low-cost materials and environmental benefits adds value; however, additional details about the motor's power requirements and energy efficiency would be beneficial. For clarity, rephrasing some phrases, such as changing "the screws of these pairs of spiral drums rotate in opposite directions" to "each spiral drum in a pair rotates in the opposite direction from its adjacent drum," would be better.
- In Subtopic 2.3 - Working Principle, the sorting process by tomato size is outlined, but presenting these stages in bullet points or numbered steps would make it easier to follow. A brief explanation of how the spiral drum design ensures sorting accuracy and efficiency would also enhance this section. In addition, introducing the purpose of the "tilted elastic slant" earlier on and explaining its material properties if they impact durability or tomato preservation, would be better.

DESIGN OF TOMATO SORTING MACHINE COMPONENTS

- The topic and subtopics outlined for the tomato sorting machine are generally suitable, effectively addressing the main components and design aspects. However, a few adjustments could improve both clarity and structure. First, the main title could be refined to better reflect the technical focus, such as "Design Specifications and Component Analysis of the Tomato Sorting Machine," which would prepare readers for a more detailed exploration of the machine's structural and mechanical components.
- In Section 3.1, currently titled "Summarize," the heading could be more precise. Changing it to "Design Overview" or "Design Summary" would better convey that this section provides a broad view of the machine's development process. Furthermore, organizing the design steps in sequence, such as drawing, modifying, assembling and checking for interference. It would enhance the flow of information. Including a brief rationale for selecting SolidWorks, perhaps by highlighting specific features that streamlined the design process, would also add context and improve reader engagement.
- In Section 3.2, titled "Design of Spiral Roller," the detailed specifications would be clearer if presented in a more structured way. Breaking down design elements like diameter, length and structure into smaller sub-points or simplified sentences would be better. Also, briefly explaining the reasoning behind each choice, such as how the drum's diameter affects sorting efficiency or how a hollow structure helps reduce weight and cost. It would provide a clearer understanding of these technical decisions.
- Section 3.3, titled "Torsional Strength Calibration of Roller Face Shafts," needs a more accessible calculation, with each variable briefly explained to aid readers unfamiliar with mechanical design. A final sentence highlighting the importance of meeting torsional strength requirements for machine stability and reliability would tie the technical aspects back to the overall functionality of the sorting machine.
- To round out the analysis, a brief discussion on design limitations could address challenges such as the machine's sensitivity to tomato texture and size constraints. If materials were chosen based on considerations like cost, durability, or availability, mentioning these choices would further enhance the technical depth and give readers a fuller understanding of the machine's practical applications and limitations.

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| | <p>Conclude</p> <ul style="list-style-type: none"> - The paper is structured logically, detailing the design components of the tomato sorting machine before moving into a conclusion that summarizes the purpose and limitations of the design. However, some adjustments could improve clarity and completeness. - A notable gap is the absence of a dedicated Methodology section, which would enhance the flow and provide insights into the approach used to develop and optimize the machine's design. This section could outline how design choices were evaluated, any tests or simulations conducted, and the steps taken to refine each component. Including a Methodology section would also strengthen the technical credibility of the design specifications presented in Section 3. - Other than this, a Results section is missing, especially if test or simulation data is available to demonstrate the machine's performance. This section could present findings on sorting accuracy, processing speed, or cost efficiency, validating the machine's effectiveness and demonstrating its advantages over traditional methods. - The current Conclusion section is somewhat lengthy and combines both the benefits and limitations of the design. Splitting this into two subsections, Conclusion and Limitations and Future Work, would be better. The Conclusion could summarize the main benefits and applications of the design, while a separate Limitations and Future Work section could outline specific areas for improvement. For example, challenges related to variations in tomato size and texture, as well as the need for additional sorting criteria like ripeness or colour, could be discussed here. - Emphasizing the practical impact of this machine for small-scale farmers and processing plants would also strengthen the conclusion. Briefly explaining how this design could reduce labour costs, improve operational efficiency, and scale to different farm sizes would highlight the machine's broad value. - Finally, incorporating Future Improvements would add depth to the paper. Suggestions such as the addition of colour sorting capabilities, adjustments to the bearing seat design to reduce obstruction, or alternative materials for further cost reduction could guide future research and design efforts. - An ideal flow might include: 1) Introduction; 2) Background and Problem Statement; 3) Design of Components; 4) Methodology; 5) Results; 6) Conclusion; and 7) Limitations and Future Work. This organization would provide a more comprehensive understanding of the machine's design, practical impact and areas for improvement, enhancing readability and technical depth. | |
| <p>Please write a few sentences regarding the scientific correctness of this manuscript. Why do you think that this manuscript is scientifically robust and technically sound? A minimum of 3-4 sentences may be required for this part.</p> | <p>This manuscript is scientifically robust and technically sound, with a systematic design approach that addresses practical agricultural needs. The design follows key mechanical principles, carefully considering size, material selection and structural elements like the spiral roller and torsional strength calibration to meet functional requirements. Using SolidWorks for 3D modelling and assembly adds reliability to the design process. In addition, the focus on cost-effective materials and a compact structure enhances its relevance and practicality for small- to medium-scale agricultural operations.</p> | |
| <p>Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.</p> | <p>Can add a few more recent articles. Not follow the formatting</p> | |
| <p><u>Minor</u> REVISION comments</p> <p>Is the language/English quality of the articles suitable for scholarly communications?</p> | <p>Moderate</p> | |
| <p><u>Optional/General</u> comments</p> | | |

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PART 2:

| | 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) |
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| 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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