

REVIEWER'S REPORT

Manuscript No.: IJAR-59397

Title: Numerical Simulation of the Influence of the Effect of Tooth Number on the Mechanical Behavior of Natural Fiber Composite Gears: The Case of HDPE 40B.

Recommendation:

Accept as it is

Accept after minor revision.....

Accept after major revision

Do not accept (*Reasons below*)

Rating	Excel.	Good	Fair	Poor
Originality		✓		
Techn. Quality		✓		
Clarity			✓	
Significance		✓		

Reviewer Id: JPR-386

Reviewer's Comment for Publication.

The manuscript presents a numerical investigation of the influence of tooth number and wear rate on the contact and bending stresses of HDPE 40B natural fiber-reinforced composite gears. The topic is relevant to the development of sustainable materials for mechanical power transmission applications. The numerical modeling approach is appropriate for the objectives of the study, and the results provide useful insights into the mechanical behavior of composite gears. The manuscript can be considered for publication after addressing the following minor revisions:

1. The abstract should be revised to include the main numerical findings and emphasize the practical significance of the study.
2. The material properties of HDPE 40B should be carefully checked, particularly the reported shear modulus, to ensure consistency with Young's modulus and Poisson's ratio.
3. The authors should briefly clarify the procedure used to model tooth wear and apply contact forces in the SOLIDWORKS simulation.
4. The results section would benefit from including numerical values of maximum contact stress, root bending stress, and deformation for selected tooth numbers and wear rates.
5. The equations and mathematical symbols should be checked for formatting errors, and all variables should be clearly defined. Equation (4) should be presented and explained more clearly.

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6. The figures and tables should be improved for readability, with consistent units, clear labels, and appropriate captions.
7. The authors should strengthen the discussion by briefly explaining the physical reasons for the reduction in contact and bending stresses with increasing tooth number.
8. The manuscript requires minor English-language editing to correct grammatical errors, improve sentence structure, and ensure consistent technical terminology.
9. The conclusion should be made more concise and should clearly highlight the main findings, practical implications, and limitations of the numerical study.

Overall Recommendation: The manuscript addresses an important topic in the mechanical behavior of natural fiber-reinforced composite gears. The study provides useful preliminary results and has potential scientific and practical significance. The issues identified above can be addressed through minor revisions without fundamentally changing the scope of the work. Therefore, I recommend **acceptance after minor revision**.