

5. Result and Discussion

Study has been carried out to evaluate static analysis of the planetary gear-train using commercial software ANSYS V14. Analysis is to find out the total amount of stresses of any structural component by applied load. Initially, it was carried out for the existing model of the planet carrier, sun & planet teeth meshing, planet & ring gear teeth meshing of planetary gearbox winch. In planet carrier, the maximum principal stress at the region of shaft fixed was observed to be 3.6041e11Mpa as shown in (Figure no.-7). Sun gear teeth and the planet gear teeth mesh together von-Mises Stress acting 8.2957e5Mpa. Shown in (Figure no.-9) and other structural analysis shown in (Figure no.-11and12) Where planet gear and ring gear perform good result under acting von- Mises Stress of 8.4087e5Mpa.The size has been varied by keeping loads and boundary conditions constant. The results obtained using these relative conditions.

6. Conclusion

The results obtained from the finite element analysis, the Planet carrier of gearbox is manufactured by cast iron FG260 material. the model showed good results with maximum principal stress of 3.6041e11Mpa and with factor of safety is good as compared to other modified models. These results are so far better than existing model. In practice analysis is also important factor for the optimum design and reverse engineering of any mechanical structure and system.

7. Scope For Further Work

This process helps in finding the optimized design for planetary gear trains in which it has the best performance without any failure and with optimum loads acting on the planet carrier. The main aim of this research is to optimize the planetary gear train through load analysis, to prevent load failure from happening in the future.

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