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Design and Analysis of Chain Sprockets

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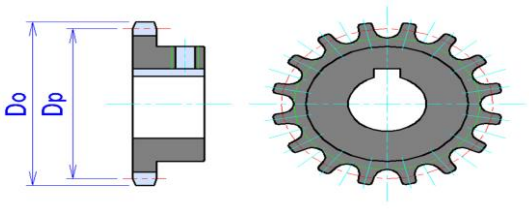
ABSTRACT

The sprocket is a totally essential part inside the transmission of strength and motion in maximum bikes. Generally sprockets are manufactured from slight steel. In this paper, current sprocket bike is compared with the sprocket of carbon fiber material. The drawing and drafting is finished the usage of CAD software. Further FEA software program is used for analysis of sprocket chain. With one of a kind properties of moderate metal and carbon fiber, strain and deformation of sprocket is in comparison. This paintings could be beneficial for further development of sprockets chain.

Keywords: ***CAD, Carbon fiber, FEA, Mild metal, Sprocket, Stress and deformation.***

INTRODUCTION

Both sprockets and gears are grooved wheels that perform inside a system, but their capabilities are instead unique. Gears are usually toothed wheels that connect to the tooth on other gears to transmit movement to every other element. Sprockets use their enamel to have interaction with and flow one (once in a while extra) flexible component, like a bicycle chain or a conveyor belt. The basic precept is comparable Gears generally tend to have interaction with other gears to transmit electricity (regularly the aspect to be moved is greater than one equipment by myself can pass) to the “end-person”, because it have been. Sprockets have interaction without delay

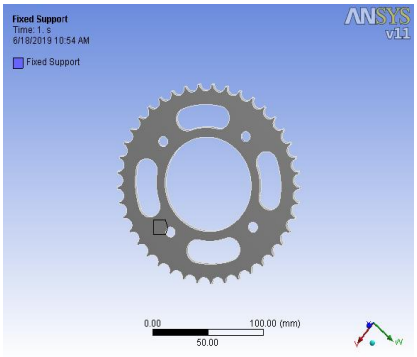


LETERATURE REVIEW

The oldest recognized illustration of an countless strength-transmitting chain pressure, from Su Song's e book of 1092 AD, describing his clock tower of Kaifeng Sketch of roller chain by means of Leonardo da Vinci

The oldest acknowledged utility of a sequence drive appears within the Polybolos, a repeating crossbow defined via the Greek engineer Philon of Byzantium (3rd century BC). Two flat-linked chains were related to a windlass, which through winding to and fro would automatically hearth the machine's arrows till its mag become empty.[3] Although the device did not transmit electricity constantly for the reason that chains "did not transmit electricity from shaft to shaft, and for this reason they had been now not within the direct line of ancestry of the chain-power proper",[4] the Greek layout marks the start of the records of the chain force due to the fact "no

MODAL IS DRAWN:



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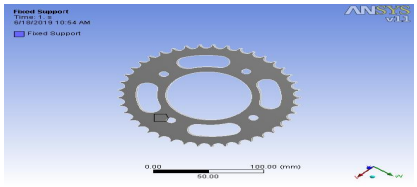
CHAPTER -5

D analysis, that's an actual illustration for this thermal evaluation. Thermal analysis is performed and with the above load structural analysis is likewise completed for analyzing the stableness of the structure.

FIXED SUPPORT1



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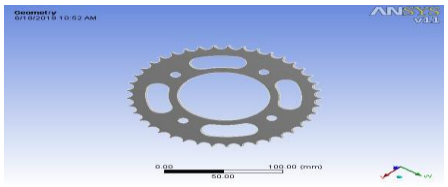
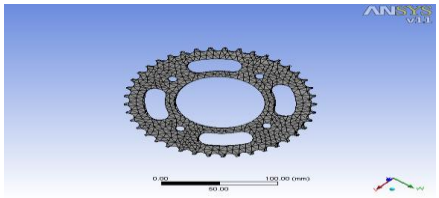
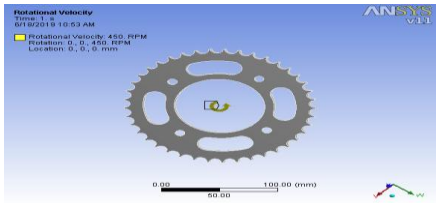


MESSING



ROTATIONAL VELOCITY

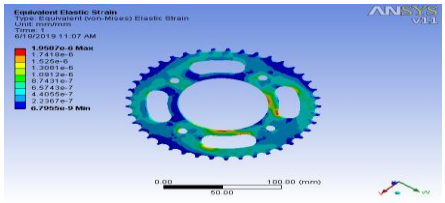


RESULTS AND DISCUSSIONS

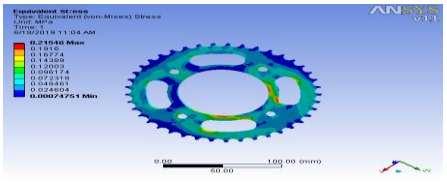
DISCUSSIONS ABOUT DIFFERENT MATERIALS

CAST IRON

Equivalent Elastic Strain



Equivalent stress



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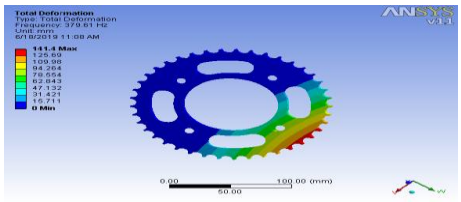

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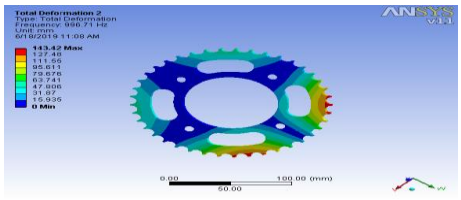

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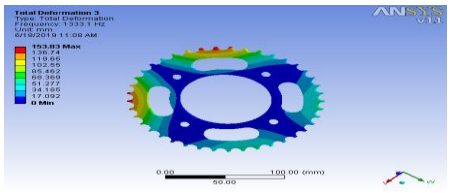

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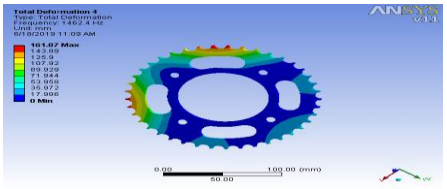

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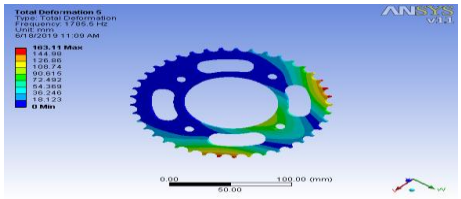

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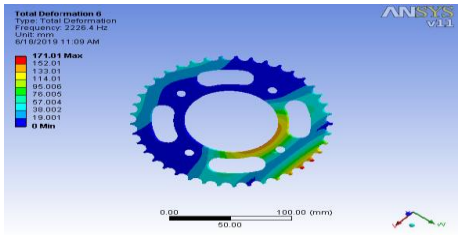

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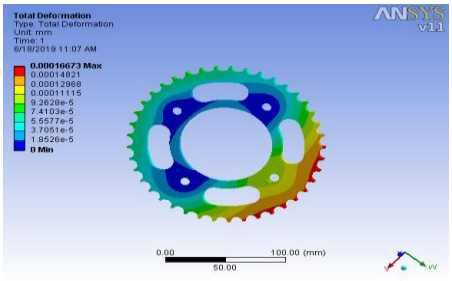
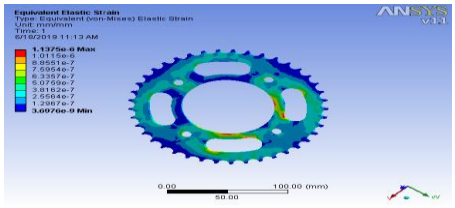
Total deformation

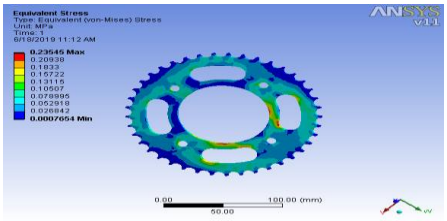


MILD STEEL

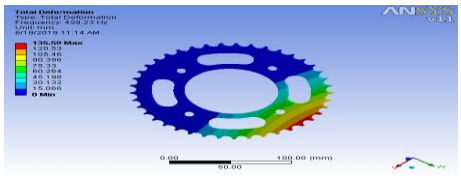
Equivalent elastic stress



Equivalent stress



TD1



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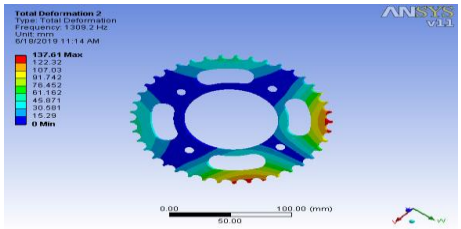

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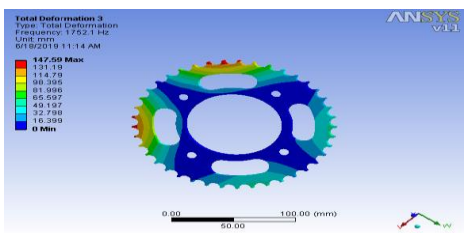

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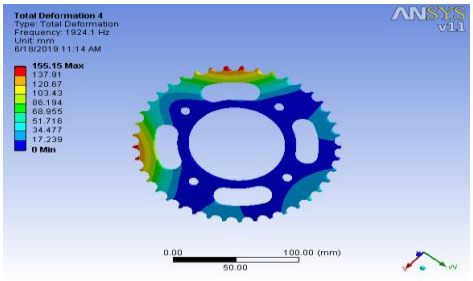

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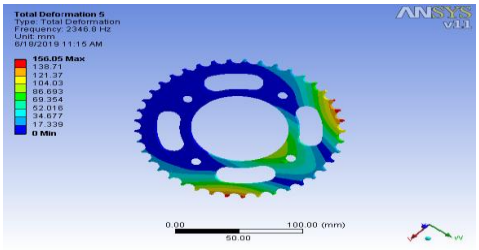

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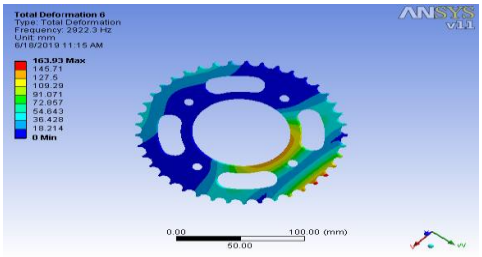
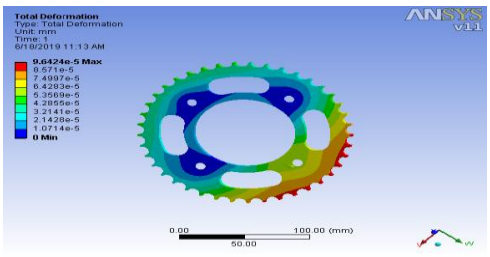


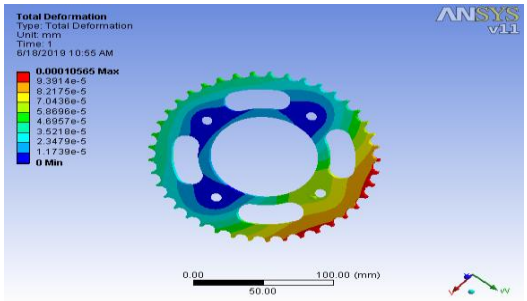
Total deformations



STAINLESS STEEL

Equivalent elastic stress

TOTAL DEFORMATION



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Conclusion

From finite element analysis of above materials, pressure values of forged iron and Carbon epoxy are in permissible limits for safer layout. As compared to material homes, carbon epoxy is exceptional suited for sprocket because of its low density, availability and less investment. Also cast iron is likewise proven better effects adjacent to Carbon epoxy, however in overall performance carbon epoxy crossed cast iron due to mass discount, higher lubrication and availability.

References

[1] Tushar S. Hingve, Y. A. Kharche and N.A. Kharche, "Diagnosis for the Failure of Sprockets and Chain Drive", International Journal of Research in Science & Engineering, e-ISSN: 2394-8299, Volume: three, Issue: three, May-June 2017, p-ISSN: 2394-8280

[2] Sagar N. Vasoya, P. L. Koradiya and B. J. Patel, "Development of Sprocket to Improvement the Torque for Off Road Bike", IJRSI, Volume IV, Issue I, December 2016, ISSN 2321-2705

[3] Nikhil P. Ambole and Prof. P. R. Kale, "Design and Analysis Carbon Fiber Sprocket", International Engineering Research Journal Page No 218-225

[4] Parag Nikam and Rahul Tanpure, "Design Optimization of Chain Sprocket Using Finite Element Analysis", Int. Journal of Engineering Research and Application, ISSN: 2248-9622, Vol. 6, Issue 9, (Part-5) September 2016, pp.Sixty six- sixty nine

[5] Nikhil P. Ambole and Prof. P. R. Kale, "Finite Element Analysis Carbon Fiber Sprocket using ANSYS", International Journal for Scientific Research & Development, Vol. Four, Issue 05, August 2016, ISSN (online): 2321-0613 Students name:Phanil kumar reddy,