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Weight Reduction of Steel Wheels by Replacing with Alloy Materials using Finite Element Analysis Technique

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Abstract: *Wheel Rim must be robust sufficient to maintain load and additives with lesser weight and fee. weight loss is the main component in automobile industries, because if weight of car will increase the gas consumption as well as the fee required to run vehicle also increases. preserving this component in mind Wheel Rim ought to be layout with excessive energy through studying different factors like pressure stress values, deformation and so forth. Optimizing the Wheel Rim with the aid of varying parameters, no of spokes gift, geometry of spokes within the Wheel Rim for modelling and evaluation. This venture involves design, analysis and optimization of Wheel rim with constraints of equal strain and deflection of wheel rim underneath most load. Automotive businesses are paying their most important hobby inside the weight reduction of components to reduce gasoline fee. This weight may be decreased by means of introducing new substances and production techniques with optimization of layout. Minimizing the weight within the wheel is extra powerful than minimizing the burden in different components due to its rotational second of inertia effect during its movement and also the tyre take the general car load and offers cushioning effect. via lowering the weight, we are able to achieve the objective the lowering of unsprung mass, by way of which the inertia masses and average weight are decreased with development of overall performance and fuel economic system. on this paper an strive is made to decrease the burden of the wheel by way of changing the aluminum alloy with composites. From the finite detail calculations, it's miles found that the mass of the wheel rim may be reduced to 50% from the prevailing alloy wheels. The evaluation also suggests that once the optimization the stresses generated from the wheel rim can be beneath the yield stress. This gave a new approach within the field of optimization of passenger automobile wheel rim. in this work the modelling is performed through the usage of CATIA and analysis is made by way of using ANSYS..*

Keywords: Automobile Rim, Dynamic cornering Fatigue test, FEA software.

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