



Numerical Validation of Octopus Wheel Rim using FEA

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Condition: New. Publisher/Verlag: LAP Lambert Academic Publishing | Steady state static analysis of Octopus Wheel Rim | Numerical prediction of the stress response of an octopus-type spoked wheel under steady state (static) loading conditions is carried out using commercially available FEA software. The model used in the simulation is based on the wheel model experimented on by H.Akbulut. The boundary and the loading conditions are same as those used in the measurement so as to enable comparison of the numerical results with measurement data and hence validate them. The geometry of the wheel is symmetric about the two Cartesian axes and hence only a quarter of the wheel is modeled for analysis. An optimum mesh size was arrived at starting from a coarse mesh, the mesh used for the final run involved hexa and penta elements. The simulation is carried out on the part, where spoke is connected to rim as it is the critical region and the plastic regions develop in the vicinity of the critical zone for higher loads. The computational results indicate that the design is safe for a load less than or equal to 16.3 kN. The numerically predicted stress response is compared with measurement data of H.Akbulut...



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