

## **DESIGN AND NUMERICAL ANALYSIS OF ALUMINIUM METAL MATRIX COMPOSITE DISC BRAKE**

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The commitment to enhance fuel efficiency and reduce the vehicle mass has been very challenging. These requisites have led to the development of reinforced components which improves performance. The primary objective of the project is to overcome the flaws of conventional cast iron disc brakes. The Aluminium Metal Matrix Composites have such potential and so gained a lot of attention in automotive sectors. Aluminium is well known for its low density and high thermal conductivity; Silicon Carbide is familiar for its high hardness feature and low wear rate. The composition of AMMC is 90% Al7075 and 10%SiC. The disc brake is manufactured with AMMC and it is analyzed using Finite Element Analysis. The above-mentioned features would be a better replacement to Cast Iron. The brake disc has an inherent ability that there is no change of coefficient of friction on the disc and so there is no problem of brake fading phenomenon. The structural and thermal analysis was carried out and the results are shown in this article. The discs are modeled in Catia v5 and the analysis is carried out in ANSYS.

