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Transient Thermal Analysis of Exhaust Manifold for Multi Cylinder Engine

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Abstract: *Exhaust manifold is an automotive component generally made up of cast iron. It collects combustion gases from multiple cylinders and directs them into the collector exhaust system. Due to complex loading i.e., mechanical load and thermal loading, it becomes necessary to find out stresses in the component. The thermal cycle load includes cold start when the vehicle is starting, at full load and a cooling when engine has stopped. Any circumstance that produces an isothermal loading led to failure of the component. The thermostatic analysis of the structure has been performed on the single runner of the exhaust manifold to check the high temperature strength. In simulation, exhaust gas temperature is implemented for the model as thermal boundary condition and pressure is applied. Stresses and temperature distribution of grey cast iron and stainless steel have compared with each other. The aim of the work is to analyze the performance of the engine exhaust manifold. Because the engine exhaust manifold is a significant factor in the engine performance. In this work the manifold design is prepared with the help of CAD software and it is analyzed by the ANSYS.*

Keywords: Exhaust Manifold, ANSYS, Mechanical Load and Thermal Loading, etc.

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