

CAD MODELLING AND COMPARATIVE DEFORMATION ANALYSIS WITH DIFFERENT MATERIALS OF AUTOMATIC CRANKSHAFT

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ABSTRACT

The connecting rod is a critical component of the complete engine assembly as it serves as a mediator between the piston assembly and crankshaft, enduring numerous tensile and compressive loads throughout its lifespan. This paper aims to propose distinct properties of various materials used in connecting rod manufacturing. We explore different types of connecting rods made from cast iron, steel, aluminum-360, AIFA sic (Aluminum-based composite material reinforced with silicon carbide), magnesium alloy, and Beryllium alloy, analyzing their mechanical properties. Given the contemporary emphasis on reducing weight, stress, strain, and displacement while enhancing or maintaining connecting rod strength, a comprehensive analysis of load, deformation, fatigue, pressure, and stress is essential. Connecting rods are high-volume components in automotive production, with every internal combustion engine reliant on at least one. Failure and damage rates are higher in connecting rods compared to other engine parts, underscoring the importance of identifying and comparing various materials for connecting rod construction.

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