



Brady Maxwell

Thermodynamic Analysis of a Jeep "Stroker" Build

This project entails modifying a stock Jeep to improve the performance of the vehicle. This modification called a "Stroker Build" increases the engine's output. Due to the amateur nature of these modifications, most people do not perform formal research and testing. Research was performed to determine needs, constraints, and processes. In the second phase, the engine was built and swapped with the old. Finally, I performed an idealized thermodynamic cycle analysis to assess gains of the new engine versus stock engine. The expected result for this project is that both horsepower and torque outputs should be greater than that of the old stock engine. The analysis supported this claim, with a horsepower increase from 162 HP to 230 HP and torque gain from 236 ft-lbs. to 326 ft-lbs. This project has allowed me to directly apply and understand the course content from ThermoFluids II to a personal hobby that I am passionate about.