

Connor O'Reilly

Individual conclusion 1

After analyzing gamma-type stirling engines, its precedence over otto, diesel and brayton engines for certain design requirements shows when noise, reliability, miniscule vibration, and versatility are vital. Stirling engines proved to be effective tools in modern day use for Gotland class submarines where the noise and vibrations produced were lower compared to diesel and even nuclear engines, and they even might even be used to produce electricity for future space exploration. As our calculations for work and thermal efficiency show, as the temperature difference between the heat source and heat sink increased from 8 °C to 12 °C the power produced by the gamma type engine and the thermal efficiency increased proportionally. So an easy way to increase the thermal efficiency of the engine would be to move the engine to an environment where the ambient temperature is lower or use a fluid like water to aid with heat transfer out of the heat sink. In addition, increasing the temperature supplied by the heat source close to what the components of the engine can withstand would also increase the overall efficiency of the engine. An improvement to the lab would be to restrict the use of solid works during the analysis section due to the problems that arose while interpolating the volume data to fit with the pressure and temperature data.