Converting a Gas Engine To Use Compressed Air

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The problem confronted is the emission of hydrocarbons from combustion engines. The Engineering goal was to convert a weed wacker engine (WWE) to utilize compressed air as fuel. A WWE was chosen because of its design, attainability, and emission contribution. Compressed air was selected as a fuel because of its simplicity and abundance. Engines that run on compressed air will never be as effective as combustion engines. However, this project develops to inspire others and illustrate the importance of using innovation with the resources available to combat real-world issues. The researcher began by downloading the proper code for the Arduino nano, uploading the code, and inputting the correct settings. Next, the researcher connected the electrical components to their respective place on the breadboard. The Spark Plug Pneumatic Adapter was assembled using a crescent wrench and vise. The engine was fastened to a plank with the reed switch and solenoid. The researcher tested the engine at pressures between 100-30 psi. The researcher recorded RPM with a digital tachometer, the mass of the wheels with a dial spring scale, and the radius of the wheels with a ruler. The recorded data was used to identify the relationships between Torque, RPM, Run-Time, and Watt Output at various pressures. The engineering goal of converting a WWE to utilize compressed air as fuel has been successful. The skills developed in this project will be utilized to promote further research so that one day a computerized two-stroke compressed air engine is optimized.

Awards Won:

Lawrence Technological University: STEM Scholar Award, a tuition scholarship of $19,650 per year, renewable for up to four years and applicable to any major

University of Texas at Dallas: Scholarship of $5,000 per year, renewable for up to four years