Electromagnetic Tire Propulsion System

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The purpose of this project was to design and build a propulsion system to replace current electric motors that would be practical for use in any vehicle tire. This prototype was an electromagnet tire propulsion system that uses four individual electromagnets that pulse on in sequential order and propel permanent magnets located on the tire. This propulsion system would be useful to any electric vehicle by removing the motor from the center of the vehicle along with removing any unnecessary mechanical parts such as the driveshaft. These unnecessary parts decrease the space available to batteries and they also increase the weight of the vehicle. If all the parts are removed and replaced with electromagnets and a small control system, then much more space is created to increase the range of the vehicle. This prototype is made out of a body of Balsa wood and a clear acrylic sheet. The tire is made out of RC car tires and the fender is made out of acrylic. The electromagnets are constructed from five centimeters of soft iron, used for its high permeability, and 250 feet of 32AWG enameled coated wire. The permanent magnets are neodymium N35 square magnets. The electromagnets are controlled by a PICAXE microcontroller that controls the speed of the tire based on increasing time intervals for acceleration then a repeating time interval to keep the vehicle at a constant speed. This system opens up the possibility of endless innovation that would allow the electric vehicle to progress to a practical and efficient vehicle in today's world.

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