How Magnetically Suspended Tires Utilizing High-Temperature Superconductivity and Electromagnetism Creates the Most Eco-Friendly Vehicle

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Global warming is a significant threat to the environment. Increased pollution and fossil fuels are being released into the environment, and one of the main culprits is cars. Both gasoline cars and electric cars threaten the environment. This project proposes a new type of car that is more sustainable, efficient, fast, smooth, and eco-friendly to decrease global warming. The car is built upon the principles of high-temperature superconductivity suspension based on the tires. The tires are entirely isolated from the car and make no contact with it during operation, yet they are responsible for its motion. The tires magnetically levitate around a high-temperature superconductor stator for frictionless movement, and electromagnets are also employed as a second stator, which rotates the tire. The models for this project were built to demonstrate how the superconducting tire system works. One model demonstrates magnetic levitation suspension by having permanent magnets lined in the interior of the rotor (demonstrated as the tire) and the exterior of the stator (demonstrated as the superconductor stator). The other model demonstrates rotation by placing electromagnets (demonstrated as the electromagnet stator) on either side of a steel ball (demonstrated as the rotor of the first model) to pulse in a sequence that attracts the ball forward. Based on the models, several relationships were calculated and graphed. Because the model worked, this project goes on to design the entire car from a theoretical standpoint using the Stirling Cryocooler RS100-77K, solar panels, YBCO superconductors, electromagnets, and sodium-ion batteries.

Awards Won:

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