The Use of Alternative Non-Solid Chemicals To Create an Advanced Energy Storage System With a Machine Learning Charging System

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In today's world, electric cars have a more prominent role within society, they provide numerous benefits such as instantaneous torque, thereby eliminating the outdated exponential torque curve that goes along with the traditional car engine. The major drawback associated with the increasingly electric future is the fact that lithium mines used to manufacture lithium for lithium-ion batteries have horrible working conditions and develop inefficient battery cells that are not energy-dense, and are hard to recycle. By redesigning the chemical structure of a rechargeable battery, and using more energy-dense materials, the overall life expectancy and power efficiency can be greatly increased. When building the GAN charging controller, an ATtiny processor was used. This processor was used in conjunction with the CH340G integrated circuit and the L298N voltage regulator. These components were hand soldered using a custom-designed microscope stand. This charging controller was built fully from the ground up. Furthermore, the Vanadium-Redox flow battery uses an ion-permeable membrane that controls the flow of vanadium from the anode and the cathode. The byproduct of this reaction releases hydrogen gas and sulfuric acid. The generative adversarial network was trained using a computer and was executed via the microcontroller. The printed circuit board was assembled via surface mount device (SMD) and ball grid array (BGA) soldering. The battery alongside the GAN charging circuit proved to be successful. It sustained an average voltage of 1.8 over the course of 100 hours, and only lost .022 volts across that time period. Furthermore, the ATtiny CPU had a current draw of only 8 milliamps. This enables the charging circuit to be powered with a small battery such as the CR2032.

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