

Fuel Cells in Military Applications

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ABSTRACT:

With all of the electronic systems that a soldier will carry in the Objective Force, that soldier may be required to carry up to 16 pounds of batteries to supply the necessary power. However, through the use of fuel cells, this weight may be reduced to 8 pounds in a fuel cell-battery combination or 4 pounds with purely using fuel cells. The low weight, high power density characteristics of fuel cells make them ideal for use in military applications. The Army Research Laboratory in Adelphi, MD is testing multiple types of fuel cells to determine the best combination for use in the military.

The focus of the testing at ARL's Fuel Cell Program centers around providing the military with an inexpensive, alternative power source. This includes improving the current fuel cell technologies by using better materials, components and designs for military applications. The goal of this research and testing is to provide the military with smaller, more cost-efficient fuel cell power sources that are capable of being used by soldiers in a combat environment or for use in future robotic and combat systems.

Because of the extent of fuel cell technology, I was unable to learn about the entire scope of military applications of fuel cells in the three weeks that I was at the Army Research Laboratory in Adelphi. However, during my stay at Adelphi, I was able to fully understand the basics behind fuel cell engineering, including the strengths and weaknesses of today's fuel cell systems. This will enable me to conduct further research into the field of fuel cells and alternative power sources.

KEYWORDS: fuel cells, alternative power sources, fuel cell engineering

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