

Future Power Needs in Fuze and Munitions Applications

Giuseppe L. Di Benedetto, Homesh R. Lalbahadur

U.S. Army Combat Capabilities Development Command Armaments Center,
Picatinny Arsenal, NJ 07806, USA

Contact Author Email: giuseppe.l.dibenedetto.civ@army.mil / 1-973-724-1977

Abstract

The U.S. Department of Defense (DoD) has an active tri-service team focused on addressing the need for improved military munitions power solutions. Munitions power have seen little technological advances in an era of great technical growth. These designs and chemistries were developed decades ago and often do not meet the requirements of modern munitions. The increased power demands, extended shelf life and environmental ruggedness of modern weapons represents a unique challenge to the current battery industrial base. With the advent of artificial intelligence (AI), hypersonic and collaborative armaments applications, the additional demand for power is greater than ever.

To meet shelf-life requirements munitions batteries are often designed in a reserve architecture which activate when the munition is fired. These reserve cells remain in an inactive state until power is required. Once activated they need to provide power in a short amount of time and provide this power to the munition throughout its mission. The reserve nature of munitions batteries and the unique environments they are required to survive represent significant design challenges. This is often in direct contrast with commercial primary and secondary battery solutions which are designed to keep costs as low as possible. The DoD also uses power generators to provide on-board munition power.

The Joint Munitions Power Sources Integrated Product Team (JMPS IPT) has become the U.S. Department of Defense's strategic leader in supporting Warfighter needs in munitions power. This team will provide centralized leadership and advocate for the research, development, production, and sustainment of a viable munitions power sources industrial base. Our goal is to leverage manufacturing lessons learned and commercial battery expertise to build better and more cost-effective munitions power solutions. This presentation will provide an overview of the IPT, progress, and power needs for future fuzing and advanced munitions applications.

Keywords

munitions, armaments, munitions power, reserve battery, power generators, fuzing, DoD, JMPS IPT