

Can long-duration energy storage (LDEs) meet the DoD's 14-day requirement?

This report provides a quantitative techno-economic analysis of a long-duration energy storage (LDES) technology, when coupled to on-base solar photovoltaics (PV), to meet the U.S. Department of Defense's (DoD's) 14-day requirement to sustain critical electric loads during a power outage and significantly reduce an installation's carbon footprint.

Should energy storage technologies move in tandem with each other?

In the case of individual energy production, as technology to harness kinetic energy is adopted more widely, developing light-weight, energy-dense storage technology will assume more importance. It can be argued, for these purposes, that the development of storage techniques should ideally move in tandem with each other.

How will military energy technology change the world?

A disruption in the energy technology used by military has the potential to cause a fundamental change in the way energy is produced, transported, and consumed, necessitating a major overhaul of the system of energy flows in the individual, vehicle, squad, and base usage.

How does the military's energy strategy change?

The military's energy strategy is undergoing a change in response to the rising pressure on resources and the changing capabilities and types of technology available. Further, the high dependence on petroleum exposes military's energy costs to volatility in global oil prices.

Why is energy storage ranked low on lethality?

Since energy storage is not expected to significantly alter the ability to generate more damage, it is ranked low on lethality. Finally, examining new concepts for nuclear fusion reactors, these have high level of mobility as they are expected to be portable.

Why is energy consumption important for the military?

Incorporating better and more efficient forms of energy consumption provides advantage to the military in various forms of conflict. It allows troops on ground to conduct operations for longer periods of time while reducing the loads they need to carry.

In this article, an overview of recent progress in linear polymers and their composites for high-energy-density electrostatic capacitors at elevated temperatures is presented. Three key factors determining energy ...

In military applications, hybridization and/or electrification of the powertrain can provide increased tactical capability of military vehicles by increasing the available on-board ...

Advanced military energy storage equipment has become an indispensable part of modern high-tech wars. At present, various forms of energy storage technology are rapidly innovated and ...

Biaxially-orientated polypropylene (BOPP) film is the state-of-the-art material for energy storage capacitors. However, the low permittivity (ϵ_r) of polypropylene (PP) restricts ...

To deploy renewable energy, it is necessary to first have an energy storage system that can support these sources. Thus, this paper proposes a review on the energy storage application ...

It is currently at a technology readiness level (TRL) of 7 and not ready for full-scale deployment. To support decisions on the value of near-term demonstrations, this analysis looked at the ...

destruction time and thus limiting the SH energy [7-8]. Limited (or controlled) SH energy is the key to development of energy efficient, weight- or cost-effective capacitors for ...

In the past few decades, electricity production depended on fossil fuels due to their reliability and efficiency [1]. Fossil fuels have many effects on the environment and directly ...

Cummins Inc. (NYSE: CMI) will debut the Tactical Energy Storage Unit during the 2019 Association of the United States Army (AUSA) show at the Washington Convention Center, October 14 - 16. The new Tactical ...

This article proposes a three-stage planning procedure for identifying the optimal locations and capacities of energy storage systems, considering multiple operating scenarios via stochastic ...