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Operational Energy Analysis for Dismounted Soldiers

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Abstract: Soldiers are reliant on cutting-edge equipment to have a technical advantage over adversaries in combat. This equipment is designed to maximize new capabilities while minimizing certain key system attributes, namely size, weight, and power (SWAP). However, these attributes do not reflect the equipment's actual usage in the field. Characterizing these attributes relative to a standard use case provides additional insight allowing for better design decisions. One such parameter is operational energy which derives from the power attribute. A case study is presented on performing an operational energy analysis. The process begins by identifying the power users, mission sets, and equipment loads. These parameters are fused together to generate a power usage profile and operational energy requirement which provide insight into the system design. The process serves as a guide for characterizing other time-based operational requirements, including physical and cognitive burden.

Keywords: Operational Energy, Dismounted Soldiers, Batteries