

Manufacturing Technology Improvements to the Conformable Wearable Battery (CWB) System

PROBLEM / OBJECTIVE

The Conformable Wearable Battery (CWB) is a rechargeable power source for the Army's Nett Warrior Soldier System. This battery provides a significant advance over rectangular or cylindrical batteries, since it eliminated the traditional hard case with a flexible enclosure. The thinness of the profile and its flexibility allows the battery to be carried in various places on the soldier thus making it highly ergonomic in nature. Additionally, since it uses a rechargeable technology, it reduces Warfighter operating and support costs along with decreasing both the logistic footprint and quantity of batteries processed as hazardous waste.

The major objective of this project was to reduce the unit price of the battery by leaning out the manufacturing process, reducing scrap/rework and reducing the overall bill of materials,

ACCOMPLISHMENTS / PAYOFF

Process Improvement: This Army ManTech project dramatically increased throughput and reduced associated material and processing costs:

- Production throughput capability increased by 5X and an automation solution was developed that enables the potential increases in throughput as customer demand levels increase.
- Manufacturing lead time was reduced by 50% through a combination of operation cycle time, batch size and lean/six sigma improvements.
- Overall scrap/repair rate was reduced by 86% for the printed circuit board assembly and by 47% for fully assembled packs.
- The unit price objective was met by improved scrap/repair rates and efforts to reduce material cost and direct labor cost

Implementation and Technology Transfer:

The CWB has been fielded as a centralized power resource for the Army's Nett Warrior system to support various tactical electronic devices.

“The CWB deployed in theater is enabling enhanced ability to shoot, move, and communicate, making the Soldier's mission safer, while providing more power resulting in increased mission capability.”

- PM SWAR – APM Soldier Power



Conformal Wearable Battery (CWB)

Expected Benefits and Warfighter Impact:

The ManTech process associated with the CWB has directly led to significant increases in reliability and has led to an initial 40% reduction in system cost and is projected to provide an additional 30% cost savings and avoidance moving forward:

- 5X increase in the production throughput
- 50% reduction in manufacturing lead time
- 20% reduction in overall scrap/repair rate
- 40% reduction in the price of the battery versus current production contracts
- Return on Investment of 6 to 1 with a cost benefit of \$12M

“With their high power consumption, they would go for four hours. But with the conformal battery, the soldier can actually go for 20 hours.”

- MAJ Mora-Jimenez, PM Soldier Warrior

TIME LINE / MILESTONE

Start Date	September 2013
End Date	March 2015

FUNDING

U.S. Army ManTech	\$3M
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PARTICIPANTS

- U.S. Army RDECOM Communications-Electronics Research, Development and Engineering Center (CERDEC)
- ICCN & Palladium Energy (formerly MicroSun Technologies)