



## Lightning Packs

### AT A GLANCE

#### WHAT IS IT?

The Lightning Pack energy generating backpack provides power in excess of 25 watts to the warfighter. This will reduce the amount of batteries a warfighter would need to carry on an extended mission. Additionally, the pack significantly reduces skeletal joint injuries.

#### HOW DOES IT WORK?

- The backpack is elastically suspended on a frame so that it is free to move vertically.
- The vertical oscillations inherent in normal walking are dampened via a small generator that produces electrical power.
- Provides sufficient electricity to run military radios while walking.
- Large peak oscillatory/transient compressive forces that would normally be absorbed by the spine, knees and ankle joints are instead diverted to generation of electricity.

#### WHAT WILL IT ACCOMPLISH?

- Enhanced self sufficiency for electrical power.
- Significantly reduces skeletal joint injuries.

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These backpacks offer an exciting high-efficiency alternative to current energy-scavenging technology. With conversion efficiencies in excess of 95 percent, these backpacks absorb the energy of motion and convert it into electricity—or absorb it altogether, saving the soldier skeletal injury and fatigue.

The backpack is suspended on springs and rides up and down a series of slide-rails, driving a tiny electric generator that produces energy with each step taken by a warfighter. The generator produces anywhere from 15 to 50 watts of energy, depending on loadout and pace. The backpack can be manually “pumped,” producing significant energy on-demand.

Several demonstrations have shown consistent and significant scavenged power produced by a user—enough to power a PRC117G radio—without the use of batteries. All energy that is converted is harvested from the detrimental effects of dynamic loading, resulting in no “parasitic” losses to the user.

This backpack is being transitioned to the U.S. Army Natick Soldier Systems Center and the commercial outdoor industry.