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Photo: Bionic Power

MEDIA RELEASE

Bionic Power strides into new field trials with U.S. Army

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By next spring, new field trials will see U.S. Army soldiers become their own power sources simply by walking, thanks to an idea conceived and developed in a Simon Fraser University lab.

During the trials the soldiers will forego the cumbersome 16-20 pounds of batteries they typically carry to power their electronic technology during three-day missions. Instead, their strides will power their electronic devices, using the PowerWalk® Kinetic Energy Harvester from Bionic Power Inc. The lightweight, leg-mounted exoskeleton harvests energy from the natural action of walking.

Bionic Power Inc., which spun out of early research led by Max Donelan, a professor in SFU's biomedical physiology and kinesiology department, has landed a $1.25-million (U.S.) contract with the Office of the U.S. Secretary of Defense.

The company signed a contract with the U.S. Army two years ago for $3.8 million, and a $1.25-million extension this past May is helping to further its energy-harvesting technology.

The new agreement will supply low-volume production units of the PowerWalk® for field trials under the U.S. Joint Infantry Company Prototype (JIC-P) Program. Testing will involve both the Marine Corps and the Army and is expected to begin in early to mid-2017.

Donelan, one of the company founders and original inventors of the bionic energy harvester, says the latest advance takes the innovation a step closer to the goal he and his team envisioned nearly a decade ago.

"The concept grew from the simple notion that power from our bodies is both efficient and portable," says Donelan, a director of the company. His SFU lab developed the initial version of wearable technology capable of generating electricity from the natural motion of walking. The research was funded by a Natural Sciences and Engineering Research Council (NSERC) grant.

The researchers were aiming to revolutionize how portable battery-powered devices are charged, with a view to reducing costs and batteries, and increasing convenience. The concept quickly became attractive in military circles, as well as in medical and general consumer markets.

"Military organizations around the world are looking for ways to take weight off the backs of their troops," says Yad Garcha, Bionic Power's chief executive officer.

"Wearing one of our PowerWalk® harvesters reduces battery weight while providing continuous, potentially life-saving

power in the field for communications, navigation and optics. That's a pretty compelling value proposition for military decision-makers."

The device can generate between 10-12 watts of electricity. Walking for an hour can provide enough electricity to charge up to four smart phones.

Strapped to the knee, the device uses sensors and a real-time control system to assist leg muscles when slowing the knee's motion is necessary. The system intelligently controls the torque it applies to the knee throughout the walking cycle, harvesting energy from the body whenever it is available without increasing user effort.

When first developed eight years ago, Donelan published his research in the journal *Science,* while *Time Magazine*, the *New York Times* and other media touted the device as one of the year's top inventions.

Bionic Power Inc. is one of 10 companies to make the 2016 Ready to Rocket Life Science list, reserved for B.C. tech companies that are best positioned to "capitalize on the technology sector trends that will lead them to faster growth than their peers."

The field trials are expected to play a vital role in helping Bionic Power prepare for volume production.

About Bionic Power

Bionic Power makes wearable technology for charging batteries. The PowerWalk® Kinetic Energy Harvester enables users to produce power as they walk. Wearing a harvester on each leg, users produce an average of 10-12 watts of electricity, which, over the course of an hour-long walk, can charge up to four smart phones. The walk-recharge capability of the PowerWalk reduces user requirements to carry backup batteries, as well as the need for battery resupply in the field. Development and testing of the PowerWalk is supported by the U.S. Army and U.S. Marine Corps as well as the Canadian Department of Defense.

Bionic Power. Walk. Recharge.

About Simon Fraser University

As Canada's engaged university, SFU is defined by its dynamic integration of innovative education, cutting-edge research and far-reaching community engagement. SFU was founded 50 years ago with a mission to be a different kind of university —to bring an interdisciplinary approach to learning, embrace bold initiatives, and engage with communities near and far. Today, SFU is Canada's leading comprehensive research university and is ranked one of the top universities in the world. With campuses in British Columbia's three largest cities – Vancouver, Burnaby and Surrey – SFU has eight faculties, delivers almost 150 programs to over 35,000 students, and boasts more than 135,000 alumni in 130 countries around the world.

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