



**Entrepreneurial  
Training & Consulting**

## **BBCetc is helping to create good vibrations.**

With the help of BBCetc, James McCullagh has taken *Creatadh* (Irish for “vibration”) Energies from a unique technology that harvests vibrational energy to discover cracks in infrastructure to identifying wear on airplane engines to using energy created by walking to alert diabetics to potential neuropathy issues with their feet.

This technology was developed as part of James’ PhD research at the University of Michigan, primarily to read cracks in bridges and other infrastructure. He decided to try and commercialize the technology through a Small Business Innovation Research grant from a government agency.

He chose BBCetc as a partner to help him navigate the often complex government grant landscape. “They worked closely with me to discover what kind of application would be most appealing to one of the participating agencies,” said McCullagh. His first application was to the Department of Defense as a tool to predict airplane engine wear for the Army.

“My proposal was rejected...but for a very good reason,” said McCullagh. “The DoD gave me terrific feedback.”

The main issue was that James had designed a specific type of circuit but was going to purchase an energy harvester “off the rack.” The harvester is what would “gather” the energy that would feed the circuitry. The DoD showed him why it needed to be an organically tailored harvester designed to work in close concert with the circuit and application. Otherwise, the system wouldn’t be efficient, and possibly even *deficient*.

McCullagh and BBCetc formulated a plan to partner with a harvester fabricator, reapplied to the DoD and simultaneously applied to the National Science Foundation.

This time, the innovation could be used to identify neuropathic structural issues in the feet of diabetics. Whenever the patient walked, energy would be generated then harvested to feed the circuitry. The NSF loved the idea but requested that James drop his re-application to the DoD as there were a lot of areas of overlap.

"I don't know that I would have been successful without BBCetc's help," said James. "Certainly it would have taken much longer to get an award and I might still be trying."

BBCetc, specifically consultant Jerry Hollister, provided a community where McCullagh could test ideas to discover what worked and what was simply too "crazy" for an agency to embrace. BBCetc also provided the guidance, motivation and discipline required to create a successful proposal.

"Jerry even figured out I could use my post-doctoral work to make my case to the NSF even stronger" said McCullagh. "He also wanted everything to be perfect and wouldn't let me off the hook until we'd hammered out the best possible proposal!"

Creathadh Industries is now primed for Phase II of their SBIR journey. BBCetc stands ready to help make it a successful trip.