Success Story

Husband’s Invention Helps Wife, May Help the World

When Ron Arnoldsen drew up the first designs for a mini biodigester, the unit was meant simply to help make manure management easier for his wife who suffers from debilitating back pain. The idea evolved quickly, though, and the couple leveraged the many resources available to them through The Pennsylvania State University to bring their idea to life.

The first evolution of the concept took the design from a simple manure management system to a bio-gas producing micro-digester, such as would be available to large farms capable of purchasing equipment that often ranges from $500,000 to $1 million dollars or more. The key was to build an affordable system, simple and safe enough to use on small farms.

The Arnoldsen’s first engaged Penn State in 2011 by sponsoring a Learning Factory team of engineering students to help them build the first prototype. The team’s work earned them the People’s Choice Award at the Learning Factory Gala, and the Arnoldsens were encouraged to keep pushing their idea forward.

In the summer of 2013, Keppy engaged the Penn State SBDC for help evaluating the business potential of the technology and to determine the value proposition, as the unit had various benefits including manure and odor management, methane gas and fertilizer production and could also process non-manure wastes, like restaurant scraps and other organic matter. Keppy, her colleague Jennifer Breimhurst, and her consultant worked through various industry applications, considering the financial, regulatory, safety, logistical and practical merit of each.

Armed with new industry research and understanding, Keppy enrolled in the Spring 2014 TechCelerator Boot Camp program, in which the SBDC is a partner. At the same time, the Arnoldsens engaged another team of Learning Factory students for a Second Generation prototype which was completed in June, 2014.

The research and advising to date has helped the Arnolds land on the fertilizer produced by the digesters as the primary value proposition, and Keppy is now again working with Penn State to verify that the fertilizer is pathogen free, which is critical to distribution potential. She and Ron are fine-tuning the digester design and preparing to pilot an innovative coop program where area farms can license a digester for manure management in exchange for providing the liquid-portion of the fertilizer produced back to the Arnolds for distribution as organic fertilizers and hydroponic growing media. The couple will remain engaged with the SBDC as they continue to move their technology toward the market.