Success Story: IMC Helps Ascent Bio-Nano Technologies Advance Biotech Startup

written by Lauri Moon | January 10, 2014

Ascent Bio-Nano Technologies is a biotech startup company that develops high-performance, low-cost miniature flow cytometry devices for various industries based in State College, PA.

The company's mission is to develop innovative biomedical instruments to accelerate the impact academic research makes on society. The company's products are used in biomedical studies, medical diagnosis and therapeutics. The applications are expansive, including for HIV, leukemia and cancer diagnosis and the product is based on patented, renowned technologies.

SITUATION

Ascent's team had developed low-cost flow cytometer cell sorters that analyze and sort without damaging cells. The achievement was significant, earning them a financial investment from the Ben Franklin Partners of Central and Northern Pennsylvania. However, while the instruments were leading edge, they were developed for the lab setting. Moving the products to market would mean engineering them for production at a variable price point while maintaining stringent quality measures.

SOLUTION

IMC business advisor, Ed Zubavich, connected Ascent President and CEO Lin Wang with the Learning Factory, a program within Penn State's College of Engineering. The Learning Factory helps to provide engineering students with practical hands-on experience through industry-sponsored and client-based capstone projects. Wang submitted a project proposal to have students perform configuration designs to reduce the instrument footprint and provide a proof-of-concept prototype based on the lab-performing system of Ascent's cytometry instruments. The project involved solid modeling, basic electronics and interfacing and multi-disciplinary expertise. Student work included the following:

- Review the lab-performing system and understand the requirements of the proof-of-concept prototype.
- Identify the most suitable commercially available components to replace the expensive lab equipment.
- Develop several concepts of prototype system design. Consider size, functionality, cost and system stability. Select one approach and develop it in detail.
- Assemble the prototype based on the design concept.

Students completed that work over the course of four months in the fall of 2012. Wang noted that her team was very pleased with the results. "The students brought good passion to the work," she explained. "They were big contributors to choosing components, resolving modeling concerns and more."

The effort was so successful that in January 2013 Ascent moved forward with a second project with IMC and The Learning Factory – this time, to *advance* the prototype developed in the fall. Students were charged with researching existing compact flow cytometry cell analyzers to develop an understanding of price, size, features and specification. Armed with that information, students moved ahead with a second prototype to consolidate power supplies, gain new efficiencies in the electronic design, optimize the data interface and enable system data to feed directly into commercially available software for display and analysis. The prototype was assembled, tested and the results compared to what was available in the

industry.

RESULTS

According to Wang, these projects have helped Ascent in many ways. Having a solid prototype in place, Ascent has extended its position from solely a research lab to that of a serious business, placing it in good position for building even more credibility in the industry and with potential investors. The process also enables Ascent’s leadership to better plan for growth by allowing them to see what skills would be needed if they expanded their operation to in-house prototype development. Combined, the two projects have staged Ascent for future success.