TinyCircuits keeps on growing

To keep up with orders for its Tiny Arcade and mini circuit boards, TinyCircuits founder Ken Burns had to add more space to the company's site in Akron.

With orders flowing in for its Tiny Arcade and mini chips, the Akron company has had to add floor space and employees to expand its production and design capabilities.

By RICHARD WEINER

Big things are happening at TinyCircuits.

The Akron manufacturer of small, open-source circuit boards is adding floor space and capacity, because the company can't keep up with the new business it's getting, company founder Kenneth Burns said.

When Crain's last visited the company, in November 2015, Tiny Circuits was just coming out with its Tiny Arcade, a hand-sized gaming system shaped like the old arcade machines. A Kickstarter campaign to raise $25,000 at that time, Burns said, eventually brought in $128,000 in preorders for Tiny Arcade, which retails at about $60 and is available through the company website.

Last year, TinyCircuits had so many orders, it couldn't keep up, Burns said. So, at the end of 2016, the company, which has expanded to eight employees, restructured its finances to expand its design and production capabilities.

That is a far cry from TinyCircuit's start in Burns' garage. A graduate of St. Vincent- St. Mary High School, Burns has bachelor's and master's degrees in electrical engineering from the University of Akron.

After stints with Telxon Corp. and a failed startup, Burns said, he became interested in industrial controls and with small sensor circuits in particular.

"I wanted to take large industrial sensors and shrink them down," he said.

In searching for an operating system, Burns discovered the open-source Arduino prototyping platform, and then he "took a left turn into the gaming sector."

It's paid off.

"We did roughly $625,000 in revenue in 2016 and plan on over 30% growth in 2017," said Burns.

"The Tiny Arcade was the growth product toward the end of 2016, after it was released for retail, and accounted for about 40% of our sales for the fourth quarter of 2016," Burns said. "About 15% of revenue came from outside custom jobs, and the remaining would be standard products that we offer."

Burns declined to talk more specifically about financials, but said, "We did obtain a loan from Growth Opportunity Partners at the end of 2016 that let us hire two new people and get new equipment and build out new space here at Canal Place. We added 2,000 more square feet of floor space, so we're up to 7,000 total. And we purchased a new pick and place machine (which places all of the electronic components onto the printed circuit boards) and a new laser cutter."

Canal Place is the old Goodrich Tire factory on the south side of downtown Akron that has been converted into a multiuse business facility. It houses the Akron Global Business Accelerator and several businesses, many of which come from the science departments at the University of Akron. TinyCircuits is listed on the accelerator's website, but Burns said the company is independent of the organization.

In the meantime, besides selling the Tiny Arcade, TinyCircuits produces about 55 different products, many of which are inspiring several makers to use them in scientific applications, Burns said.

TinyCircuits manufactures most of its products in-house with a "wide mix of low-volume production machines" and the lessons learned from mistakes made over time, he added.

The company's products include small games and game kits, tiny video screens, a smartwatch kit, processor boards, an accelerometer, a GPS board, a transceiver, an LED display board, processor kits, an audio board and lots of other small circuit boards.

TinyCircuits' chips are about the size of a quarter and very inexpensive compared to other circuit boards. They are compatible with the Arduino operating system, meaning they're perfect for hackers and makers who want to embed computing power into the electronic devices they create.

Out in Missouri, for instance, J. Scott Christenson built a training stethoscope using a TinyCircuits board. Christenson, an assistant professor at the University of Missouri, was searching for a solution to a problem in training doctors and nurses to use a stethoscope.

"An actor can play a simulated patient who displays the symptoms of a disease," said Christenson. "But you can't simulate what you hear in a stethoscope."

Christenson's solution, which is still in development, involves a TinyCircuits board connected to a sound database of medical conditions, created to imitate the look and feel of a stethoscope.

A radio frequency identification chip on the patient tells the TinyCircuits chip what sound to play based on a programmed condition. Voila — the medical student hears what a patient's medical condition will sound like.

"I found TinyCircuits on the web, looking for Arduino chips," Christenson said. "It was a small, compact system, and they are good guys — very helpful."

In Boston, at the Massachusetts Institute of Technology, Columbus native Anna Young is working on a couple of projects using TinyCircuits technology.

One currently in development at Young's lab is a "smart" pill bottle that can help people with electronically timing their medication intake and tracking data.

Young said that the bottle she is helping to develop could be sold for a fraction of the cost of similar products on the market.

"I love working with the TinyCircuits team because I'm from Ohio (to begin with)," Young said. "It's fun for us to explore possibilities with them. They are not just a vendor; we visited their shop and brainstormed with them. They are a great team, and we enjoy working with them."

TinyCircuits connects with these scientists and others at maker's fairs and trade shows around the country. After ideas are brainstormed, TinyCircuits is set up to design and manufacture small batches of products based on a customer's needs.

Those needs seem to be expanding as fast as Burns and company can get new machines into their space.

"We can do cool things that other companies just can't do," he said.