

Back in 1963, Paul Penn and two engineers each invested \$500 in a manufacturing start-up business. Their company, DART Controls, today led by President Mike Lunsford, has emerged as the designer and manufacturer of some of the world's most reliable variable speed motor drives, controls and accessories for electric motors.



Innovation in CONTROL

Written by Margaret Patricia Eaton

In the early years the Zionsville, Indiana-based company, engineered custom solutions for various businesses in the American Midwest. In the late sixties, the company was approached by a customer to design a lap speed timer for slot cars. The resulting digital automatic race timer was named for its acronym – DART – and provided the company with an easy-to-recognize brand name. The timers were picked up by a nation-wide distributor. One could say the rest is history, but timers were just the beginning.

Next, Penn was contracted to make electronic controls for direct current (DC) permanent magnet motors and then was approached by John Slauson who was selling a motor but needed to adjust its speed, and so the first motor speed control was developed, with Slauson and Steve Garstang as partners.

“As an engineer and manufacturer, Penn was interested to find a product that would have broad-based interest, so he settled on this motor speed control as a general product and something the company would pursue in the future. And that’s what we’ve been doing for the bulk of fifty-three years now,” says Mark Lewis, vice president of sales and marketing.

In the late 1980s, Pete Hawryluk became the third partner when Garstang left, and company engineers developed the first drive for a pizza oven that was based on a microprocessor.

“This is a fun one,” Lewis says. “In the eighties, the pizza industry exploded – the Dominos and Pizza Huts were expanding like crazy, and the core of every restaurant was the oven as they changed from baking one or two at a time and taking them



out with a wooden paddle. The automatic oven had come into play, and they contacted us because they had a small motor driving the conveyor, but they needed consistent, repeatable bake-time. Even a few seconds variation on a pizza can change the product quality so they needed repeatable accuracy and a control that would display the time in minutes and seconds, so we created the first digital DC motor control,” he says.

“We put a microprocessor in a control for the first time, and that gave us a little computer to work with to make sure the motor was running at the speed it was supposed to and allowed us to do math calculations. So we could convert rate or speed of the motor into time in the oven. It was very innovative, and we were selling hundreds of these controls every month, and it was exciting.” ▶▶

► As Lewis says, “We still sell them in good volume but responding to customer need has resulted in other new products for us that have found broad application across many industries and expanded beyond food preparation into clean water and wastewater management, many aspects of agriculture, packaging and material handling and medical equipment.”

Dart Controls makes modern surgery possible since its parts are used in laser surgery smoke extractors, liquid nitrogen scalpels and a variety of surgical related pumps. For the past twenty years, the Dart Brushless DC (700 Series) has been employed in numerous medical devices made around the world. Any time there is a device that requires quiet operation, high revolutions per minute capability, reliability and a long time between repairs, Dart Controls is the answer.

Lewis says the company's latest innovations include “networked data communication with our drives to enable direct interface and control from Cloud applications, Bluetooth and smartphone/tablet apps.”

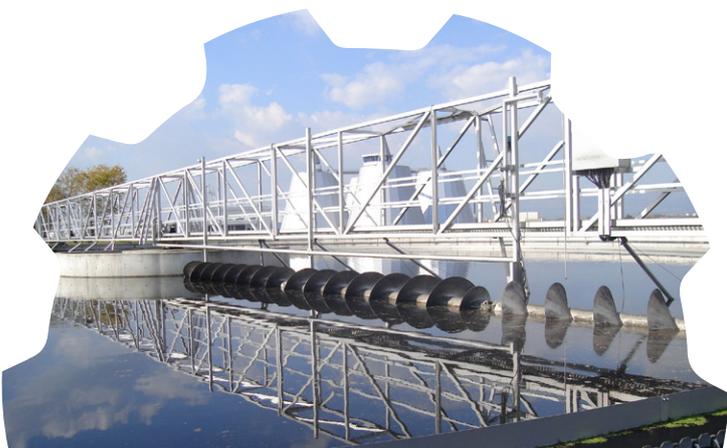
Penn's foresight to perfect and find multiple applications for what is essentially one product has held the company in good stead, even throughout the last recession in 2008. “It impacted everyone hard, but we managed to make a profit every year,” Lewis says. “It might have been \$1.29, but we made a profit, and the big reason for that is because we are not locked into a limited market segment and the fact that we span so many really helps us to ride out business cycles.”

Dart has never gone offshore and never will because it recognizes the myriad advantages of domestic manufacturing. Not only does domestic manufacturing provide employment and benefit the economy, but it also eliminates the problems associated with outsourcing. ►►



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►“It stands to reason,” Lewis wrote in a 2014 blog, “that when your supply chain is long, complex and geographically far from you, the challenges grow exponentially, and the quality and service will suffer. At Dart Controls we are proud to manufacture in Indiana, a state which is attracting a lot of industry attention.”

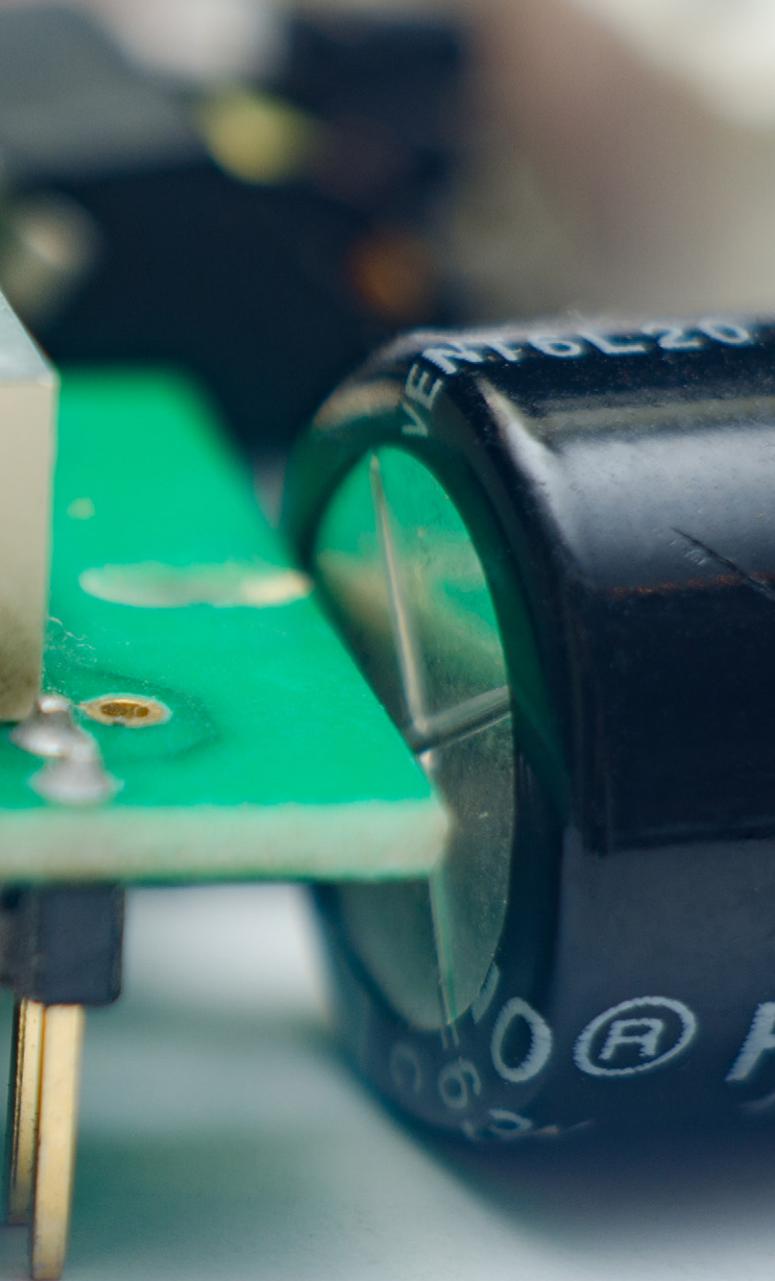
Because of its onshore manufacturing policy, Dart has a dedicated workforce of fifty with an extremely low turnover rate, which guarantees that the team of technically skilled people who assemble the products understand their job very well and know the importance of doing it right.

A significant change in Dart Controls came about in 1998 when lean manufacturing was adopted. Lewis who has worked there

for a total of seventeen years, beginning in the eighties and returning in 2006, saw the operations both before and after lean manufacturing was introduced and says it has made a huge difference in the company's success.

“In the eighties, we would do a batch process, take model X and set up a production line to build five hundred of them and then put the finished parts into inventory and wait until someone ordered them. But then we had customers with special needs, who wanted something slightly different. So, we'd have to take those parts out of inventory, modify them and then ship them, but by today's standards that is so inefficient. Now we build everything to order, so we have a low finished goods inventory, and we don't have a lot of money tied up. It's not ground-

“Penn's foresight to perfect and find multiple applications for what is essentially one product has held the company in good stead, even throughout the last recession in 2008.”



breaking, but by fully embracing this method, it's positively impacted our bottom line as a business and made us responsive to customer needs."

Dart also offers a complete line of digital potentiometers which have repeatable, accurate settings and programmable displays.

To date, Dart Controls has produced and shipped more than two million variable speed drives, consistently won awards from its partners, has ISO 9001-2008 rating and will be going for the new 2015 standard next year.

"We don't use that as a sales differentiator," Lewis says, "but we use it as a check for ourselves to make sure we're doing what we say we do. We say we deliver a quality product, and we want to make sure internally that we know we're doing it."

Now retired, partners Paul Penn and Pete Hawryluk attend meetings a few times a year and continue to take an interest in their little start-up that has emerged as an industry leader in innovative speed-time controls and is indeed the stuff of manufacturing legend. ■

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