



*Training North Carolina's workforce for the manufacturing jobs of the future is a key part of the mission at the Manufacturing Solutions Center in Conover.*

## FOCUS ON: MANUFACTURING

# THINK BIG, ACT SMALL

Advanced manufacturing goes hand-in-hand with N.C. history as entrepreneurs revitalize the sector.

Jordan Schindler was a University of Washington student in Seattle when his dermatologist said the dirt and oil on Schindler's pillowcase were causing his skin issues.

The doc suggested washing the pillowcase every two or three days. But laundry is not a college kid's priority, so Schindler opted to treat his blemishes by feeding ideas to his mind, rather than detergent to a machine. "I thought, what if instead of taking a pill or using a cream, you could simply get dressed in the morning? What if people needing medication could benefit from a garment or fabric?"

The West Coast, he says, had "really cool technology, but little understanding of the textile industry." So to nudge his invention toward reality, he switched geographies. "We came to the East Coast



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ECONOMIC DEVELOPMENT PARTNERSHIP OF NORTH CAROLINA

## FOCUS ON: MANUFACTURING



*Textile-Based Delivery Inc. CEO Jordan Schindler turned to North Carolina for expertise in fabric manufacturing.*

and found the Manufacturing Solutions Center in Conover [a branch of Catawba Valley Community College] and immediately knew they could help. The ability to have this expertise is something we couldn't get anywhere else," Schindler says. "We've been here almost three years now."

Schindler, 27, is founder and CEO of Textile-Based Delivery Inc., also known as Texdel, a company that makes breathable, body-activated fabric called Nufabrx for shirts, yoga pants, socks and arm sleeves. The fabric releases a compound derived from peppers called capsaicin. His company uses two hosiery mills in Asheboro to manufacture products and has raised more than \$4 million from investors. Schindler expects to have sales of \$1.5 million to \$2 million this year and says more manufacturing expansion is planned.

"We have a manufacturing line where we treat the yarn and put pain relief in the yarn, and it's woven into the garment," Schindler says. Products can be laundered about 30 times before the effect is diminished.

Schindler's business exemplifies what community leaders and educators push regarding North Carolina manufacturing: Industries are thriving,

community colleges are on board with workforce training, and this isn't your great-grandpa's textile mill.

The Manufacturing Solutions Center helps entrepreneurs with product development, testing, marketing, training and engineering, and introduces them to large-scale manufacturers. Computers, flash-drive data and complex automation are standard in machinery used in textile development.

Texdel has seven full-time employees and received a grant last year from Advanced Functional Fabrics of America, a nonprofit based at Massachusetts Institute of Technology, for a partnership with the Department of Defense to develop applications for the military. The company also is working with the health care industry for items such as medicated socks for the elderly, and with Kentwool of Greenville, S.C., on performance socks for golfers. "Medical is a huge market, and in military applications, think about soldiers hiking every day with 50-pound backpacks. If you could put pain relief into socks, it would help," Schindler says.

North Carolina has many major, innovative manufacturing entities including a growing aerospace and defense sector made up of about 40,000 engineers

and 1,000 aviation-related companies, according to the NC Aerospace industry group. But smaller outlets are also combining innovation with homegrown talent and making it work.

"Our younger generation really wants to do things that make a difference," says Phil Mintz, interim executive director of N.C. State Industry Expansion Solutions and director of the North Carolina Manufacturing Extension Partnership in Raleigh. "Not only can they make a really cool item, but it has a service to it that appeals to a younger generation. Like putting medicine in a fabric. Or places that say, if we sell a pair of socks, we'll give a pair away. They're helping those in need."

More so than in previous generations, younger workers are increasingly asking, "What are you doing to help people?" Mintz says. "They want to work at a place that's doing something good. Although we're not landing the big auto manufacturer, we have smaller companies coming in all the time. And in a way, it's better to get the smaller companies. It's more diversified and we can manage it better."

Manufacturing jobs account for 10.8% of the state workforce, according to the North Carolina Chamber.

"The key is 'think big, act small,'" says Gary Salamido, the chamber's acting president. "Each community has to look at that data in that community, and the educational opportunities, and say, 'Here's what we have; here's what we need.' Let the data at the community level drive what the education and training opportunities are. North Carolina has a history of being strong in the manufacturing sector, with good-paying jobs averaging about \$69,000. We're strong, but we can always get better."

Salamido says the key is developing the state's talent pipeline.

Business partners John Gage and Mike Hawkins of Charlotte know about offshoring. They watched their 50-plus employee dye and finishing company dissolve in the late 1990s as global trade agreements lured textiles overseas. "We built it ourselves and

# MAKING A DIFFERENCE

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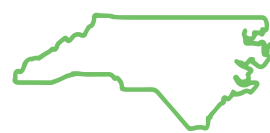


## SUCCESS STORY

Advanced Superabrasives | ASI  
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Advanced Superabrasives manufactures extreme-precision diamond and CBN grinding wheels for any industry. Since working with the SBTDC on market research, competitor analysis, benchmarking, and exporting, ASI has grown to 40 employees, a 33% increase. Revenues are up 15%, and in the machinist division, they are up 50%. They've added new product lines, and they are now exporting to 26 countries.

NORTH CAROLINA BOASTS OVER  
**8,000** MANUFACTURERS



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## FOCUS ON: MANUFACTURING



*This isn't your grandparents' shop floor. North Carolina manufacturers embrace high-tech machinery in a clean environment.*

ran that company for about 11 years," Gage says, "when it basically vanished. When a textile company closes its doors, you're losing not only skilled employees who ran computerized machinery, you're losing technicians and engineers and accountants and the whole pyramid of the supply chain — chemical companies, machine riggers, all these highly skilled people. There was an image of the textile industry being low-wage and low-skill and dirty, and that was absolutely not true."

In 2015, the men pooled their money and formed another garment manufacturing company in a 6,000-square-foot building north of Charlotte. They bought and customized used equipment and spent two years researching wool types, trouble-shooting knitting machines and designing garments. Sales for their Appalachian Gear Co. started in 2018.

Gage, 57, and Hawkins, 58, run a three-person business that can produce enough fabric a week to create 1,000 items and uses the U.S. Postal Service to ship nationwide. Made entirely from alpaca fleece imported from Peru, the products appeal to hikers, backpackers and others.

"We started bringing in yarn in 2016 and running some knitting trials. It's a performance fiber that's lighter, softer and breathes better than wool," Gage says. "Our growth goal is to have between 15 and 20 employees and bring some manufacturing back."

The inside of their plant is a collection of fabric spools, intricate machinery and skilled operators.

"We thought, how can we have a product that is not a commodity and produce and sell directly to the public and bring the industry back to the States?" Gage says. "It's very risky to do it this way, and we realized the killer of small business is to be saddled with debt, so we're either going to make this work with the money we put in it or go broke trying."

They also accessed the Manufacturing Solutions Center, which helped advance and guide their ideas.

"Manufacturing is a key to our future," Salamido says. "There are a lot of jobs available today, and even more available tomorrow, but we have to have the talent supply chain to make sure companies have the talent they need now, and a realistic source for the future. And we're committed to doing that."

Businesses look to the state's 58 community colleges for technical training, mathematical skills and customized courses that also instill the qualities of goal-setting and problem-solving.

"What we have to do is engage students early, engage them in middle school, and say, 'Here are the options available to you,'" Salamido says.

Some school systems such as Charlotte-Mecklenburg Schools use a website to push career and technical education and help students partner with businesses while in high school. Several counties participate in the Career & College Promise program, which allows high school juniors and seniors to earn college credit prior to graduation.

To assess talent growth and skills-gap issues in rural areas, as well as job creation and education, the N.C. Chamber Foundation commissioned a rural economic development study in 2016 called "Spreading Economic Opportunity Across North Carolina."

"We're well on our way. We're looking to use proven supply chain management principles and will be working with the U.S. Chamber of Commerce on the Talent Pipeline Management initiative, a 12-month training program," Salamido says. "We will reach out to community leaders in the state and say, if your community is in need, this is a time-tested, data-driven way to do it."

Chamber spokeswoman Chloe Madsen says part of the strategy is to spread economic development to designated opportunity zones.

In May 2018, the U.S. Treasury certified 252 opportunity zones for North Carolina — one-third of them in rural areas or small towns — as part of the 2017 Tax Cuts and Jobs Act. Government officials looked at low-income census areas that could benefit from tax incentives to spur revitalization. Investors in the zones are rewarded with a reduction or elimination of the capital gains tax.

"What we want to do as a chamber is make our members aware of the locations of the opportunity zones and

# WELL TRAINED



Caldwell's initiative to be well trained since The Great Recession has yielded cutting-edge, core industries requiring 21st century skill sets. From plastics, packaging, pharmaceuticals and furniture to the backbone of the Internet, an array of global leaders call Caldwell home and rely on Caldwell Community College and Technical Institute for training.



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## FOCUS ON: MANUFACTURING

the benefits of what that means to their communities and encourage them to get involved and hopefully create businesses — and support businesses that already exist — and help them flourish and thrive,” says Debra Derr, the chamber’s director of government affairs. “It’s an investment program that has come to us from the federal government that we haven’t seen in 15 years, and it’s leveling the playing field for rural communities.”

On Manufacturing Day, held statewide the first Friday of October, manufacturers open their doors to students and others to showcase their operations and promote manufacturing to future generations. Last year, Jerry Pedley, president of Mertek Solutions in Sanford, had 800 students come in buses from five counties.

They consumed 45 dozen hot dogs, saw robots and people work together on the production floor, and learned about the company whose engineers design and construct assembly

equipment and products for various industries. Mertek, a family business formed in 2009, has customers in China, Italy and Mexico, as well as domestic clients. His employees benefit from a profit-sharing plan, and some roles at the plant pay as much as \$27 an hour.

“The first thing those kids see is things that make machines, guys that know mechanical things and guys that know design. You see a clean manufacturing floor, very neat and orderly,” Pedley says. “This isn’t Laverne and Shirley putting things in bottles as they go by. In the old days, you walked into a machine shop and it was greasy and dirty. But technology has changed.”

Mintz says training curriculums continue to advance.

While many headlines about technology relate to Amazon’s remarkable supply-change advances, there also is strong innovation in how specific goods are manufactured, often by leveraging 3D printing and other new

technologies, Mintz says. “There are companies doing plastic fabrication work for international companies using robotics technologies that are cost-effective. Early on, it was a question of if robots would replace people, but that’s not the question anymore. It’s whether robots and automation can allow us to grow, given the lack of workers to work right beside them.”

Creating a work atmosphere is vital, Mintz says. “It’s easy to link what’s happening in your plant to technology. It’s the simple things, like putting an iPhone charging system in your break room. Things like that make a difference to workers. You have to make an effort. You can’t just be the way it’s been for years, because it was OK for you.”

John Chaffee is president and CEO of NCEast Alliance in Greenville, an economic development agency with a 28-county coverage area stretching from the eastern fringe of Research Triangle Park to the Atlantic coast. His



## Creating Solutions Through Partnerships

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territory ranges from major bioscience and biopharmaceutical manufacturing and aerospace and motor vehicle equipment plants, to counties still struggling to snag adequate internet access.

The alliance's STEM East supports science, technology, engineering and math education in school as a segue into local colleges and the workforce and has expanded from its inaugural four counties to 12, mainly because of aerospace and defense demand. The region has the nation's third-largest concentration of military personnel, according to the NCEast data, and companies such as Spirit AeroSystems, GE Aviation, and several military operations that seek STEM-trained employees.

While the STEM initiative is tied to community colleges and universities, "where we focus our first efforts is in middle school," Chaffee says. That includes "upgrading their technology, providing information to teachers and working with employers and vendors to really add relevance to what they're learning in the classroom."

He cites the example of making math and science relevant as a career builder to younger students. "For a relatively poor kid sitting in sixth or seventh grade, if people tell him he has to go to college to be successful, he's thinking he's never going to make it, so what's the point? That's not right. That's false information."

Last year, the University of North Carolina Board of Governors approved a measure called Innovation Early College High School for Pitt County Schools and East Carolina University, to allow high schoolers to graduate with up to 60 hours of transferrable credit.

"College now begins in 11th grade for a lot of students. Even if you're poor, you can have a college degree by the end of high school," Chaffee says. "And if you look at our employment growth, most has been around STEM disciplines — pharmaceuticals and STEM-driven automation, aerospace, and even the food industry in terms of automation and improving their processes."

"You just go out and put one foot in front of the other, but make sure you

love it," Texdel's Schindler says. "If you don't wake up every day excited to check your email and get to the office, it won't work."

Pedley says North Carolina is in an enviable position.

"Everything is in place very, very well in North Carolina to start your own manufacturing business. But you need to have a plan and know how to succeed through tough times," he

says. "We once went without paychecks for seven weeks, and if you can do that, you can have your own business. The internet has made the world flat. The state certainly has all the pieces in place, and the opportunities are here for people to do those things and grow." ■

— Kathy Blake is a freelance writer from eastern North Carolina.

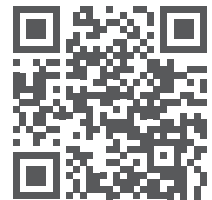


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