

Yadkinville plant makes polyester yarn from recycled plastic bottles

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YADKINVILLE — If looking out for the environment doesn't give you a warm feeling, maybe zipping up in a snugly Polartec fleece jacket made of recycled water bottles will.

The popular performance fabric is one of many items – automotive upholstery fabric, men's slacks, sweat-wicking socks – made of yarn that North Carolina-based Unifi Manufacturing Inc. spins from ground-up plastic bottles and other polyester waste at its plant in Yadkinville.

The yarn, sold under the brand name Repreve, is a relatively new product in an old industry that some people think has disappeared from the state.

For a while, it looked as though it would. "In the early 2000s, we were struggling," said Jay Hertwig, vice president of global brand sales and marketing for the company.



Billy E. Holcomb III works in the \$10 million recycling facility at the Unifi Manufacturing plant in Yadkinville Wednesday, June 5, 2013.

ETHAN HYMAN — ehyman@newsobserver.com **Buy Photo**

Fifty years earlier, the textile industry employed more than half a million people in North Carolina. Automation and consolidation had nearly cut that number in half by the mid-1990s.

After that, the numbers began dropping fast as companies closed or moved their operations to countries where labor is cheaper than in the U.S.

High-tech yarns and fabrics are the heart of North Carolina textile manufacturing now. There are still several hundred textile makers in the state, most of them focused on niche products with medical or military applications or aimed at a specific industry such as automobile manufacturing.

Banking on 'performance'

Greensboro native Allen Mebane got interested in the industry in the 1950s, when it was at its peak in the state in terms of jobs. His great-great-grandfather had run a cotton mill, but Mebane was always intrigued by the next thing: the newest fibers, the most current technology, the most efficient machines.

He and some colleagues launched Unifi in 1971, when polyester was new on the market and considered a wonder fabric. It was tough but felt nice to the touch, was inexpensive, and didn't wrinkle.

When consumer interest turned from polyester leisure suits and dresses to more natural fibers less than a decade later, Unifi found a market in China. When China began making its own polyester, Unifi reached out to customers in other parts of the world and, as demand rose, began buying struggling competitors, modernizing their plants and increasing production. By the mid-1990s, Unifi controlled 70 percent of the U.S. polyester market with 15 U.S. production facilities and 6,000 employees, plus a plant in Ireland, according to company histories.

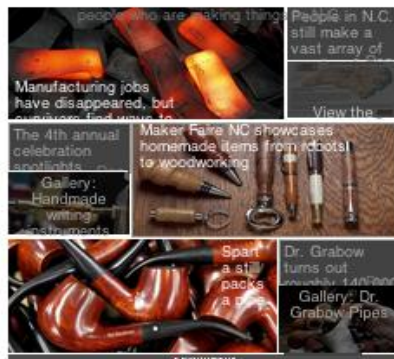
The company's fortunes turned in 2000. Mebane, in his mid-70s, stepped down from the company's board. Asian competitors were flooding the yarn market and some of Unifi's customers went out of business or reduced orders. The company laid off 750 workers in 2001.

As it had always done, Hertwig said, the company continued to invest in research and development, looking for new ways to treat its fibers and new markets in which to sell them to people who had come to think of "synthetic" as a bad word.

From that work came high-tech "performance" yarns that could wick perspiration, fight odor, discourage microbial growth and, in 2006, one that could be made from polyester waste from the company's own manufacturing processes. The company called it Repreve, and began selling it to Polartec in 2007.

Repreve took off fast, and Unifi soon needed more raw material than it could get from the castoff of its other yarn-making processes. So company researchers figured out a way to incorporate used water bottles collected for recycling.

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Unifi buys the bottles after they have been cleaned, sorted and “flaked” into pieces that look like shards of glass. At the \$10 million recycling facility it added on to the yarn-making plant in Yadkinville in 2011, the flakes are melted, mixed for uniformity and formed into BB-sized pellets.

In the yarn-making process, the pellets are melted down again, extruded through the tiny holes of what look like shower heads, manipulated with air and temperature and joined into threads of various shapes and thicknesses to achieve different textures and lusters.

It’s a clean, but noisy, highly automated process that relies on computers and robotics. The Yadkinville plant, which once employed 2,000 people, now has about 943, many of them second- or third generation textile workers who started out when North Carolina textiles meant hosiery, T-shirts fabric and denim.

“It’s a good job,” said Eddie Westmoreland, who has been at Unifi for 13 years and worked at other textile plants before that. He works in the Repreve spinning plant now, maintaining the extruding machines and swooping in to clean the spinnerets and re-align the hot filaments when there’s a jam or a break in the process.

After spinning, the slightly brittle yarn that looks and feels like a Halloween wig is transferred to the texturing side of the Yadkinville plant – the largest yarn-texturing plant in North America – where it’s again manipulated with heat and air to give it stretch, strength and loft.

Between 30 and 40 million pounds of Repreve leaves Unifi each year, wrapped on huge spools and used alone or blended with other fibers, the same as any other polyester yarn.

When it first came on the market, Hertwig said, Repreve cost a little more than the company’s other polyester yarn, but as more people recycle plastic bottles, Repreve gets cheaper to make.

Some manufacturers that use the yarn in their fabrics highlight it as a selling point, adding tags to indicate how many plastic bottles were recycled to make each item: Three for a fleece beanie, six for a Patagonia jacket. The fabric inside a Ford Fusion car can use up to 40.

The Yadkinville recycling plant used flakes from more than 410 million plastic bottles last year, running 24 hours a day.

Younger consumers are especially enthusiastic about fabrics made from recycled goods, Hertwig said. They’ve begun to look for them.

“If you’re looking at two jackets that look the same, feel the same, perform the same and cost about the same, why not pick the one that’s doing something good for the environment?” he said.

Based on current trends, the company expects to double its recoiling capacity in 2014-2015, Hertwig said. It will also expand its manufacture of solution-dyed yarns, in which color is added to the molten polyester before it’s spun into yarn, rather than applying the color later.

Hertwig said the company markets Repreve yarn not just as a commodity, but as a solution. It solves a waste problem within the plant and in the larger community, and gives its customers a solid claim of sustainable manufacturing.

And, Hertwig said, “It helped turn this company around.”