

## Diversity and development help to keep family firm on top

**Founded in 1963 and still family-owned, Patrick Yarns has built up a wide range of added-value products, a skilled workforce, and strong relationships with both its customers and suppliers. John McCurry visited the company from Kings Mountain.**

**K**ings Mountain, North Carolina, USA, is a small town with a population of about 10 000. It is about 30 miles west of Charlotte and is primarily known in relation to a key battle in the American War of Independence that took place nearby. Kings Mountain has also long been a hub of textile manufacturing. Much of that industry is gone now, but one company, Patrick Yarns, has quietly gone about carving out a successful niche making products for a wide variety of technical textile markets.

The story of Patrick Yarns is one of an evolving family-owned company, dating back to its founding by H.L. Patrick some 45 years ago. Synthetic mop yarn was the company's staple product then and while that remains an important product line today, the company's overall mix is far more diverse. Patrick Yarn's technologies are diverse too—it has Dref, open-end and ring-spinning capabilities. The company's flexibility and its willingness to be a pioneer in the development of new yarns have allowed it to transform into one of America's most versatile technical textile manufacturers.

Those industrial mop yarns that Patrick Yarns began manufacturing in 1963 launched a company that has grown through close cooperation with customers and suppliers. Today, the mop yarn business has involved into a variety of value-added products, including antimicrobial yarns, low linting yarns and high-performance synthetic dust mop yarns.

The growing list of end markets for Patrick Yarns today is seemingly endless. It includes all sorts of filtration, janito-



*Patrick Yarns' corporate offices and largest manufacturing facility are located in Kings Mountain, North Carolina, USA. Its original factory, which is still operating, can also be found in the same town.*

rial products, industrial and commercial gloves, upholstery, drapery and tapestry, hammocks, cordage and rugs. The company's cut-, heat- and flame-resistant yarns, as well as its performance engineered yarns, go into a vast array of specialized end uses.

Son of the founder and the company's current President, Gilbert Patrick, says "We still manufacture a wide variety of mop yarns

with global sales and exposure that are engineered for earth-friendly performance. We then evolved into filtration yarns for liquid filtration. Our next area of growth has been in yarns that are engineered for specific end uses; these include yarns for aerospace, belting, hose reinforcement, gaskets, protective apparel, gloves, hosiery, sewing threads and geotextiles."

Patrick Yarn's array of products is diverse and vast. Some of the more interesting ones are of a secretive nature and the company declines to discuss them for proprietary reasons. Most of Patrick Yarn's products are custom-made. Patrick describes the company as a solution-based spinner. As a privately held company, Patrick Yarns does not reveal its annual yarn production, but says it is growing steadily.

Filtration yarn has been an important market for the company for more than 25 years. This has been a particularly strong area as the company has developed into the world's most comprehensive yarn supplier to the liquid filtration industry. Yarns include extremely low foam (ELF) yarns, a low foaming polypropylene media, antimicrobial media and



*Dref spinning is used to make engineered core yarns and filtration media.*

an assortment of innovating blends incorporating different fibres for increased performance.

A recent introduction in this sector involves Patrick Yarn's AquaTRUST line which uses polypropylene media protected with AgION antimicrobials. This technology uses silver ions to protect the filter from plugging or blinding the media by deterring the growth of bacterial biofilm. Patrick says filters produced with this media have been proven to be bacteriostatic and longer lasting. Patrick Yarns is working with future designs and materials that will further enhance the filtration properties of liquid filtration cartridges, he says.

Patrick Yarns engineers high-performance yarns to suit its customers' needs. This involves using the company's full array of spinning processes, including core/sheath construction through the use of Dref friction spinning and through open-end and ring spinning. The company offers customers with demanding requirements unique core and sheath constructed yarns manufactured on Dref spinning machines, known for their ability to process difficult fibres.

Manufacturing capabilities include the ability to blend up to six different staple fibre components with an accuracy to within 1%. Patrick Yarns claims to have the largest global installation of modern Dref II machines and of Dref 2000s dedicated to sales yarn.

The industrial glove yarn market is another Patrick Yarns' speciality. These include yarns engineered for cut and/or heat protection, antimicrobial yarns and nylon blends for extra durability.

Patrick Yarns was one of the earliest developers of yarns using recycled fibre. This led to development of EarthSPUN recycled content yarns. The company reclaims unwanted fabric created in the manufacturing process of cloth or garments. The EarthSPUN process reclaims the fibres within these scraps without causing substantial damage to the fibres. EarthSPUN yarns are used in a wide variety of knitted, woven, braided and performance applications.

"We initiated our EarthSPUN product line in the mid/late 1990s" Patrick says. "At the time we foresaw this as a forthcoming demand from our customers and invested heavily in state-of-the-art equipment to make a superior yarn of reclaimed fibres. As it turned out, then it was just a fad and our customers moved on to other requirements. We stayed the course at Patrick Yarns and continued to perfect the quality and performance of our EarthSPUN reclaimed fibre product line. Now the demand for Earth Friendly yarns and products is huge and growing."

Patrick says end-uses for EarthSPUN yarns are growing, and currently include gloves, upholstery, rugs, blankets and apparel. The company will soon introduce a new line of EarthSPUN Tech yarns that will use reclaimed technical fibres such as para- and meta-aramids (including Kermel), Kuraray's liquid-crystal polymer (LCP) Vectran, and other fibres. These will be available with some of the same combinations of cores, fibre blends and flexibilities as allowed by the reclaimed fibres' properties.

"This will open the door to a new product offering and bring environmental stewardship to a whole line of technical textiles in protective gloves, blankets and apparel" says Patrick.

Within the EarthSPUN realm is an array of environmentally sound fibres including soybean, flax, bamboo, recycled polyester and milk. This interesting mix is all renewable or sustainable.

"We have seen good success with bamboo, recycled drink bottles and flax fibres going into a multitude of apparel and home furnishings" Patrick says. "The soybean fibres produce a really soft and appealing product and are being evaluated and tested by customers. The milk fibres are unique and at present are very expensive. We are still evaluating the possibilities and value-added properties of products made with these fibres and blends.

"Customers come to us with their challenges and we develop textile solutions to meet their unique requirements"

Patrick adds. "Because the yarns were developed specifically for a certain customer, we honour their commitment for innovation and work with them so they enjoy the benefits of being leaders in their field."

Patrick Yarns, which sources its fibres worldwide from a varied list of natural and man-made producers, spins a long list of materials that includes cotton, the entire gamut of polyesters, acrylic, polyamide, rayon, soybean, flax and milk. In the performance fibre area, Patrick spins both para- and meta-aramids, polyphenylene sulphide (PPS), polybenzimidazole (PBI), flame retardant (FR) rayon, modacrylic Vectran, polytetrafluoroethylene (PTFE) and cardable glass and stainless steel. In fact, Patrick says it is currently the only spinner worldwide spinning certain fibres.

"We can do all in blends, with or without multiple cores, and on a Dref can actually build a yarn like the rings on a tree" according to Patrick.

Spinning capabilities continue to evolve in the company. Just over a year ago, Patrick Yarns added ring spinning to its capabilities and that has opened up new markets.

"We initially spun coarse counts on roving frames and then graduated to big rotor open-end" Patrick says. "We still have our large rotor open-end machines and they are complemented with late model automated open-end spinning frames. We added Dref spinning for its unique capabilities of spinning core and filtration yarns and its ability to process difficult fibres. At present, Patrick Yarns has the largest installation of late model Dref spinning for sales yarn that we know of worldwide.

"With just friction and open-end spinning, our development team continually hit a ceiling as to finer yarn sizes, greater strength requirements and difficult fibre process ability" Patrick continues. "This was the deciding factor to install a major ring spinning addition at this past year. We are now able to produce a complete range of technical yarns and blends with or without cores. This has opened many doors to new and exciting products for our sales team to explore."

The company operates two manufacturing facilities:



*Schlafhorst model 360 open-end spinning producing technical yarns.*

- the original factory is a 1.4 ha (150 000 square-feet) facility located in downtown Kings Mountain;
- the company's headquarters can be found at the larger 2.6 ha (276 000 square feet) building located near the interstate highway.

Both factories operate around the clock and the company employs a total of about 160. While Patrick Yarns operates with modern technology, company officials cite other factors as manufacturing strengths, including the company's skilled work force.

"Our customer partnerships and our commitment for success are our greatest manufacturing strengths" Patrick says.

Patrick is especially complimentary of his employees. With other nearby textile companies closing in recent years, the company has been able to fill openings with experienced, but relatively youthful personnel, many of whom are skilled in the art of yarn spinning.

"As Patrick Yarns has grown, we have attracted a young and very knowledgeable work force. With this pool of cumulative skill sets, our talented associates accept innovation and

*Patrick Yarns produces a wide array of media for water filtration.*

*The latest introduction to the company's AquaTRUST line is a polypropylene media protected with AgION antimicrobials.*





Three of Patrick Yarns' total of 17 Trützschler carding lines.

embrace computerization that makes the task of developing new yarns and manufacturing processes easier than in houses that are commodity driven with an older work force."

As a company, Patrick Yarns doesn't exhibit at industry trade shows, but does send key personnel to the important exhibitions, such as *Techtextil North America* in Atlanta, Georgia, USA. Patrick says most of his company's business comes from fibre producers, its current customers and the all-important word-of-mouth process that has spread information on Patrick Yarns' capabilities. Patrick Yarns has close relationships with its fibre suppliers, for several of whom the company spin yarns that the supplier markets themselves.

"We're usually on a very short list of people to call for certain yarns" Patrick says. "We are very proud of the fact that we have strong partnerships with all our customers. It is this close relationship that helps us in determining where we

need to focus our energies on new products to help keep our customers innovative and profitable."

Patrick Yarns serves a global market and exports its yarns to countries including China, the Philippines, Malaysia, Australia, Italy and the UK on a regular basis.

"Exporting is looking more attractive now considering the value of the dollar" according to the company's Director of Sales Craig Behringer. He adds that Asia is the top market for yarns for filtration, while Europe is the leading destination for the company's engineered yarns.

Bobby Patrick, who is not related to the company's owners, heads the company's research and development. He stays in constant communication with customers and fibre suppliers. His responsibilities include evaluating new fibres and yarn constructions. At any given time, he is busy with six to 12 products in development.

A new product can take from two weeks to two years to develop, he says. For Bobby Patrick and his staff, it's a matter of finding the best textile alchemy. Often it involves making a product better or less damaging to the environment.

He says that Patrick Yarns will attempt a lot of product development that other companies won't touch. "We like to give two or three options to our customers, including different blends and different components" Bobby Patrick says.

"Customers find a list of capabilities here, not a list of yarns."

Patrick believes certain textile niches are here to stay in the USA and that his company will continue to be successful within its niche, but there are outside challenges to be faced: "The challenges we face as a company are the same challenges we face as a nation. The value of the falling dollar, unfair and ever changing trade agreements, rising health care costs, the immigration stalemate and especially the eroding US manufacturing base affects all manufacturing in America, regardless of the products produced."



### Further information

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