

# Recycling to reclaim profits

Unifi's new US\$8 million recycling centre now enables the US yarn supplier to produce whiter, cleaner, recycled polyester yarns from plastic bottles – and even fabric scraps – to give retailers a high level of product transparency.



Once a high volume supplier of commodity polyester and nylon filament yarns to the US and European textile sectors, Unifi has refocused its strategy in recent years after its core markets contracted when retail sourcing policies shifted to Asia.

At the forefront of this shift is the company's recycled 'Repreve' branded polyester yarns that are now instrumental in its move towards becoming a more specialised yarn supplier; and the company confirms this strategy will see its recycled product capacity sky-rocket in the very near future. "There is a lot of value in our Repreve brand and our product provides our partners with something different and unique – trust and transparency. We realise there is a significant opportunity for Repreve and Unifi invested US\$8 million to build the Repreve Recycling Centre. This facility will have the best mechanical recycling technology and equipment available globally," Roger Berrier, Unifi Executive Vice President told *Ecotextile News*. "Initially, this investment will nearly

double the capacity of Repreve from the current 25 million pounds to 40 million pounds of product each year."

Currently, sales of Repreve are in the region of 15 million pounds out of a total of 150 million pounds of virgin POY polyester that Unifi makes annually. "But this is set to change," notes Berrier, "Our vision is to drive the expansion of Repreve so that volumes equal and eventually exceed the output of Unifi's virgin polyester. This will enable Repreve yarn to approach the price of virgin yarns due to new economies of scale."

Unifi says the flexible, modular way in which its new plant has been built easily allows it to expand capacity. Initially, it will consist of two spinning lines: one for the conversion of post-consumer flake into chip and one for the production of the hybrid chip, which will recycle pre-consumer industrial waste. "One extruder is designed and developed to recycle PET flake from plastic bottles, whereas the second extrusion line is designed to recycle internal pre-consumer waste."

The second extrusion line will also

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be able to recycle fabric scraps – a significant move for Unifi and its partner brands. “The new recycling unit will be able to utilise polyester fabric scraps from the cutting room floors of sewing, knitting and weaving plants along with second quality fabrics,” revealed Berrier, “around 8 – 15% of waste in a factory can come from the cutting room table, which is either down-graded into a lower value product or ends up in landfill.”

As long as it's 100% polyester, this waste fabric will be ground, torn, shredded and melted and reformed into Repreve chip before being re-extruded as a solution-dyed black Repreve yarn.

“We are now working with customers to style this black Repreve yarn into garment collections,” he added, “This shows that the waste product doesn't necessarily have to be down-cycled.” Unifi is working closely with companies such as Polartec and the US outdoor retailer REI on this new program and says it is just six months away from producing high-grade commercial fabrics from recycled fabric scraps.

Interest in Unifi's project is growing and other brands working on sustainability are taking note. The company already works with the likes of Wal-Mart, Patagonia, H&M, Hagggar, Decathlon, Sears and workwear giant Cintas on its recycled polyester programs.

In the contract market segment Unifi is also working with AllSteel, Hon, Steelcase and Hunter Douglas Contract and for performance textiles it supplies recycled products to brands such as SheeBeast and Mt. Borah Cycling.

The recycling centre will be fully operational by March 2011 with a ribbon-cutting ceremony pencilled in for early May in Yadkinville, North Carolina, where the new facility is located.

## New technology

It is essential that Unifi can quickly get the new recycling plant to operate at efficient economies of scale which will not only make product more cost-effective, but also justify the brave decision to bring the recycled raw material in-house.

The new plant has been built with flexibility in mind so that capacity can be added as the Repreve brand continues to

grow. “We have two to three new major programs next year which will require additional Repreve capacity,” revealed Bett Anderson Faircloth, marketing manager at Unifi, Inc., “so we need to secure the supply of quality raw materials and we feel the best way to do this is in-house to control quality.”

The company says that it has successfully refined the recycling technology so that it can produce whiter, cleaner, recycled polyester yarns that are identical to virgin white polyesters. Previously, recycled polyester chip suffered from being off colour or creamy yellow due to the presence of impurities in the recycled raw material. “This has given us confidence to plan for expansion,” said Berrier.

The off-white coloured chips have been one of the main challenges over the past few years for companies that offer recycled polyester chip; and with Berrier estimating that around 40% of all textile SKU's (stock keeping units), in terms of inventory, are white, then dyeing problems can be a major commercial headache for light shades.

In terms of counts, Repreve filament yarns are available from 50 to 300 denier and as low as 1 denier per filament.

## Transparency

The new plant will focus on converting waste for the production of recycled polyester filaments, available as 100% post consumer ‘Repreve PC’ and ‘Repreve Hybrid’, which is a blend of post-industrial and post-consumer waste. In addition, to the products, the company also offers Repreve staple fibre, available as both hybrid and 100% PC and nylon filament yarn made entirely of post-industrial waste.

For enhanced transparency, Unifi has implemented its ‘U-Trust’ system which uses the third party organisation Scientific Certification Systems (SCS) to audit its manufacturing and verify the recycled credentials of its products. “We have also gone one stage further with our proprietary ‘Fiberprint’ technology,” said Berrier. This is where a special ‘tracer’ additive is introduced at the polymer stage of yarn production prior to extrusion. This enables Repreve yarns to be identified in garments and fabrics

to ensure Repreve recycled yarns are actually used. “This is used in negligible amounts so it does not affect our 100% recycled content claims. We can test for Repreve in as little as 10 minutes.”

Transparency and trust is becoming an ever more vital relationship between suppliers and retailers as well as between retailers and consumers, but the new recycling plant is also anticipated to offer commercial advantages to Unifi by securing long-term raw material partnerships.

“Plastic bottles become a more valuable commodity as oil prices continue to rise,” added Berrier, “that is why it is important that Unifi secures its own reliable supply source of polymer from waste raw materials. Around 90% of our raw material for recycling comes from the USA and we work closely with multiple sources to ensure we will have a continuous supply, since we plan for aggressive growth.”

However, he acknowledges that Unifi cannot control the supply and demand prices for this raw material commodity. Starting in October 2010, PET raw material prices have increased and companies such as Unifi have to pass on this inevitable cost to customers. Yet recycling rates for plastic bottles in the US are now around 28% which is up from around 21% a few years ago, and suggests that if there are more bottles available the pressure on prices may ease. However, these rates are still low compared to Europe and in addition 50% of all plastic bottles collected in the US are exported to China according to US recycling body NAPCOR

Unifi says its new recycling centre will serve North America, but it is keen to emphasise that Repreve is very much a global brand. “Repreve is widely used and recognised in Asia and Europe. We typically serve this customer base out of China where it is manufactured,” he said.

There is a possibility that Unifi may implement a similar facility in China if all goes to plan in the USA, according to Berrier, “but for now the recycling centre will be located in North Carolina. We want to be the world's best and leading producer of recycled synthetic fibres and this centre is our next step on this sustainable journey.” ■