

# ELEMENTAL TEXTILES FOR A SUSTAINABLE

As the sustainability wave continues to sweep across businesses, we are faced with the fact that this is not a case of “here today, gone tomorrow,” but a concept that is becoming increasingly integrated with business practice. At Novozymes, this progress is welcomed as we have always been committed to developing sustainable enzymatic solutions for forward-thinking companies – and the textile industry is no exception.



Elemental textiles sustain the water streams by reducing water usage and making wastewater cleaner.

Although washing and drying clothes may consume a lot of energy and water, there are many sustainable contributions to be made in the textile industry even before the clothes reach the consumer. Bioinnovation from Novozymes can already enable the relevant processes, but the solutions are often used as stand-alone products. So, in order to get manufacturers to use nature’s own enzymes in all of their processes, Novozymes joined forces with global textile and apparel manufacturer Esquel Group to demonstrate the impact of today’s enzyme technology. This was done by applying bioinnovative solutions at all the different stages of the production of one T-shirt.

## Enzymatic solutions are elemental

Teaming up with Esquel meant sharing knowledge and R&D competencies to make trials work optimally. The trials were performed at Esquel’s facilities using the best available technology for knitted fabric: bioinnovation and chemicals. First,

the fabric was bioscoured and bleached at low temperature. Next came the dyeing process, in which Novozymes Cellusoft® Combi, which removes residual hydrogen peroxide and then bioblends fabrics, was applied. The trials finished with a bio-soaping of the fabric using an enzymatic rinse solution. As a result, Novozymes produced what was coined “the elemental T-shirt,” a showcase for the overall “elemental textiles” concept.

Amazingly, the life cycle assessment conducted by Novozymes indicates possible savings of 70,000 liters of water and 1 ton of CO<sub>2</sub> per ton knitted fabric. It also shows a 20–25% reduction in processing time. “The savings we have achieved almost took us by surprise! We’re very glad to see that our solutions can reduce water and energy usage to such an extent simply by being applied at different stages of the same textile production process,” says Han Kuilderd, Customer Solutions Manager at Novozymes.

Creating textiles using the best technology available is elemental because it is cost neutral, it achieves greater quality, and the solution helps to protect the four elements:

- Water: Elemental textiles save water and make wastewater more environmentally friendly
- Air: Elemental textiles reduce emissions of CO<sub>2</sub> and other damaging particles
- Fire: Elemental textiles lower energy consumption and the use of fossil fuels
- Earth: Elemental textiles get you more fabric from your crops and reduce overall usage of farmland

When we consider that 9 million tons of knitwear is produced every year, it is easy to imagine the difference that elemental textiles could make in the textile industry. That is why the elemental T-shirt is just the beginning. “We believe that mills and retailers can go a long way with elemental textiles. Savings in time seasoned with increased

# TEXTILE INDUSTRY



ESQUEL GROUP

Novozymes' sustainable elemental textiles solutions do not compromise on quality.

output and better quality at the same cost as a traditional process give a competitive edge, and, considering the sustainable aspect, it's a win-win situation for everyone," explains Umar Riaz, Global Marketing Manager at Novozymes. With elemental textiles Novozymes plans to collaborate with world-leading textile companies to bring about an industry that, by using enzymes, keeps customers, producers, and the environment happy.

## Bioinnovation paves the way

Substituting chemicals with enzymatic solutions throughout the process does not affect quality – that is something on which enzymes do not compromise. Novozymes therefore sees great potential in elemental textiles, which we believe will pave the way for a more sustainable textile industry. Taking a step in the right direction, elemental textiles were featured at the Fashion Summit in Copenhagen in December

2009. The summit was a side event to COP15, and it drew over 600 eco-conscious fashionistas from around the world to kick-start the Nordic Initiative Clean and Ethical (NICE). Hosted by the Nordic Fashion Association and the Danish Fashion Institute, the Fashion Summit turned the spotlight on accelerating sustainability and socially responsible behavior in the dynamic and fast-to-market fashion industry. A proud partner, Novozymes and the elemental textiles exhibition received a lot of positive attention from the media and retailers.

Novozymes' collaboration with Esquel to develop the elemental textiles concept shows that rethinking conventional processes and incorporating sustainable ones instead is actually good business because it leads to reduced manufacturing costs, increased competitiveness, and higher-quality fabrics. That is why turning your business elemental makes perfect sense. ■

**FOR MORE INFORMATION**  
Han Kuilderd  
hkui@novozymes.com