

# Natural solution

The appeal of 37.5 technology is extending beyond sports / outdoor wear as consumers yearn for enhanced performance in their everyday garments. **Dr Gregory Haggquist**, chief technology officer at Cocona, which owns 37.5, speaks to Twist about the latest developments.

A unique technology derived from natural particles, 37.5 is designed to enhance the properties of natural fibres such as wool, cotton and silk.

Developed and owned by the American textile technology company Cocona, based in Boulder, Colorado, 37.5 technology is made of volcanic sand or coconut shell-activated carbon that is added to fibres to increase comfort and performance.

The technology first began its development when Cocona was founded in 2000 by Gregory Haggquist, PhD, along with Thomas Kallish and Amy Haggquist.


Gregory Haggquist is also Cocona's chief technology officer.

37.5 has since proved a hit among sports and outdoor wear brands, and as consumers yearn

increasingly for superior performance in all types of garments, the technology is now being adopted in other sectors as well.

"The major growth of 37.5 technology this year has come from products in lifestyle and workwear, as well as performance wear," says Gregory Haggquist. "A lot of brands in the tailored and lifestyle markets are incorporating 37.5 technology into their products – you can't see it, it doesn't change the hand, and it provides a level of comfort unlike anything else. What was once just technology used in performance and outdoor wear is now being adopted in the clothing that people wear all day every day."

Dr Haggquist points to several examples of such products that have been launched over the past year, together with further developments in the sports / outdoor wear segment. The IslandZone clothing line from Tommy Bahama includes blends of 37.5 with silk, cotton and Modal. Kenneth Cole Awear-Tech tailored clothing and sportswear includes 37.5 in cotton blends and wool blends. Point6 socks feature 37.5 technology with wool yarn. Carl Gross suits use 37.5 with wool, while its dress shirts have



Gregory Haggquist, PhD, the founder of Cocona and its chief technology officer.



Women's headwear from The Headwear Company featuring 37.5 in a blend with Merino wool.

37.5 with cotton. Other examples include corporate wear from Greiff, and headwear featuring 37.5 in a blend with Merino wool from The Headwear Company.

Dr Haggquist adds that French brand Aigle is due to launch a collection that includes natural fibres with 37.5 technology, while UK company Ashmei makes Merino cycling gear featuring 37.5. "Many more are in development," he says.

As 37.5 technology becomes more widely used, Dr Haggquist says that blends with natural fibres are key to this expansion. "A large portion of new products using 37.5 technology is coming from natural fibres blending with 37.5. Silk, wool, linen and cotton are all becoming favourite blends with 37.5 technology. We expect this to continue in the future as the lifestyle market shifts to athleisure clothing. Blending 37.5 technology with natural fibres has a dramatic change in the overall fabric performance."

According to Dr Haggquist, the enhancements 37.5 technology delivers to natural blends are a combination of increased comfort and superior performance. "Natural fibres do a great job of humidity attraction, but lack in their ability to release that humidity," he says. "Combining these fibres with 37.5 technology adds an energy capture and humidity release mechanism, improving comfort and user performance. Users wearing garments with 37.5 technology blended with natural fibres notice a slower build-up of microclimate humidity, a faster recovery time, and a wider comfort zone. This gives users garments that are more versatile in a wider range of climates and levels of activity, making the garments with 37.5 technology their favourite product in their closet."

Dr Haggquist pointed to the results of a recent test carried out by Inside Climate, a company based in Munich, Germany that offers solutions for the evaluation of humidity management in areas including apparel, protection clothing, automotive seating, sleep systems and head protection.

The test was performed with two identical suits and dress shirts, one with 37.5 blended and one without. "The test subject held 80 watts on a stationary bike – equivalent to a brisk walk," says Dr Haggquist. "There were periods of work and periods of rest. While on the bike, he stayed in the comfort zone (a combination of temperature and humidity) 80% of the time in the suit with 37.5 technology, vs. 48% of the time in the suit without 37.5 technology. At rest, after the 80 watts, the time to recovery (comfort) was

## How 37.5 works

37.5 technology is made of volcanic sand or coconut shell-activated carbon. By embedding these natural particles in fabrics, 37.5 speeds up the conversion of liquid to vapour, cooling you when it is hot and warming you when it is cold.

37.5 adds a water release mechanism to natural fibres, reducing the microclimate humidity level and leading to greater comfort and performance.

"Unlike conventional wicking, 37.5 technology is all about preventing sweating in the first place," explains Dr Gregory Haggquist. "It works by providing two unique driving forces that no other technology can match. First the 37.5 materials attract water through electrostatic force, pulling it away from your skin, drying out the microclimate. Second, they absorb the infrared energy your body naturally emits, which heats the particle and speeds evaporation."

The active particles in 37.5 fibres add up to 1,000 square metres of surface area to an average garment. "The combination of increased surface area and the unique driving forces mean that no other performance fabric can come close to the comfort and performance of 37.5 fabrics," claims Dr Haggquist.

37.5 fibres can be blended with any natural fibre, forming a spun yarn that can be used in a wide range of fabric constructions.



Corporate wear from Greiff featuring 37.5 technology.

just 1.05 minutes for the suit with the 37.5 system as compared to 8.55 minutes in the suit without 37.5 technology. This is a result of the 37.5 technology pulling moisture vapour out of the system, delaying the onset of liquid sweat and increasing comfort."

In another example highlighting the benefits of 37.5 in suits, Carl Gross, the suit partner for 37.5 in Germany, had several runners in the 2017 Hamburg Marathon, held on April 23, run in suits and other garments featuring 37.5 technology. 37.5 was blended in the wool and lining of the jacket, pants and vest, and blended with cotton in a dress shirt.

Felix Mayerhöfer, one of the Carl Gross runners, broke the world record to become

the fastest marathon runner in a business suit, shattering the previous record of 2:58 hours in the Guinness World Records with a time of 2:43 hours. "With the suit it was quite pleasant," said Mayerhöfer after the race.

37.5 is also continuing to benefit from the growing popularity of wool in activewear. "[UK outdoor brand] Rab makes one of the best, and possibly the most versatile, base-layer products by combining 37.5 technology with Merino wool," Dr Haggquist explains, adding: "Many high-performance cycling brands have moved to Merino jerseys. We've been seeing that trend for a while now and we expect it to grow beyond climbing, hiking and cycling. These products can be used in a wide range of environments and

activity levels, making it an easy choice when you decide what to wear that day. You can feel confident you are not over or underdressed for whatever the day brings and you don't have to lug around extra clothing."

Dr Haggquist reveals that Cocona is now working on expanding the range of products in which 37.5 can be used even further.

"Our goal at Cocona is to provide higher comfort and performance for users 24 hours a day, 7 days a week," he says. "We want to deliver products that help you perform better, feel more comfortable, recover faster, and train harder. Our future plans are to expand our product offerings into more product areas and more markets.

"Over the past year Cocona has been busy developing new products in both product categories and new types of carriers. We will be launching new product offerings in foams, synthetic leathers and fabric coatings. These products along with fibre technology will be in bedding, towels, tailored clothing, footwear, down-filled products and protective padding to name a few. Some products we cannot yet talk about but will be hitting the market in spring 2018."

He adds: "Cocona prides itself on constantly looking at novel ways to understand human comfort and performance. We are always pushing the envelope with testing methods and understanding how the human body interacts with clothing. This drive to understand what really matters to human comfort and performance has allowed us to understand the best areas of application of 37.5 technology. As we understand the critical mechanisms behind comfort and performance we are better positioned to improve upon our great products with higher and faster performance."

Meanwhile, Dr Haggquist says that recent scientific research highlights the value of a natural solution such as 37.5 in controlling fabric odours – without sacrificing the health of your skin.

"We pay a lot of attention to what is going on in the scientific community, as it often overlaps with what we're developing," he says, pointing to new research from The Human Microbiome Project, a US\$157 million, five-year research project overseen by the National Institutes of Health (USA).

"It details the astounding variety of microbial communities on our skin and in our guts," Dr Haggquist explains. (See Reisch, M.S., "The microbiome comes to cosmetics", Chemical & Engineering News, May 8th, 2017, page 30).

"It is now understood that the right



Felix Mayerhöfer after his run in the 2017 Hamburg Marathon. Wearing a Carl Gross wool suit featuring 37.5 technology, Mayerhöfer broke the world record to become the fastest marathon runner in a business suit.



Lanai Lagoon Tropicool knit camp shirt from the IslandZone range by Tommy Bahama in a 37.5 blend.

bacteria and microbes on your skin leads to healthier skin, just as we know the right bacteria in your intestinal tract leads to a healthier digestive system," Dr Haggquist says. "This leads to serious questions about if antibacterial and antimicrobial fabrics have the same side effects as antibiotics? Do antibacterial and antimicrobial fabrics that kill all bacterial and microbes on the skin reduce the health of the skin? Are antibacterial fabrics that reduce odours in fabrics worth the side effect of unhealthy skin? We already know that antimicrobials wash off and create superbugs in the waste stream. At what point does the rest of the world follow Sweden and ban these chemicals?"

He adds: "At Cocona we feel there is a better way to control fabric odours

without sacrificing the health of your skin. The use of 37.5 technology is a healthy and natural solution to achieve performance and comfort improvements, along with a healthy way to combat fabric odours – without risking the health of your skin." ☞

- *As the appeal of 37.5 technology broadens beyond the sports / outdoor wear market, Cocona is exhibiting at a wider range of trade shows, including Première Vision Paris in February and September, and Magic/Project in Las Vegas in February and August. It is also showing at Performance Days twice each year, and ISPO and the Professional Golfers' Association (PGA) Show in the winter.*