Turning new ideas into industrial reality at the Monforts ATC

The Monforts Advanced Technology Centre (ATC),continues to be an invaluable resource to customers from around the world in achieving new standards in fabric finishing.

Covering an area of 1,200 square metres, the Monforts ATC at the company's headquarters in Mönchengladbach houses two full MONTEX finishing lines, engineered to accommodate an extremely diverse range of processes, in addition to a THERMEX range for the continuous dyeing of denim and other woven fabrics, a full colour kitchen and a number of lab-scale systems for smaller batch trials.

"The ATC allows our customers to test their own textiles and technical fabrics on Monforts dyeing and finishing machines under fully confidential, real production conditions," says the company's Marketing Manager Nicole Croonenbroek. "Using the results from these trials, we are also able to make recommendations for improving many fabric finishes."

Technical textiles

A highly-controlled and contained environment was a key consideration when constructing the special MONTEXline for technical textiles at the ATC.



MonfortsTextile Technologist Saskia Bollhöfer.

"Technical textiles are extremely diverse in their end-use applications and manufacturers can be called upon to quickly produce a succession of materials with widely differing properties and performance applications – often within a single shift," explains MonfortsTextile Technologist Saskia Bollhöfer. "These range from substrates for digitally-printed soft signage to carbon fabrics for today's high-performance composites, and from filter media which must perform in extreme temperatures to flame retardant barrier fabrics.These very different materials all require expert coating and finishing for maximum efficiency and the technology to allow for ultimate flexibility and the ability to switch quickly from one fabric formula to the next, without compromising on the economical use of energy or raw materials."

Advanced functions

The technical textiles line incorporates a Montex four-chamber, horizontal chain stenter and is fitted with an explosion-proof coating application chamber in order to allow treatment to be carried out with organic solvents and other volatile materials.

Special features on the line relate to further advanced functions – the ability to treat materials not only at temperatures of up to 320°C, but also to be able to treat the top and bottom faces of certain materials at different temperatures within a single pass through the machine.There are many applications where employing two separate temperature treatments is beneficial, such as floorcoverings – where the textile face fabric is treated at one temperature and the rubber backing at another – as well as PVC flooring employing chemical foams or materials like black-out roller blinds with heavy backings.



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At the same time, in the pharmaceutical industry there is a wide range of different applications for organic solvents such as anti-septic treatments which have to be treated very carefully and applied at very specific temperatures in order not to destroy their efficacy.

Most recently, a Baldwin TexCoat™ G4 digital spray unit has been successfully integrated into this line and is further available for full customer trials, especially for making full use of the latest advanced sustainable finishing chemistries supplied by industry leader Archroma.

BW Converting's Baldwin TexCoatG4 enables softeners, antimicrobials, durable water repellents, flame retardants and many other water-based chemicals to be precisely applied to textile surfaces, and in combination with industry-leading MONTEX stenters can reduce water, chemistry and energy consumption by up to 50% compared to traditional pad application processes.

"The new TexCoat installation is making an important contribution to what we can achieve and we are excited to be working together with Archroma and BW Converting to bring further transformative change to the dyeing and finishing space," saysSaskia Bollhöfer.

Knitwear

The second production line at the ATC has been engineered with the state-of-the art production of conventional knitwear in mind and is based around a MONTEX stenter with vertical chain return.

"Knitted fabrics need delicate handling as they often have a higher degree of elasticity compared to more rigid woven materials," says Nicole Croonenbroek. "Our MONTEX stenters provide smooth treatment at very low and precisely controlled tension during all stages of knitted fabric handling, as well as very gentle and even thermal treatment. The MONTEX is extremely flexible in terms of the different fabric qualities it can accommodate and also provides significant benefits in terms of energy consumption."

The line is also equipped with the company's Eco Applicator system which eliminates the need for a conventional wet-on-wet padder, instead employing trough and roller techniques to precisely apply the required amount of liquid/coating to the fabric.

Compared with a padder system, where the initial moisture content of the fabric entering the stenter is 60%, with the Eco Applicator it is reduced to 40% and the system also has the shortest fabric path from the coating unit into the stenter.

The Eco Applicator's versatility also allows mills to apply finishes to just one side of the fabric, or both, and even to apply separate finishes to each side, or to specific areas of a fabric, for endless possibilities, whether treating wovens, denim or delicate knits.

THERMEX

Almost 1,000 MonfortsTHERMEXhotflue dyeing systems are now operational in the key manufacturing countries, with more than 150 of them already reaping the benefits of the Econtrol® process.

With Econtrol®, reactive dyestuffs are fixed into the fabric in a one-step dyeing and drying process with a controlled combination of steam and air. The entire pad-dry process takes just two-to-three minutes at a temperature of between 120-130°C and a relative humidity volume of 25-30%.

The THERMEX line at the Monforts ATC has recently been equipped with the Monforts Universal Energy Tower, a stand-alone module which enables the heat from the exhaust air flow of thermal processes to be recovered, resulting in energy savings of up to 25%, depending on the exhaust air volume and operating temperature.

“The current focus of the industry is very much on cleaner processes in order to meet the commitments on sustainability made by the major fashion brands and with further regulations already in the pipeline,” says Nicole Croonenbroek. “This is calling for new investments that enable a significant reduction in resource consumption to be achieved, but that are easy to integrate into existing production systems. THERMEX lines running Econtrol fit the bill perfectly.”

From trials to production

The value of the ATC ultimately lies in its ability to bring together the accumulated process knowledge of Monfortswith full-scale production technology, allowing customers to move beyond laboratory evaluation and establish exactly how new fabrics, finishes and processes will perform under industrial conditions.

Trials can be used to determine optimum machine settings, temperatures, dwell times and application parameters, as well as to assess the implications for energy, water and chemical consumption. This provides manufacturers with reliable production data before introducing a new process at their own mills or committing to further investment.

The centre is also increasingly important as textile manufacturers respond to demands for lower resource consumption, new finishing chemistries and increasingly specialised fabric performance. By working alongside Monforts technologists, customers can investigate new approaches while drawing on extensive experience across conventional apparel fabrics, technical textiles, coating and dyeing and thermal finishing.

“The ATC draws on all of the know-how of our company in respect of fabric processing,” concludes Saskia Bollhöfer. “It gives customers the opportunity to work with our specialists and our latest technologies to establish solutions that are not only technically achievable, but practical and economically viable in production.

“Whether the objective is to improve an existing process, develop an entirely new product or evaluate the potential of a new technology, we can work with customers from the initial trials through to the optimum production parameters. This is what makes the ATC such an important resource for turning new ideas into industrial reality.”

To learn more, please visit:
www.monforts.de/en/techcenter