Zero waste upholstery fabrics and decorative parts boost sustainability
imat-uve, Trevira and Kobleder make 3D flat knit suitable for car interior

In times of digital transformation and climate change, the mobility of the future is discussed more controversially than ever before. Automotive manufacturers and suppliers are looking for innovative solutions in drive technology, design and materials. Above all, surface materials have to manage the balancing act between consumer acceptance and manufacturer needs such as cost optimization and high quality requirements. What will the material of the future look like that will make both consumers and manufacturers happy?

The 3D flat knit has great opportunities to shape the vehicles of the future. The design and engineering company imat-uve and the market-leading yarn manufacturer Trevira had already announced the breakthrough of flat knitting technology for the automotive sector in 2018. In order to drive the project forward and pool their expertise, both companies have now included the Austrian knitting expert Kobleder into the consortium. Another decisive milestone has thus been reached: the 3D flat knitting process has been further developed under the name "Mobile Knit" to meet the high demands of vehicle interiors.

Seat covers in particular are subject to high stresses when getting in and out of the car. By further developing the yarn and the binding technique in the knitting process, it was possible to achieve a significant increase in mechanical resistance. Various test cycles have confirmed that the knitted fabric performs well in various textile performance tests such as Mace Snag, Velcro abrasion and Martindale test. At the same time, the haptics of the material have been further improved in terms of its softness, resulting in a pleasant textile feel.

The new process, which combines innovative yarn, binding and finishing technologies, can be used to produce form-knitted seat covers and decorative parts for vehicle interiors. The integral technology of flat knitting enables parts to be knitted in shape or in 3D. What's special about this is that the application can be knitted in one piece and can save costs in the use of materials and in the production process itself. Complex work stages such as cutting and sewing are no longer necessary. In this way, the knitted fabric supports a zero-waste concept, since no more waste is generated in the fabrication process. Local production is possible by saving those work steps. The polyester recycling yarns used from Trevira make also a meaningful contribution to the eco-efficient textile cycle.

In terms of design and function, the flat knitting process permits individual design and is thus a further milestone in the direction of on-demand production. The automotive industry is very interested in the technology, so that several R&D projects with automobile manufacturers and suppliers are in prospect.

Background:
Trevira, imat-uve and Kobleder are the first companies to have elaborated the knitting process to this maturity. This is made possible by the new processing and finishing method from imat-uve using a specially developed yarn from Trevira. With the production and finishing expertise of the Kobleder knitting mill, a hard-wearing knitted fabric is produced that meets the highest standards of quality and comfort. Good abrasion resistance in the Velcro test according to VDA 230-210 and in the DIN standardised Martindale test, as well as a low thread pulling tendency in the Mace Snag test have already been confirmed in the imat test laboratory. The 3D flat knitting process also makes it possible to eliminate known weak points, such as seams on seat covers. It also reinforces these abrasion zones in the same production process during knitting. A further advantage of the innovative technology is that it contributes much to sustainable

production: in addition to the "zero-waste strategy" in processing the knitted fabric can also be made entirely from polyester recycling yarns.

From a design point of view, the 3D flat knitted fabric offers many options for personalization and individualization of components and is therefore particularly interesting for innovative interior concepts. For example, it would also be possible to knit a logo into the component.

"The development service provider imat-uve and the knitting expert Kobleder have succeeded in developing a forward-looking process that has turned our newly developed recycled yarn into a sought-after top product for automotive interiors," is how Thomas Rademacher, head of the development department at Trevira, sums up the core of the collaboration. "Flat knitting technology will therefore be used in vehicles for technical applications and will be indispensable in the future."

Hans Peter Schlegelmilch, member of the management board of imat-uve, emphasizes the advantages of the technology for automobile manufacturers and their suppliers: "The 3D flat knit not only saves costs and time in production, but also allows a completely new individual design scope for the end consumer. We are delighted that we have already been able to take this important step further into the future of automotive interiors".

"Our many years of experience in the field of technical knitted fabrics have been put to good use in this joint project. We are enthusiastic about pioneering technologies and are therefore happy to support the development process for flat-knitted interior parts," says Paul Stollberger, member of the management board and owner of Kobleder, describing the coperation with imat-uve and Trevira. "Here, three partners complement each other perfectly with their strengths".

On May 17, 2019, during the trade fair Techtextil in Frankfurt/Germany Hans Peter Schlegelmilch, imat-uve, is going to present the topic **"Re-introducing 3D flat knitting technology for automotive interiors - A milestone for future car designs"**.
At **11:30 CEST** in **Techtextil Forum (hall 4, level 1)**, session of Dornbirn GFC about sustainable fiber innovations.

About imat-uve gmbh
imat-uve gmbh is an innovative design and engineering company and has positioned itself internationally as a strategic partner of the textile and automotive industries. In addition to its headquarters in Mönchengladbach, the company now operates with further branches in Germany, China, the USA and South Africa, all of which work in accordance with the high quality requirements of DIN EN ISO 17025, VDA 6.2. and ISO 9001. The services accompany the entire value-added process from the idea to the finished component or product. This includes the design, development and testing of materials, components and systems. imat-uve supports the identification of the future needs of road users in terms of design, ergonomics and comfort. At the same time, market research within the framework of customer and test person surveys secures technical needs and the effect of innovative solutions on consumers. www.imat-uve.de
Techtextil Hall 3.0 H39

About Trevira GmbH
Trevira GmbH is an innovative European manufacturer of high-quality branded fibers and filament yarns for technical applications and hygiene products, home textiles, automotive interiors and functional clothing. Around 1,100 employees work at two production sites and a sales centers in Germany. These are supported by an international marketing and sales organisation. In 2017, a turnover of around 244 million euros was achieved. The company is based in Bobingen near Augsburg. Trevira GmbH is owned by the Thai company Indorama Ventures PCL. Trevira is known worldwide for fibers and yarns for flame retardant home textiles made of polyester (Trevira CS), for fibers for hygiene products and technical nonwovens and for low-pillage fibers for functional clothing. www.trevira.de
Techtextil Hall 4.1 D19

About Kobleder GmbH
As a family business in the 3rd / 4th generation, the Kobleder company stands for a fruitful symbiosis of innovation and tradition as well as technology and craftsmanship. Founded in 1927, the hand knitting production has been continuously modernised and is still at the forefront of available technological developments. As a pioneer of technical knitted fabrics and especially 3D knitted fabrics in the early 90s, Kobleder acts as a reliable producer, development service provider and initiator of innovative knitted concepts. The company researches and develops in close cooperation with scientific and industrial institutions. Kobleder combines sustainability, quality, speed and flexibility in a global market with regional responsibility in Upper Austria. www.kobleder.at
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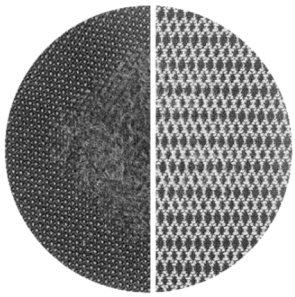
Digital imagery is available from imat-uve upon request.

1: Visualization of a car seat with flat knit textile

2: Possibility of creating different patterns



3: Differences of Velcro test results (according to VDA 230-210).
Left: Conventional knit, right: innovative flat knit by imat/Trevira/Kobleder