With its cutting-edge spinning and nonwovens equipment, the CETI is the place where the technical textile industry plans to develop new processes, products and markets to brighten the future of a region with a strong heritage in advanced textiles.

CETI paves the way for next-generation textiles

Recently inaugurated in the north of France, the Centre Européen des Textiles Innovants or European Centre of Innovative Textiles (CETI) is a new advanced research and prototyping unit in the midst of a dense network of technical textile companies, research institutes and schools in France and across the border in Belgium.

Located near Lille, in a district aptly named L'Union, CETI is at the centre of a Euro-region where 380 companies specialise in technical textiles. Their combined estimated sales of €4.8 billion represent 5% of the global market. Advanced textiles employ 50% of the region's 15,000 textile workforce. This area is also where 17% of Europe's textile engineers are trained.

The €40 million investment granted by the French state, the regional government of Nord-Pas-de-Calais and the city of Lille makes the CETI one of the most advanced research centres in Europe. "It's been a long time since a textile centre was inaugurated in Europe," declared John Cleuren, European commissioner in charge of the Directorate for Industrial Technologies, at the inaugural event. Of this sum, €25 million went into acquiring machinery, and €15 million were spent on the construction of the buildings, covering a total of 15,000 square-metres.



Marc Honoré, CETI general manager.
CETI



Damart's Ocealis, a thermoregulating fabric based on a hydric phase-change material, was developed by a team of researchers that are a part of the new technical textile innovation network at CETI.
Damart

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The new set-up now houses several organisations and institutes, including IFTH-Nord, a textile lab and certification centre, as well as technical textile promotion associations Up-tex and Clubtex, in addition to the CETI. Combined, they form a complete eco-system capable of addressing all aspects of research, development, prototyping, financing and bringing to market new textiles. Unlike other countries, in France academia and industry have not developed strong ties, a weak point that the CETI plans to fix. "We need to bridge the gap between business and research. We also need to talk less about the effects of outsourcing on the European textile industry and spend more time developing new products," says Marc Honoré, general manager of both CETI and Up-tex. In the course of his career, he has worked in swimwear, lingerie and retail.

Islands-in-the-sea

Phase one of the CETI master plan focuses on two areas of research: spinning and nonwovens. The centre has acquired a Hills multicomponent continuous filament machine, one of the five currently in operation worldwide. The investment in spinning is designed to boost innovation upstream, at the starting point of new textiles.

The Hills equipment produces mono, bi and tri-component filaments in many configurations, including variations on sheath-core yarns (with metal or hollow cores), pie-segment shapes (with possibilities that are said to reach up to sixteen different segments) and islands-in-the-sea, a method used to produce nano-sized yarns once the "sea" component is washed away to release the "island" filaments. In a speech held during the inaugural event, Hills president Arnold Wilkie mentioned the possibility of creating a filament with up to 600 "islands". These multicomponent filaments can be designed to address specific niche markets or help make lighter-weight fabrics.



A Hills tricomponent spinning machine installed at CETI is one of only five units in operation in the world.

CETI / David Coppietres

The Hills equipment allows some 150 different combinations, making it possible to develop yarns for myriad end uses. "We have barely explored all the possibilities of bicomponent yarns, which leaves much room for tricomponent filaments," says Simon Fremaux, one of CETI's technical managers.

The nonwoven equipment installed at CETI is designed to make tomorrow's high-tech composites. They represent a potentially vast market, says Marc Honoré as there is growing demand for composites in transportation (by



After extrusion, the filaments are deposited on a conveyor belt to create spunbond nonwovens.

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Another stage of spunbond nonwoven manufacturing: when the melted polymer is pushed through a plate that forms the filaments.

CETI

road, rail and air) and construction, in addition to traditional filtration and hygiene end-uses. Sales of nonwovens have been increasing by 7% to 8% annually, claims Mr Honoré.

Phase two developments will focus on projects for specific end markets identified by individual companies or research teams. Among the options currently under consideration, Mr Honoré would like to devise a demonstration version of the textile factory of the future. "The advent of the internet and big data has already modified the retail environment and will continue to impact our markets in the future. This means we need to rethink how products are manufactured and delivered," he says. He also believes the textile industry could benefit from adopting systems applied in today's automobile industry: "In car manufacturing, stock management and reaction times are counted in hours, whereas the textile industry still treats orders in weeks, if not months." Rising manufacturing costs and long delivery times in China could also change current outsourcing practices.

Advanced sportswear

The many retail companies that dot the northern region of France are already working with CETI to develop new products, including sports retailer Decathlon, whose headquarters are located just a few kilometres away from the research centre. Damartex, also close-by, is another a key partner of the CETI. Océalis, a fresh effect textile based on a micro-encapsulated hydric phase-change material, was developed with teams that are now a part of the innovation hub.

CETI also plans to help develop biopolymers, which could open up new possibilities to the region's many beetroot farmers. Futerro, a division of petrochemical company Total, has set up a pilot plant that already produces PLA in the region. Production was recently scaled up from 750,000 to 1.5 million tonnes. French starch specialist Roquette and Belgian research centre Materia Nova are also part of a network of companies and labs working on fibres and plastics derived from renewable resources. The biopolymer that is currently produced at the Futerro PLA plant is similar to polyester, but possesses a low melting point (60°C), which makes it compostable, but not yet suitable for apparel applications.

These are just some of the many new leads being followed in the region in general and at CETI in particular, where many different projects can now be prototyped and tested under a single roof. At the inaugural event, André Beirnaert, considered the father of the project and now president-founder of the centre, declared that this is where the textile industry now has access to a fast-track lane for innovation.



CETI Technical manager Thierry Le Blan shown during the presentation of the new centre.

CETI / David Coppietres

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