INNOVATING FOR BETTER COMPETITIVENESS & SUSTAINABILITY
Textiles are an "empathetic" ground for innovation since they are spontaneously associated with a strong, reassuring imagery. By their nature, they facilitate the appropriation and integration of high-level technologies on an everyday basis. From their use in intimate contexts to the role they play in public spaces, textiles are present everywhere.

Today the CETI’s engineering strengths in the research and development of advanced textiles legitimize its European leadership and position it as one of the Top 5 technical centers worldwide.

This textile intelligence also helps companies find answers to current challenges in society as well as addressing the many needs of individuals.

It is worth noting that the revolution brought about by the advent of digital and smart technologies is making a strong impact on the future of the textile industry. Thus the CETI adds a digital dimension to materials and products while helping explore this area in terms of client experience.

In the same way, the optimization of the environmental footprint of textiles that integrates eco-conception and their ability to participate in a circular economy is at the heart of the CETI’s current developments.

For all these axes of progress, prototyping is the DNA of our organization while our associated Material, Digital and Sustainable Development platforms help prove the pertinence of each concept by actually putting it in work.

These advances, that hybrid innovation and added value for society, help energize local economies and develop close-proximity production with small and mid-sized (PME) French companies while giving projects an international scope and promoting “French Tex”.

**THE APPLIED RESEARCH CENTER FOR SUSTAINABLE INNOVATION**

**our mission**

CONCEIVING, PROTOTYPING, INDUSTRIALIZING fibrous materials and finished products with you

**our areas of expertise**

- CIRCULAR ECONOMY MATERIALS AND PRODUCTS
- PRODUCT ECO-DESIGN
- END-OF-LIFE TREATMENT OF A PRODUCT
- MECHANICAL & THERMOMECHANICAL RECYCLING
- SHORT AND BAST FIBRE SPINNING
- TRACEABILITY
- OPTIMIZATION OF THE MATERIALS PERFORMANCE
- ECO-DESIGNED FIBRES: RECYCLED, BIOPOLYMERS, BIOSOURCED, NATURAL
- FILAMENT & NONWOVEN FUNCTIONALIZATION
- MONO, BI AND TRI-COMPONENT THREADINGS
- 3D NONWOVENS
- DIGITALIZATION OF MATERIAL AND PRODUCT PROCESSES
- 3D VIRTUAL DESIGN
- PRODUCT CUSTOMIZATION
- PRINTING, KNITTING, WEAVING, REASONED MANUFACTURING
- STOCK POOLING
- TRACEABILITY

**OUR ANSWER TO SOCIETY’S CHALLENGES**

ENVIRONMENTAL FOOTPRINTS
DIGITAL TRANSFORMATIONS
SMART TECHNOLOGIES
A TEAM THAT OPERATES AT THE CORE OF INNOVATION

The CETI coordinates the profiles of various experts to unfurl a rich palette of textile trades. This multi-talented, multi-cultural team encourages meetings between experts. In 2020, the CETI has expanded its business development staff to reinforce its presence internationally and regionally.

Management
- Gilles DAHEZ President
- Pascal DENIZART CEO
- Isabelle CORNU Strategic Marketing & Business Development Direction
- Simon FREMEAUX Industrial Logistic Direction
- Gilles DESHAYES HR - IS Financial Operations Direction

Pascal DENIZART
CEO
Strategic Marketing & Business Development Direction

Gilles DESHAYES
HR - IS Financial Operations Direction

Business development
- Chloé SALMON-LEGAGNEUR Deployment Manager CETIA
- Said EL KASMI New Textile Technology Watch Manager
- Simon FREMEAUX Industrial Logistic Direction
- Gilles DESHAYES HR - IS Financial Operations Direction

Gilles DESHAYES
HR - IS Financial Operations Direction

Strategic Watch
- Marie-Pierre CHAPUIS Communication Manager & events
- Chloé VASSEUR CRM Manager
- Marie-Pierre CHAPUIS Communication Manager & events

Marie-Pierre CHAPUIS
Communication Manager & events
CRM Manager

Finance HR - IS
- Fabienne HINDRÉ Business Manager of Circularity Design 4.0 & training
- Fabienne HINDRÉ Business Manager of Circularity Design 4.0 & training

Fabienne HINDRÉ
Business Manager of Circularity Design 4.0 & training

Proximity and ambition are the two pillars of the quality of our services, which are reflected in: the high level of technologies made available, the experience, expertise and proactive force of our employees (Engineer, technician, business developer…), Relevance of reports and results.

PROXIMITY

We maintain close and friendly relations with our clients. We are committed to supporting their teams step by step, offering tailor-made solutions to ensure the success of projects. We remain agile and responsive to respond to business concerns, human issues and guarantee the confidentiality of results.

EXCELLENCE

Proximity and ambition are the two pillars of the quality of our services, which are reflected in: the high level of technologies made available, the experience, expertise and proactive force of our employees (Engineer, technician, business developer…), Relevance of reports and results.

AMBITION

“Act as if it were impossible to fail” – Winston Churchill. That is the state of mind of our teams, always ready to face the challenges offered by our clients. With our multiple expertise and partnerships, we know how to bring innovations of rupture by demonstrating pugnacity and pragmatism.

THE DEVELOPMENT OF APPLICATIONS WITH TEXTILE MATERIALS BASED ON BIO-SOURCED POLYMERS
INTELLIGENT TEXTILES REQUIRING A CROSS-CUTTING APPROACH
3D PRINTING
TEXTILE COMPOSITE MATERIALS

OUR VALUES

EXCELLENCE

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PILOT LINES FOR PROTOTYPING

CETI GUARANTEES THE FEASIBILITY OF THE IDEA THROUGH PROTOTYPING, ACCELERATING THE INDUSTRIAL TRANSFER AND THE PRODUCTION OF MINI SERIES.

EXPERIENTIAL WORKSHOPS
TEXTILE & FASHION DESIGN 4.0

WORKSHOP DESIGN INNOVATION

WORKSHOP DIGITAL 4.0

CONNECTED CONSUMER SPACE

PILOT LINES
POLYMER FUNCTIONALIZATION

COMPOUNDING

MELT SPINNING

FIBER CRIMPING & CUTTING

PILOT LINES
NONWOVENS SPUNLAID

SPUNBOND

MELTBLOWN

BONDING HYDROENTANGLEMENT

PILOT LINES
NONWOVENS DRYLAID

CARDING

THERMAL & MECHANICAL BONDING

AILAYING

PLATFORM
MECHANICAL RECYCLING / YARN SPINNING

FRAYING

BLENDING / OPENING FIBRE CARDING

OPEN-END SPINNING
INTERNATIONAL VISIBILITY

A REINFORCED POSITION: THE CETI IS A EUROPEAN LEADER OF INNOVATIVE TEXTILES.

ACCOMPANIES THE STRATEGIC EVOLUTIONS OF COMPANIES.

MEMBER OF INTERNATIONAL NETWORKS

- International Textile Manufacturers Federation (ITMF).
- European Technology Platforms (ETP).
- French Textile and Clothing Industries Union (UITH).
- EDANA, the international association for the nonwovens and related industries.

EXHIBITORS & SPEAKERS AT TRADE SHOWS & CONFERENCES

Fashion
- TEXWORLD « AVANTEX »
- TRAFFIC
- MADE IN FRANCE
- COPENHAGEN FASHION SUMMIT

Technical Textiles
- TECHTEXTIL
- ExpoProtection
- Medica

Nonwovens
- IDEA
- INDEX
- Outlook

A SPEAKER IN STRATEGIC CONFERENCES FOR THE DEVELOPMENT OF THE TEXTILE INDUSTRY

- 3D Nonwovens the future of nonwovens.
- Material innovation for sustainable sporting goods.
- Reinventing the end of life of clothing / textile eco-circularity.
- The metamorphosis of textiles for a circular future.

FACILITATOR OF WORKSHOPS

- To integrate the stakes of the textile and fashion 4.0 sector within its brand.
- Become a responsible and committed brand.
- Facilitate co-creation with its customers.

PARTNER OF TECHNOLOGY LEADERS

- ANDRITZ
- HILLS INC
- LECTRA
- Textile des Dunes / MFT

PARTNER OF THE SCHOOLS

- ESITH
- ENSAIT
- ESTIA
A WIDE RANGE OF TRAINING COURSES
Developing talents

Since 2015, CETI is an international training organization dedicated to textile innovation. It accompanies the transformation of companies in the extended textile, fashion, luxury and distribution sectors.

CETI IS AN PROFESSIONAL TRAINING ORGANISM CERTIFIED

TRAINING CATALOGUE AVAILABLE
WWW.CETI.COM

CETI, THE REFERENCE IN NONWOVENS

The international association of nonwovens and its industry, EDANA, has called upon the know-how and knowledge of nonwovens from CETI’s R&D teams to become the official trainer of the nonwovens training course: The Nonwovens Learning Cycle. Register on www.edana.org.

IMPROVE THE PERFORMANCE OF NONWOVENS

- ECO-DESIGN OF NONWOVENS
- EXTRUSION SPINNING OF POLYMERS AND BIOPOLYMERS
- CARDING ADVANCED COURSE
- MELTBLOWN/SPUNBOND ADVANCED COURSE

BECOMING A RESPONSIBLE BRAND 4.0

- CSR ISSUES AND SUSTAINABLE COLLECTIONS
- ECO-DESIGN OF MATERIALS AND PRODUCTS
- TRACEABILITY AND TRANSPARENCY IN ITS ECOSYSTEM
- DIGITAL TRANSFORMATION OF BUSINESS PROCESSES
- INNOVATIVE AND FUNCTIONAL MATERIALS SPORT AND FASHION

INNOVATE TOWARDS FASHION ONDEMAND

- CO-CREATION AND PERSONALIZATION AT THE HEART OF BRAND STRATEGY
- DIGITAL MATERIAL AND PRODUCT DESIGN
- SHORT CIRCUIT AND PRODUCTION ON DEMAND

CUSTOMER REFERENCES

NONWOVENS

- JOHNSON & JOHNSON
- INDOBAMA VENTURES
- OMYA
- AVGOL NONWOVENS
- SUBRENAT
- AUTONEUM
- ARKEMA
- HEXCEL
- IDEMITSU
- EDANA
- HILL’S INC
- TOTAL / CORRION
- FIVES
- SABIC
- NATUREWORKS
- ACHILLE BAYART
- BCNONWOVENS
- APLIX
- MACOPHARMA
- FERLAM
- ANDRITZ
- ANANAS ANAM - PINATEX
- HAAS NONWOVENS SYSTEM
- MACOPHARMA
- IDEMITSU
- BCNONWOVENS
- APLIX
- ERAM
- CEPOVETT
- SONORCO
- SNCF
- DECATHLON
- EDI

ECO-DESIGN

- DEVRED 1902
- ERAM
- FUSALP
- GROUPE IDKIDS - OKAIDI
- GROUPE HAPPY CHIC - BRICE
- SNCF
- GROUPE HAPPY CHIC - BRICE
- DECATHLON
- EDI

DESIGN 4.0

- HANES
- PETIT BATEAU
- NORTH TRI
- GROUPE HAPPY CHIC - BRICE
- LECTRA
- HANES
- PETIT BATEAU
- NORTH TRI
- GROUPE HAPPY CHIC - BRICE
- LECTRA
INNOVATING IN A CIRCULAR ECONOMY DYNAMIC
Agenda 2030, consisting of 17 Sustainable Development Goals, adopted in September 2015 by the 193 UN Member States, provides a framework of universal and binding goals for organizations.

As described in ODD 12, an organization’s social responsibility is strongly expressed through its contribution to production and consumption patterns that:

- Encourage the efficient use of material, water and energy flows and the development of sustainable production infrastructure and processes (environmental pillar).
- Strengthen its economic competitiveness (economic pillar).
- Favour sustainable supply chain management (social and societal pillar).
- Integrate a circular economy scheme.

In addition, ODD 9 « Innovative industry and infrastructure » requires that each new development of products, services, processes and infrastructures be the subject of a reflection on its overall effectiveness, i.e. its social / societal / environmental contribution.

From the start, CETI has integrated Sustainable Development as a strategic axis. It thus supports its stakeholders by making them available to them:

- with the best available technologies,
- innovation and eco-design methods that contribute to the modernisation and sustainable development of the textile sector.

Since 2014, CETI has been distinguished by the development of new products using bio-based materials such as PLA, a corn and beet-based POLYESTER, POLYAMID 11 (often combined with Nylon) spun on a castor oil basis. It also favours the lightening of textile structures, thus making it possible to consume less energy while preserving the same mechanical properties.

Today, our research is focused on recyclability, in order to reuse waste from the textile or leather industry as well as used textiles. Indeed, fibre consumption is growing even faster than the population, especially with fast fashion, while arable land is losing surface area worldwide. This is as much an environmental necessity as a political and societal imperative. Proof of this is the theme chosen by France at the 2019 G7 in Biarritz: « sustainable fashion ». Creating a textile recycling industry, which does not exist today, is a national priority and it is in this sense that CETI is committed.

We act on breakthrough innovations to meet market challenges:

- To guarantee a supply of cotton for which demand is still strong on the world market (30% of the fibres used) by using a local source of used Textiles (Clothing, Home textiles and Footwear) and off-cuts;
- Find alternatives to polyester, a fibre derived from petroleum, which accounts for 70% of the world’s fibre consumption.

The regulatory context, i.e. the ban on the destruction of unsold goods from 2021, will also accelerate the transformation of the sector. The CETI has the ambition to create a new local industrial sector, in a dynamic of circular economy, or even economy of functionality.

In this concern to preserve resources, CETI is positioning itself as a precursor in the improvement of industrial processes and also contributes to the influence of its territory, a historical and resolutely resilient textile land.
A POSITIONING
TAILOR-MADE ASSISTANCE
FOR YOUR PROJECT

Carrying out R&D means making an alliance with uncertainty, which is not always teasy.

Thanks to the technical skills of our engineers, to their experience in the industry; thanks to their attentive listening, their openness and their availability at your side to exchange throughout the project, your R&D experience takes place in a climate of trust and healthy stimulation.

This favourable climate is conducive to a fine and realistic analysis of your requests, to an efficient diagnosis of the solutions to be considered and points of vigilance to be addressed in order to nourish reflection, to guide the test plan and to formalise the results.

By adjusting to each individual situation, our support engineering widens the scope of possibilities and enables you to achieve your objectives efficiently.

Mara POGGIO
Circular economy Business Manager
mara.poggio@ceti.com

Trained as a textile engineer, her mission at CETI is to support companies in their innovation process towards a circular economy. Her experience in the recycling and recovery of fibrous materials, acquired during product development for clients and major textile and clothing brands, makes her an expert in this field. Mara will be able to accompany you in all confidentiality in your national or international projects.

OUR OFFER

CSR CHALLENGE

ACCOMPANIMENT IN THE IMPLEMENTATION AND
DEPLOYMENT OF THE CSR POLICY

DEVELOPMENT OF ECO-DESIGNED PRODUCTS

PRODUCT KNOWLEDGE
- Identification of the most suitable raw material for its use.
- Life cycle assessment.
- Multi-criteria evaluation.

ENVIRONMENTAL GAIN
- Prevention of environmental impacts.
- Optimization of processes, materials and products.
- Consideration of the end of life of products.

PRODUCT PROTOTYPING
- Designing a product from recycled fibres.
- Increasing the rate of recycled fibres in a finished product.

TRACEABILITY FROM FIBRE TO FABRIC

FIBRE MARKING
- Prototyping of filament at the core of the fibre.

TRACEABILITY DESIGN
- 3 pillars (Labels/NGOs/Data Management)

PRODUCT RECYCLABILITY

IDENTIFICATION OF THE SOURCE OF RECOVERABLE MATERIALS
- Post-consumer » used textile articles (clothing, household linen, professional clothing).
- Unsold stock and end of series, «leftovers ».
- Textile industry wastes (production offcuts, cutting offcuts, production defects).

RECYCLABILITY TRIAL
- Sorting by composition and colour.
- Automatic identification and elimination of hard points in materials.
- Fraying: processing of fabrics into fibres.

PROTOTYPING OF RECYCLED YARNS
- Development of recycled yarns.
- Product characterization.

PROTOTYPING OF NON-WOVEN FABRICS OR MATTRESSES
- Development of nonwovens.
- Performance optimization.

SUPPORT FOR INDUSTRIALIZATION
- Training and support for teams.
- Material labelling and REACH certification.
MECHANICAL RECYCLING PLATFORM

FROM THE CLOTH TO FIBRE STATE

PREPARATION OF RECOVERABLE MATERIALS

FRAYING FIBRES

FRAYING

SHREDDING

SIZING

FROM FIBRE TO YARN

BLENDING & OPENING

CARDING

OPEN-END SPINNING

FROM FIBRE TO NONWOVEN

BLENDING & OPENING

AIRLAYING

THERMAL & MECHANICAL BONDING

Recycled fibre blends
COTTON, WOOL, POLYESTER, POLYCOTTON, ACRYLIC, ...

CHARACTERISATION LABORATORY

TEXTILE FABRICS
NONWOVEN - KNITTED - WOVEN

FILAMENTS - FIBRES - YARN TAPES

AIR PERMEABILITY

WATER IMPERMEABILITY

STRENGTH AND ELONGATION

THICKNESS

MASS PER UNIT AREA

FILAMENT DIAMETER

YARN/ FIBRES TITLE (Nm)

TOUGHNESS AND ELONGATION

ELASTICITY

YARN REGULARITY & HAIRINESS

YARN TWISTING

FIBRES MOISTURE CONTENT
**RECYCLING PILOT LINE**
**OF THERMOPLASTIC POLYMERS**

**OBJECTIVE**
Identify and develop innovative recyclable materials that will allow easily customizable sport products to be produced.

Every gram of a soccer or sport shoe’s material can be reused and re-fashioned in a 3-D shape.

**Adidas**, sponsor of the “Sport Infinity” research project carried out in the context of the European Commission H2020 initiatives, asked CETI and other industrial partners, including BASF, to research and develop the creation of a new generation of entirely recycled sport products.

*Create a new generation of entirely recycled sport products.*

---

**TRAINING SHOES**

**COMPOUNDING**
**MELT SPINNING**
**CRIMPING & CUTTING**

**POLYMER FUNCTIONALIZATION**
**FUNCTIONALIZED FILAMENTS**

**ADDITION OF SHORT FIBRES, POWDERS, PELLETS & LIQUID ADDITIVES**
**CO-EXTRUSION : ARAMID, ÂME MÉTALLIQUE ; ...**
**FILAMENTS UP TO 3 COMPONENTS**
**MONO FILAMENTS & MULTI FILAMENTS**
**HIGH TEMPERATURE POLYMERS**
400°C : PEI, PEEK, ...
**LOW TEMPERATURE POLYMERS**
100°C : PCL, ...

**POLYMERS BLENDING**
**CRIMPING**
**CUTTING FILAMENTS**
POURQUOI LE CHOIX DU COTON?
Cotton has a bad environmental footprint since growing it requires the use of pesticides and a large amount of water. However, it remains the favorite raw material of clothing manufacturers because of its softness and easy-care qualities. Circular recycling helps bring a true added value to cotton.

THE CLOTHING COLLECTED IN FRANCE IS A SOURCE OF RAW MATERIAL BY-PRODUCTS.

CREATION OF A NEW RECYCLED TEXTILE INDUSTRY IN FRANCE

PROJECT FINANCED BY ADEME – AAP
Operation realized with the support of Investissements d’Avenir – Circular economy, recycling and validation of waste and co-financing by Métropole Européenne de Lille.

Brands and manufacturers will be able to use recycled materials that will, over time, considerably help reduce the volume of virgin materials and production costs while optimizing the cotton fibers’ environmental footprint.

REWIND project is inscribed in the ethical circle of a circular economy and plans to deploy industrial installations that can collect, sort, break down and recycle post-consumer textile articles. After demonstration models have been produced, they will be validated by user-client panels at DECATHLON. These tests can then lead to the progressive inclusion of recycled cotton fibers in all the DECATHLON group’s industrial production for woven and knit garments. By reinventing the end-of-life of a product, we supply the textile industry with a raw material by-product.

OPPORTUNITY
This project is part of Okaïdi’s overall approach to acting more responsibly with all its stakeholders. For CETI, this is a matter of completing the research for textile innovations in a logic of sustainable development of the sector. Supply complementary to cotton cultivation and sustainable.

A REINVENTION OF 3 KEY STEPS
the process of upgrading cotton products:

STEP 1
The sorting of textile materials recovered by the collecting organisms.

STEP 2
The fraying of fabrics

STEP 3
Spinning of the fibres

OBJECTIVE
This approach will ultimately reduce the environmental impact of cotton product manufacturing: by reducing the quantity of cotton grown, it reduces soil pollution and water consumption, by eliminating or simplifying the dyeing and finishing stage, by reducing their chemical impact and by creating a source of local raw materials.

OKAÏDI, member of the ÏDKIDS brand community and CETI share the same ambition: to create a circular economic circuit around cotton in order to reduce the environmental impact of this raw material known to be one of the most polluting and water-consuming. It is in 2017 that they launch together a textile innovation project...

WWW.CETI.COM • CONTACT@CETI.COM
CETI’s team ran a trial campaign, training, fibres and process engineering and also an industrial transfer solution. CETI used its drylaid nonwovens platform to test different fibres blends, to investigate on the different process stages and to prototype nonwoven samples ready to test. Each step of the way of this expertise, CETI team has delivered process and laboratory reports including all the specifications to transfer the sampling to industrial manufacturing.

Within the framework of this private project, CETI accompanied CEPOVETT group, in the continuity of their sustainable development approach, with the implementation of a global solution for the production of a new range of eco-designed products with high added value. The aim was to test the recyclability of products from a collection and to prototype textile materials made from recycled fibres. The innovative alliance between a research and development centre (CETI) and an industrialist (TDV Industries) gives CEPOVETT group the opportunity to accelerate the transition from product development on pilot lines to industrialisation. CEPOVETT group thus gains in agility and speed to bring a new collection to market.

Piñatex® by Ananas Aman is a coated nonwoven material made from Pineapple leaf fibres. Piñatex® material can be used as an alternative to leather and petroleum-based materials in the fashion, apparel, interior and car industry, and has been the start of the Piñatex Collection. Piñatex takes into account social, ecological and economic responsibilities throughout its full life cycle and follows Circular Economy ethos.

For nearly 70 years, CEPOVETT group has been making its know-how and experience available to all professionals. The brand supports each user in his or her choices by offering a range of innovative products and services adapted to each need. An industrial company perfectly integrated into the world of professional workwear, the group has its own manufacturing entities in France and abroad. Today, CEPOVETT group wishes to be a player in the development of a complete sector for the management and recycling of waste from its activity, and to offer its own customers a solution for the reuse of clothing at the end of its life cycle.
OUR TRAINING COURSE
Developing talents

CETI supports European companies in the extended textile, fashion, luxury goods, distribution and/or users of textiles and flexible materials in their evolution and transformation towards a responsible approach.

The strength of conviction of CETI’s trainers and their experience in companies, invites each trainee to surpass himself and to approach this transformation of the professions in the best possible way.

CETI is an international training centre certified

The originality of these trainings lies in a more concrete pedagogical approach through the sharing of brands & industrial experience and through illustration on CETI’s prototyping pilot lines. Each trainee thus has the opportunity to interact with technicians and engineers who favour the sharing of know-how.

CSR ISSUES AND SUSTAINABLE COLLECTIONS

A MORE SUSTAINABLE FASHION
TRACEABILITY AND TRANSPARENCY
INTEGRATING THE CIRCULAR ECONOMY INTO ONE'S BUSINESS
RECYCLING - AN EMERGING TEXTILE SECTOR
DIGITALISATION AT THE SERVICE OF SUSTAINABLE DEVELOPMENT

BECOMING A RESPONSIBLE BRAND 4.0

ECO-DESIGN OF MATERIALS AND PRODUCTS
TRACEABILITY AND TRANSPARENCY IN ITS ECOSYSTEM
DIGITAL TRANSFORMATION OF BUSINESS PROCESSES
INNOVATIVE AND FUNCTIONAL MATERIALS FOR SPORT AND FASHION TRENDS

TRAINING CATALOGUE AVAILABLE
WWW.CETI.COM

CUSTOMERS REFERENCE

[List of customer logos and names]

WWW.CETI.COM - CONTACT@CETI.COM
VALEURS FONDAMENTALES AMBITION EXCELLENCE PROXIMITÉ
CETI - CENTRE EUROPÉEN DES TEXTILES INNOVANTS

INNOVATING TO ENHANCE MATERIAL & PRODUCT PERFORMANCE
THE APPLIED RESEARCH CENTRE FOR SUSTAINABLE INNOVATION

Our mission
Designing, prototyping and industrializing materials and finished products with you

Our areas of expertise

- Circular economy materials and products
- Optimization of the materials performance
- Digitalization of material and product processes
- Product eco-design
- Filament & nonwoven functionalization
- 3D virtual design
- End-of-life treatment of a product
- Printing, knitting, weaving, reasoned manufacturing
- Mono, bi and tri-component threadings
- Stock pooling
- Mechnical & thermomechanical recycling
- Functionalized nonwovens
- Traceability
- Short and bast fibre spinning
- 3D nonwovens
- Traceability

Our pilote lines
Mini-series prototyping and industrial transfer

Imagine our future with textile materials!

CETI is now more than just a tool offered to businesses to encourage and accelerate innovation in the field of advanced textiles. It is a place for inventing and developing new products that meet all the needs of tomorrow’s world. Its service offer remains abreast of societal challenges: Environmental footprints - Smart technology - Live well.

In this approach, nonwoven technologies are a key differentiator. The nonwoven fabric market has a vast growth potential as indicated by the EU scenario for Technical Textiles and the Gherzi analysis. Medical sutures, man-made filament fabrics and spunmelt nonwovens are three of the major growth items. In this field, the major breakthrough of nonwoven fabrics used in manufacturing absorbent hygiene products (AHPs) must be cited. It is clear that high-profile companies have quickly seized the opportunity to supply this accelerated production (Trend: 9% CAGR).

Meanwhile, efforts to make the textile and clothing supply chain more environmentally sustainable tended to focus, in the past, on production processes and raw materials. But today, nonwoven initiatives regarding already-used, upcycled fibres are extremely pertinent.

In its latest survey dated dec. 2016, XERFI, one of the most reliable economy analysts, concluded that France represents a fertile ground, favourable for establishing a sector of excellence as far as Technical Textiles are concerned. The survey noted that France has all major advantages to become a leading country in this field. It quotes, as the first of these assets, the excellence of its world reference Research Centers and points out CETI as a partner for many French and international companies who are keen to develop their innovations.

Therefore, CETI is running applied innovation product developments that offer solutions for high-level responses to meet hygiene and medical market needs:

- “Lofty spunbond!” improving comfort, softness, bulkiness and lighter weights,
- Bio-based nonwovens reducing environmental footprint,
- Functionalized nonwovens enhancing performances,
- Fine filament increasing homogeneity separation performance,
- Airthrough carded web with flat oven equipment.

“We form a team with our customers to make innovative textiles an essential vector for our future.”
A POSITIONING TAILOR-MADE ASSISTANCE FOR YOUR PROJECT

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By adjusting to each individual situation, our support engineering widens the scope of possibilities and enables you to achieve your objectives efficiently.

Melanie MONCEAUX
Melt-spinning & Nonwovens
Business Development
melanie.monceaux@ceti.com

Trained as a textile engineer, Melanie began her career in the nonwovens industry as an R&D manager and laboratory manager. She joined CETI in 2010 and assists companies in the hygiene, transport, medical and sports sectors to develop and improve the performance of their products. Its expertise in materials and processes (spinning, nonwovens) as well as its product sensitivity will enable it to accompany you in all confidentiality in your national or international projects from the design of solutions to the production of prototypes.

ENGINEERING PROCESS MATERIALS PRODUCT

BUILDING PROJECT
ECO-DESIGNING PRODUCTS
DEVELOPING INNOVATIVE PRODUCT
DEVELOPING & PROTOTYPING PRODUCTS
PROTOTYPING MATERIALS & PRODUCTS
OPTIMIZING PROCESS
ENHANCING SKILLS

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OUR OFFER

BUILDING PROJECT
State of the art.
Value chain identification/Market positioning.
Development of specifications.

DEVELOPING & PROTOTYPING PRODUCTS
Elaboration of functional specifications.
Documentary watch.
Identification of markets.
Countertyping & Prototyping.
Proposal of product/process solutions.
Implementation of a test plan.
Analysis of the results obtained.
Proof of Concept.
Research / material supply.
Spinnability and processability of materials.
Identification of the choice of raw materials.
Development of new filaments and nonwovens.
Multi-component and/or multi-layer product innovation.

ECO-DESIGNING PRODUCTS
Valuation of the product.
Multi-criteria evaluation.
Optimization of processes, materials and products.
Identification of the most suitable raw material for its use.
Search for alternative raw materials.
Consideration of the end of life of products.
Designing a product from recycled fibres.
Increasing the rate of recycled fibres in a finished product.

ENHANCING PROCESS & TRANSFERING TO INDUSTRIALIZATION
Optimization of raw material use.
Optimization of production cost.
Integration of specific functionalities.
Audit on customer site.
Technical assistance of the production teams on industrial site.
Development of business skills.
A UNIQUE NONWOVEN PLATFORM

CETI is the leading centre for research and applied development in the prototyping of fibrous materials. It concentrates on a single site technologies covering the entire chain from polymer to nonwoven material, favouring cross-fertilisation and the development of company partnerships, and accelerating industrial transfer and market launch.

**Thermal Bonding**
- Drylaid Web Forming
- Flat Airthrough Oven
- Card
- Cross Lapper
- Omega Airthrough Oven
- Bico Meltblown

**Mechanical Bonding**
- Needle Loom

**Nonwovens Post-Treatment**
- Kiss Roll (Inline)
- Squeezer (Inline)
- Smooth Calender (Offline)

**Hydro-Entanglement**
- Engraving Calender
- Bico Spunbond

**Flexible configuration of dry and molten track pilot lines with more than 150 combinaisons possibles.**
A PILOT LINE FOR FILAMENT PROTOTYPING

- **Componding**
  - Polymer functionalization
  - Addition of short fibres, powders, pellets & liquid additives
  - Polymer blend

- **Spinning**
  - Mono, bi, tri-components

- **Crimping & Cutting**
  - Functionalyzed filaments
  - Low temperature polymers 100°C : PCL, ...
  - Specialty polymers
  - Fluoropolymers
  - Co-extrusion: metal core, aramid
  - Filaments up to three components
  - Mono filaments et multi filaments
  - High temperature polymers 400°C : PEI, PEEK...
  - Bio-sourced polymers
  - Recycled polymers

**Evaluation of the performance of the prototypes during testing. As our laboratory is not accredited, the results are given for information only.**

A LABORATORY OF MATERIAL CHARACTERISATION

- **Polymers**
  - Capillary rheometer
  - Melt flow

- **Textile Fabrics**
  - Nonwoven - knitted - woven

- **Filaments - fibres**
  - Air permeability
  - Water impermeability
  - Strength and elongation
  - Thickness
  - Mass per unit area
  - Filament diameter
  - Yarn / filament title
  - Toughness and elongation
  - Cross-sectional view of the filaments
  - Elasticity
PHOTONITEX project aims to develop a new smart textile type which improves comfort by a dynamic regulation of the space between body and textile. This smart textile should be able to give the infra-red radiation back depending on the body or external temperature and humidity (sweat).

This functionality is not only for athletes. It also covers personal protection, insulation, military and interior textiles.

To achieve this objective, PHOTONITEX proposes to take inspiration from photonic structures, which are nanostructures that interact with light according to their wavelength (i.e. their color). They allow, for example, some butterflies to display their shimmering colours. If their manufacture uses nanotechnologies, we will, in PHOTONITEX, generate similar structures adapted to the Infrared «light» via methods compatible with the textile industry.
**DURATEX** project is the development of ecofriendly fluorine-free & hydro- and oleophobic and silver free antimicrobial textiles for durable applications in construction and architecture. Three approaches will be envisaged to obtain water and oil repellent properties: Deposition of nanofibres via layer-by-layer (LbL) technology and chemical modification based on branched hydrocarbons, sol-gel hybrid layers and layer deposition by local solution-reprecipitation using green solvents. Moreover, Biobased product or non-toxic biocides will be incorporate in coatings and filaments in order to obtain antibacterial properties.

**SEABIOCOMP** will develop and deliver demonstrators using innovative bio-based thermoplastic composite materials with the following characteristics:

- Tailored durability according to the specific application (2 to >20 years) for a demonstrator in a marine environment as measured by newly developed analytical methods.
- Mechanical properties that are at least equivalent to the ones of conventional oil-based composites.
- Reduced CO2 emission (30%).
- Reduced ecotoxic impact on the marine environment by microplastics as measured by newly developed analytical methods.
- Demonstrated recycling potential of the used materials in the demonstrator.

These characteristics should decrease the overall environmental impact by 50% compared to conventional oil-based counterparts through the entire value chain from production to waste treatment. The proposed bio-composite materials and developed analytical protocols for long-term durability and ecotoxicity should lead to a shifted mind-set along the value chain about bio-based composites being a realistic alternative to oil-based counterparts.

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**ECO-FRIENDLY ANTI-STAINING AND ANTIMICROBIAL TEXTILES**

**DEVELOPMENT AND DEMONSTRATORS OF DURABLE BIO-BASED COMPOSITES for the marine environment**

**PARTNERS**

To ensure the success of this project, expertise in various domains including polymer formulation and textiles (Centexbel, CETI), composite formation (ARMINES, U Plymouth & PolyProducts BV), environmental Impact and durability studies in sea environment (U Portsmouth, VLIZ & Ifremer) has been combined in the SeaBioComp-partnership.
OUR TRAINING COURSE
Developing talents

CETI supports European companies in the extended textile, fashion, luxury goods, distribution and/or users of textiles and flexible materials in their evolution and transformation towards a responsible approach.

The strength of conviction of CETI’s trainers and their experience in companies, invites each trainee to surpass himself and to approach this transformation of the professions in the best possible way.

CETI IS A TRAINING CENTRE CERTIFIED

The originality of these trainings lies in a more concrete pedagogical approach by sharing the experience of brands and industrialists and by illustration on CETI’s prototyping pilot lines. Each trainee thus has the opportunity to interact with technicians and engineers who favour the sharing of know-how.

ON DEMAND TRAINING

NONWOVEN BASIC
Impact of belt forming on nonwoven processes.

MEDICAL MARKET
Nonwoven materials and processes applied to the medical market.

HYGIENE MARKET
Nonwoven materials and processes applied to the hygiene market.

CETI is the reference in Nonwovens thanks to its collaboration with EDANA’s: The International association of nonwovens and its industry, EDANA, asked CETI and its R&D team to communicate their skills and knowledge of nonwovens to become the official trainer for The Nonwovens Learning Cycle™.

CUSTOMERS REFERENCE

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CARDING ADVANCED COURSE
Innovations in nonwoven drylaid products / An in-depth focus on web forming technology - CARDING.

MELTBLOWN & SPUNBOND ADVANCED COURSE
Innovations in nonwoven spunlaid products / An in-depth focus on web forming technologies SPUNBOND – MELTBLOWN – SPUNMELT web.

TRAINING CATALOGUE AVAILABLE
WWW.CETI.COM
IMPROVING AGILITY & SUSTAINABILITY WITH 4.0 TECHNOLOGIES
Digital makes sense as a result of radical changes in consumer behaviour.

For the fashion sector, the international lockdown at the beginning of the year has upset the process of creating the offer and its marketing: production sites shut down, inability to move, store closures, a fall in consumption generating an increase in stocks and unsold goods...

This situation has highlighted the fragility of a fragmented value chain that is too dependent on distant sourcing, with multi-factorial risks: health, geopolitical, social and environmental crises, without controlled traceability.

To adapt to these major upheavals, brands and the entire textile industry must show real flexibility and agility in their teams and organization to resist and implement change quickly. Digital is no longer an option but a necessity to get out of the crisis and rebound.

The era of personalization, short circuit and transparency has arrived!

More and more brands and retailers are reflecting on the subject of personalized fashion that echoes the need to consume better and more responsibly. A new approach to design, product validation on 3D virtualisation to eliminate unnecessary prototypes, product customization, limitation of material and product stocks, relocation and short circuit are opportunities to meet these expectations.

End of a system and necessary transition to the new winning economic equation.

At CETI, we are convinced that innovation through creativity in materials and products is the regeneration of fashion by integrating 3 drivers: Create on demand / Produce on demand / Integrate the circular economy as a pillar associated with digitalization.

Supporting companies to tackle this cultural transformation of professions.

Since its creation in 2012, CETI has integrated digital textile innovation as a source of competitiveness and growth for brands. Of course, start-ups have more natural ability to launch themselves using digital tools at all stages of the product development process because they are more agile than large traditional players whose organizational and information systems are more demanding and complex to evolve.

CETI’s expertise gives the various players in the textile industry the opportunity to make choices that best suit their structure and teams.
A POSITIONING
TAILOR-MADE ASSISTANCE
FOR YOUR PROJECT

Carrying out R&D means making an alliance with uncertainty, which is not always teasy.

Thanks to the technical skills of our engineers, to their experience in the industry, thanks to their attentive listening, their openness and their availability at your side to exchange throughout the project, your R&D experience takes place in a climate of trust and healthy stimulation.

This favourable climate is conducive to a fine and realistic analysis of your requests, an efficient diagnosis of the solutions to be considered and points of vigilance to be addressed in order to nourish reflection, to guide the test plan and to formalise the results.

By adjusting to each individual situation, our support engineering widens the scope of possibilities and enables you to achieve your objectives efficiently.

Fabienne Hindré
Business Development Circularity
Design 4.0 & Training
fabienne.hindre@ceti.com

Fabienne Hindré is a professional in the textile-clothing industry and has been working in the worlds of sport, fashion, lingerie and luxury goods for more than 25 years as a Product Marketing Manager for major French companies abroad. She has contributed to the development of brands such as Aigle® and Polvire-Blanc®, as well as to the deployment of the Lectra FashionPLM® software. She joined the CETI in early 2019 to assist companies with their brand strategy and their evolution towards a 4.0 approach.
"Surrounded by professional experts, the CETI positions itself as a demonstrator and beta-tester to facilitate each brand’s ability to make decisions. It is also a catalyst for the fashion industry of tomorrow”

CETI’s experimental workshop space aims to promote the discovery and experimentation of 4.0 technologies for the creation of products and materials, the digitalisation of processes and the prototyping of all innovative products based on new consumer behavioural experiences.

The objective is to enable the various companies in the textile sector to make the right changes in this transformation of traditional activities.

“Integrate digital design and model 4.0 processes”
“Discover new tools to Rekindle client experiences enthusiasm”
“Promote creativity and strength the identity of its brand”
The American group Hanes Brands Inc, designer and manufacturer specialized in lingerie, carries the brands DIM, WONDERBRA, PLAYTEX internationally.

Since 2017, a leader in its field, Hanes France, formerly DBA (Dim Branded Apparel), has been committed to a digital strategy that impacts several internal activities, including product development. The objectives are clearly expressed: to respond effectively to the need for rapid renewal of the product offer for retail. To achieve this, CETI supports creative teams in validating collection plans at an early stage through the virtualization of new designs, using CLO 3D software.

The DIGTEX project in partnership with LECTRA and CETI made it possible to rethink the value chain in a collaborative way by placing the customer at the heart of the strategy. The DIGTEX project in partnership with LECTRA and CETI made it possible to rethink the value chain in a collaborative way by placing the customer at the heart of the strategy.

REINFORCE COMPETITIVITY BY LETTING US PUT INNOVATIVE products or products reinvented by co-creation with consumers into the market faster and help remove the Client/Supplier divide to benefit a long-term, collaborative relationship.

CAPITALIZE ON NEW TYPES OF CONSUMPTION by using social networks, Internet, mobility and new experiences expected by the consumer.

SAVING TIME AND REDUCE COSTS on the whole value chain.

VALIDATION OF THE VIRTUAL COLLECTION before prototype assembly

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A PROOF OF CONCEPT was carried out to give PETIT BATEAU visibility on its future organisation by integrating the entire process of the path of a product personalised by a client, from its conception resulting from market analyses, exchanges with the client and stylistic creations up to its production, with an emphasis on priority visual collaborative tools (Clo 3D and Modaris V8 3D) and secondary co-creation tools such as Virtual Reality.

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The originality of this training lies in a more concrete pedagogical approach through the sharing of experience between brands and manufacturers and through demonstrations on the CETI demonstrator dedicated to textile & fashion design 4.0.

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