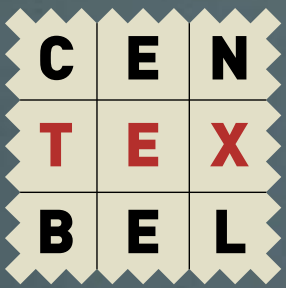


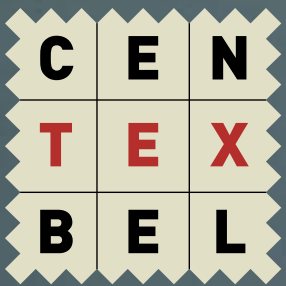
Innovative textile products and processes: from research to industrial application

Jan Laperre
Director-general CENTEXBEL



Outline

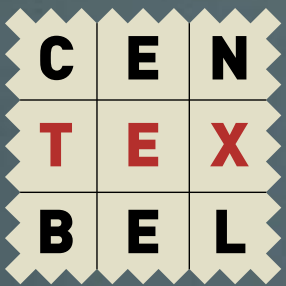
- Profile CENTEXBEL
- Stackholders and their expectations
- Activities
 - Testing
 - Research
 - Consultancy



Profile CENTEXBEL

centre of competence

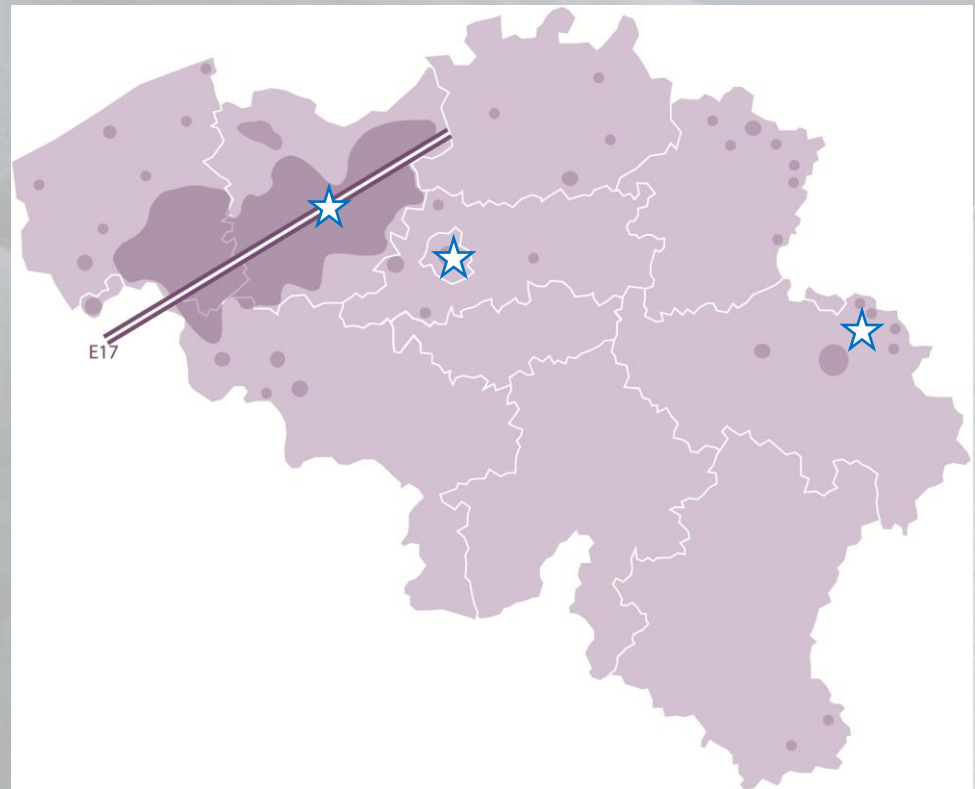
- collective centre of expertise uniting
 - 500 Belgian textile producers
 - over 100 freely associated national & international companies & organisations
- staff
 - 138 highly skilled collaborators

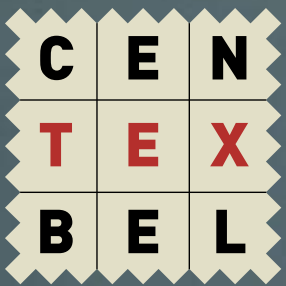


Profile CENTEXBEL

Centre of competence

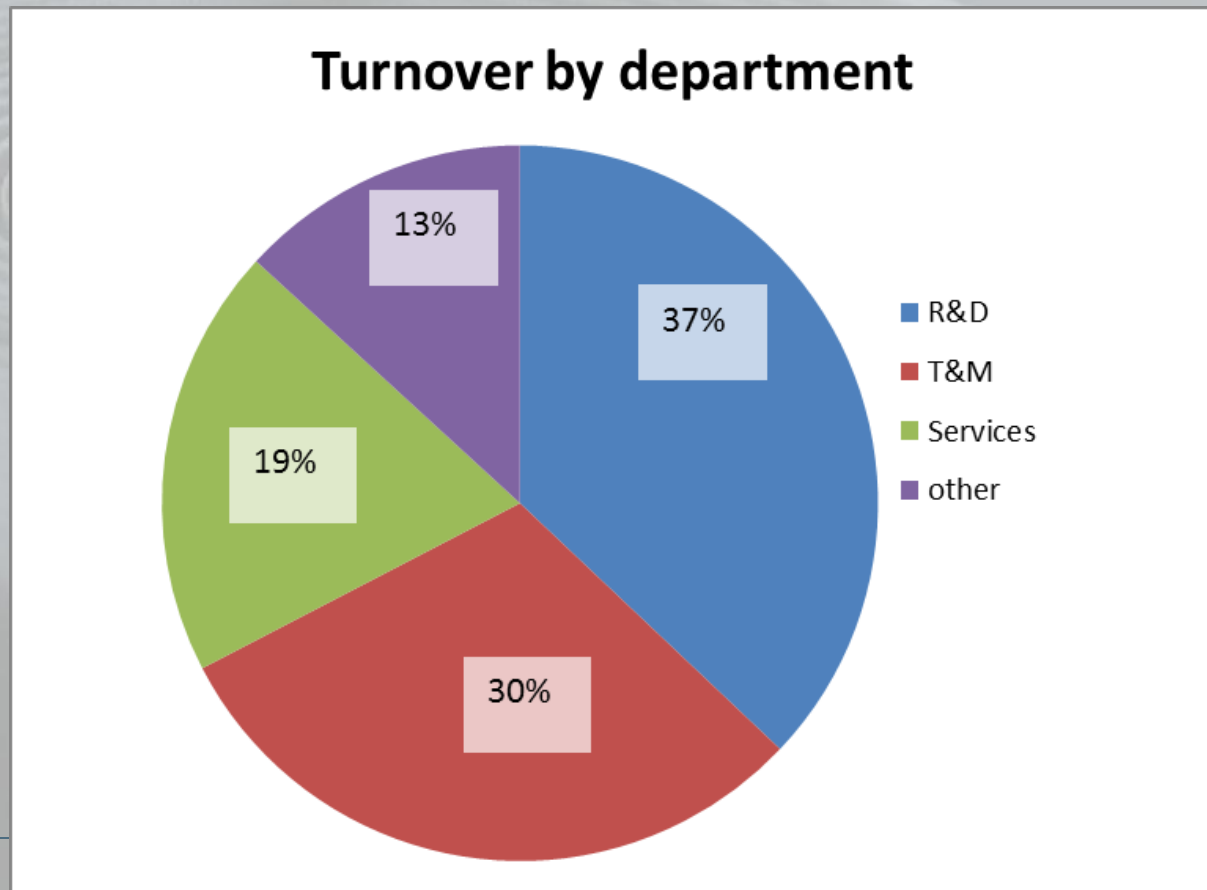
- Key figures
 - 138 staff members
 - 12 M€ turnover
- 2 locations
 - Ghent
 - Verviers

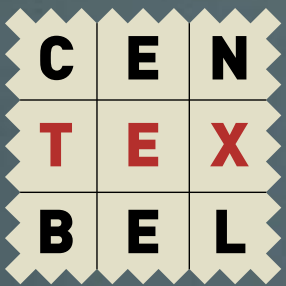




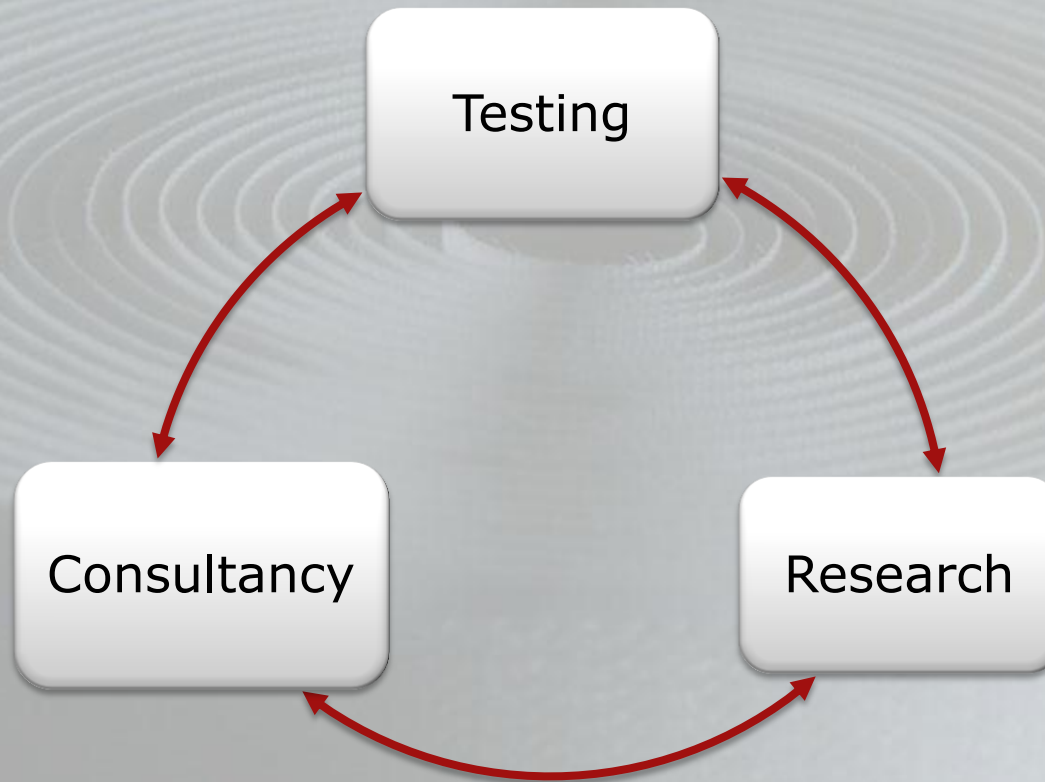
Profile CENTEXBEL Activities

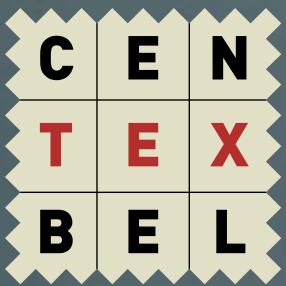
- 3 major synergetic activities
 - R&D
 - Services
 - Testing





Activities Overview

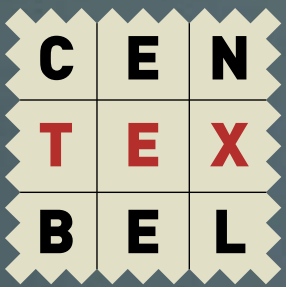




Stackholders expectations

The textile industry in Belgium

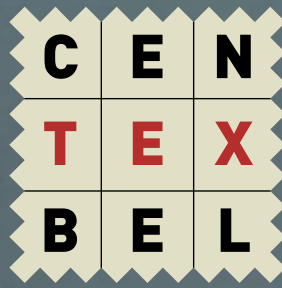
- Important industrial sector and 4th European producer
- Presence of complete supply chain
- Strong position in technical and interior textiles:
 - Interior: B: 46 % - EU15: 20%
 - Technical textiles: B: 30 % - EU15: 20%
- Broad rang of business models:
 - Cost leadership: carpet, matrast ticking ...
 - Focus (niches): ropes, strings, ...
- > 85 % SME companies
- Supplier dominated
- Regional cluster



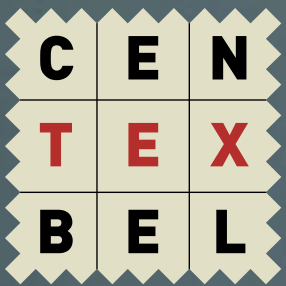
Stackholders expectations

Expectations of our stackholders

- Support of textile companies in strengthening competitive position (competitive) through:
 - Efficient standaardtesting and trouble shooting
 - Technological assistance: process, materials, applications, ...
 - Product- en process research & development
 - Introduction & support in EU-research & -networks
- support of textile companies in strengthening competitive position (pre-competitive) through:
 - Acquire knowledge new materials, techniques and processes
 - Initiatives to collectively tackle challenges
 - Explore new application areas (cross sectorial)
- Available expertise
 - Knowledge of TEXTILE products, processes and applications
 - Support and stimulation of cross-sectoral collaboration

The background of the slide is a photograph of a roll of white, textured fabric, possibly a geotextile or filter fabric. The roll is unrolled in a way that creates a series of concentric circles, radiating from the center. The lighting is soft, highlighting the texture of the material.

Activity Testing

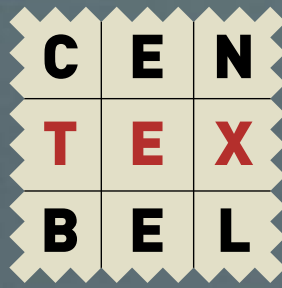


Activities

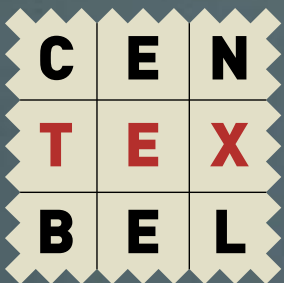
Accredited testing

- Testing
 - Physical lab
 - Chemical lab
 - Fire lab
 - Microbiology lab



The background of the slide is a photograph of a roll of white, textured material, possibly fabric or paper, with a series of concentric circles visible on its surface. A semi-transparent grey horizontal band is positioned across the middle of the image, serving as a backdrop for the text.

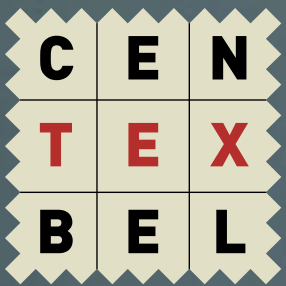
Activity Research



Activities

Research activities

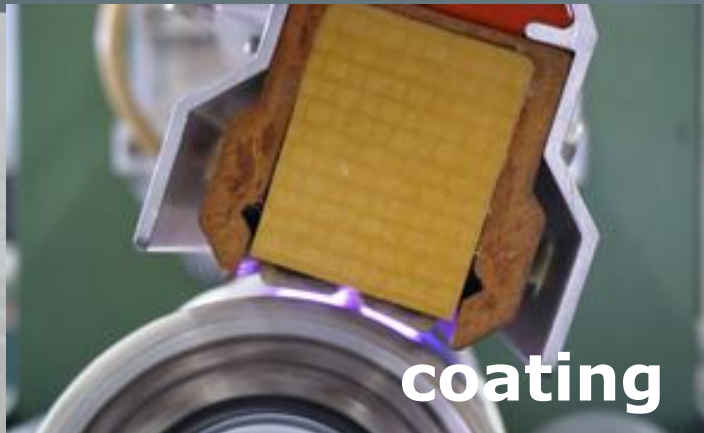
- 5 research fields
 - Biopolymers for use in textile processes & products
 - Nanoadditives in coatings and meltprocessing
 - Sustainable development
 - Multifunctional textile surfaces and related processes
 - Textiles in composites
 - Intelligent materials and smart textiles
 - Health, safety and security
- 3 research groups
 - Textile Functionalisation & Surface Modification
 - Functional Thermoplastic Textiles
 - Health, Safety & Security



Semi-Industrial equipment



knitting



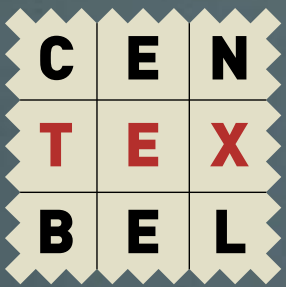
coating



textile finishing



extrusion



Semi-industrial equipment



hotmelt



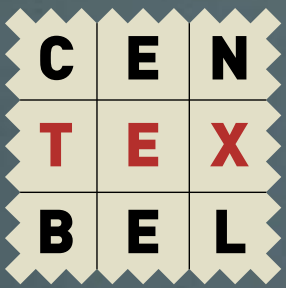
Spray machine



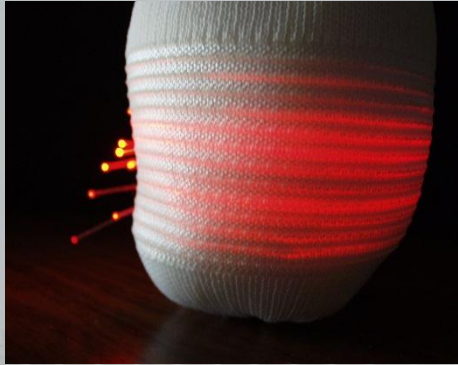
Lab coating machine



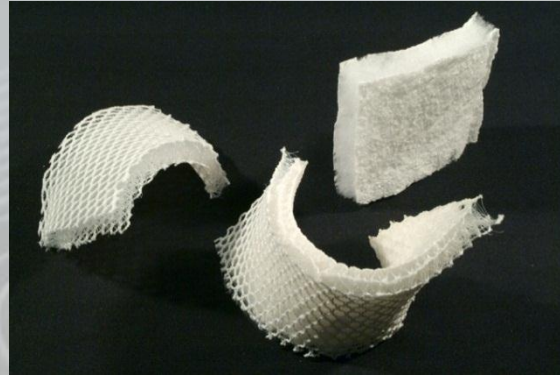
compounding



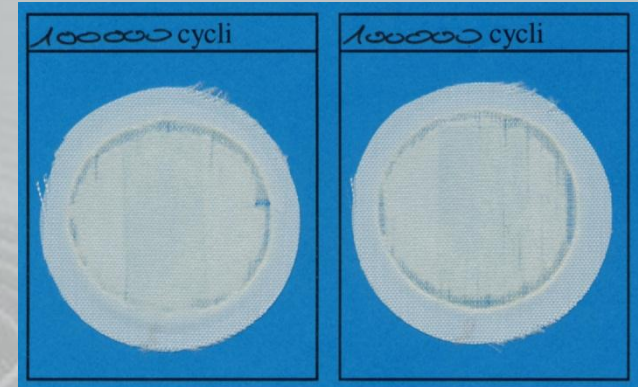
Research and development with and for companies



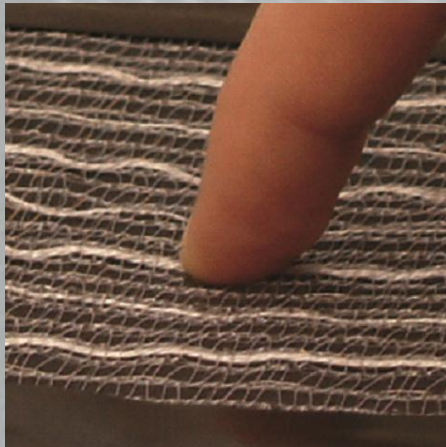
Optical fibers



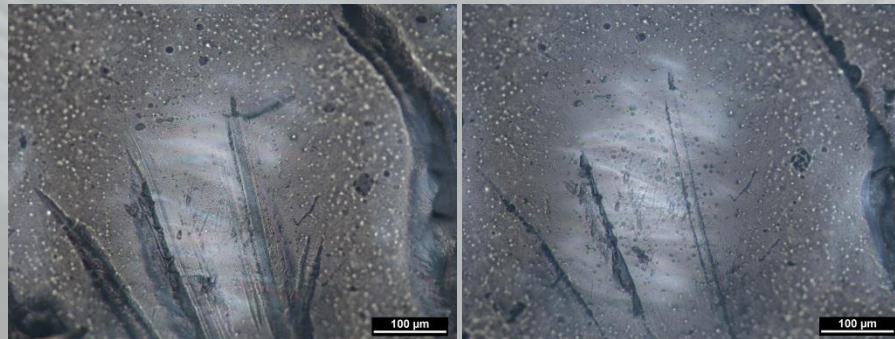
Polyolefine dispersions



Sol-gel coatings



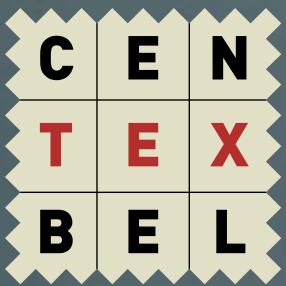
Pression sensing textiel



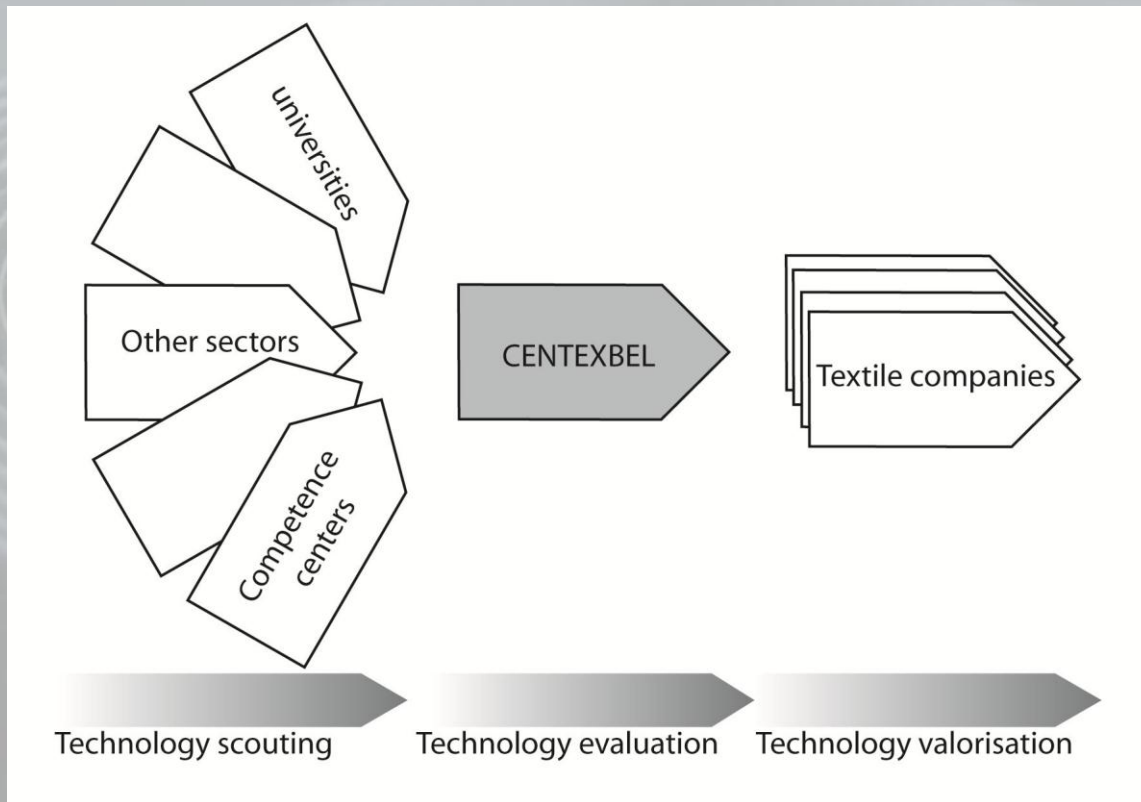
Selfreparing coatings

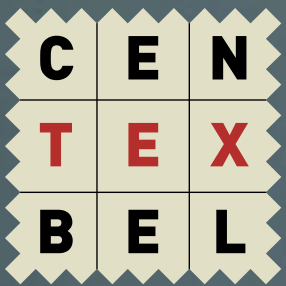


Hydrogels

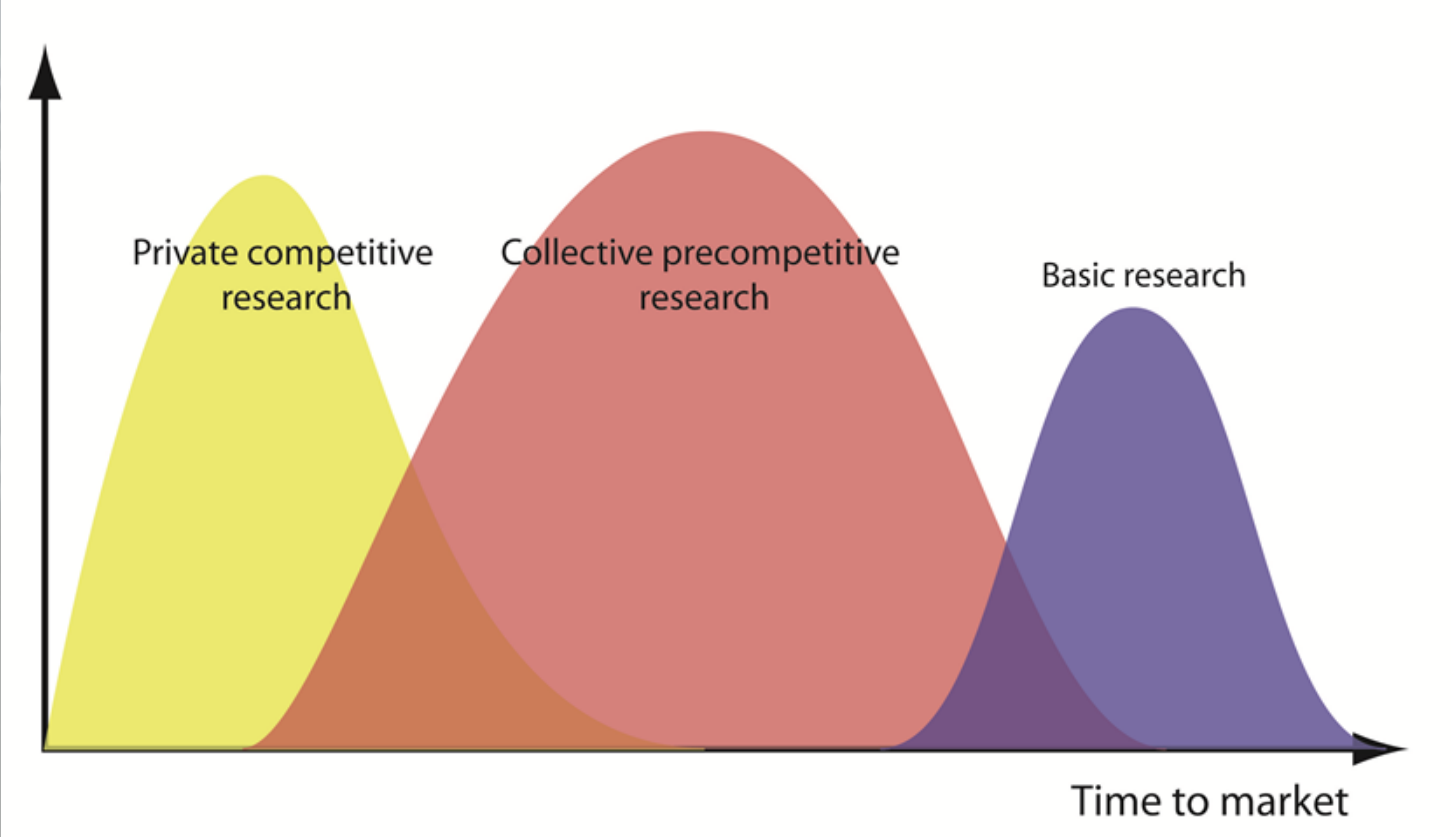


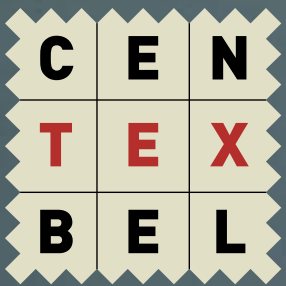
Rol of Centexbel





Research portfolio

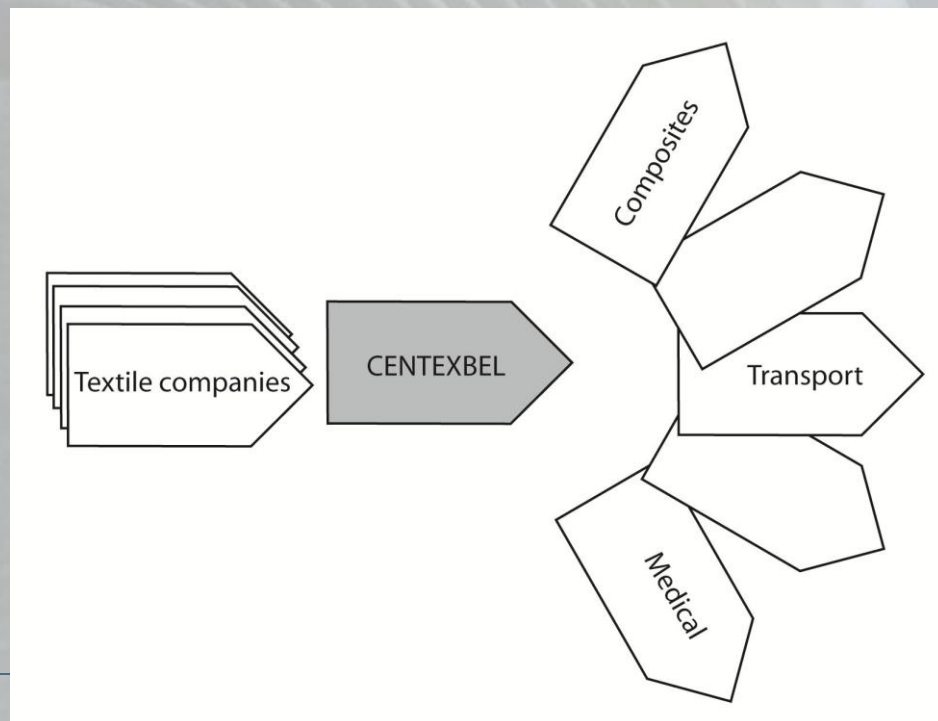


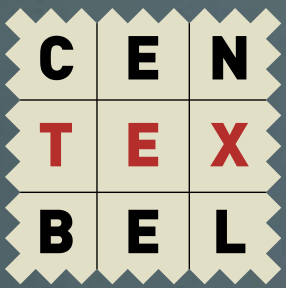


Rol of Centexbel

Cross sectorial activities

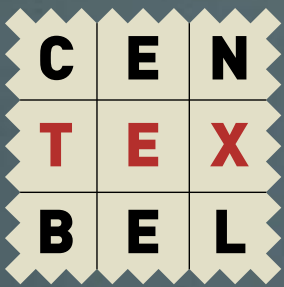
- Opening horizons for application of textile products
 - Construction industry
 - Composite industry
 - Medical applications
 -





Research topics

- Hot research topics
 - Biopolymers
 - UV curable coatings and hotmelts
 - Nano-additives in coating and extrusion
 - Sol-gel coatings
 -
- Examples:
 - Sol-gel
 - UV-curable coatings
 - Carbon nanotubes



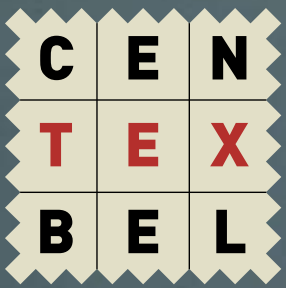
EXAMPLE 1

Sol-gel

- 'Old' existing technology for coating on glass surfaces
- Sol: colloidal solutions of metal oxides
 - Met-O-Met; "Met" = silicium, titaan, vanadium, ...

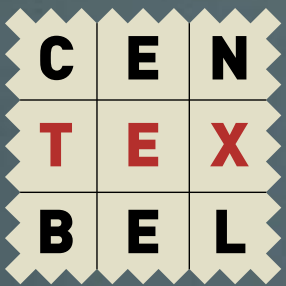


- Gel: obtained through evaporation of solvent in the sol
- sustainable layers of eg. Si-O-Si (\sim glass)
- Nano-porous surface
- Thickness : $\sim 100\text{nm}$



Challenges sol-gel

- Classical sol-gel technology requires:
 - Long processing time
 - High temperatures curing proces
 - Large quantities of solvents (ethanol)
- Suited for textiles if:
 - Process time is short
 - Low temperature processing
 - Preferably water based coating



Sol-gel

- Increase in abrasion & pilling resistance

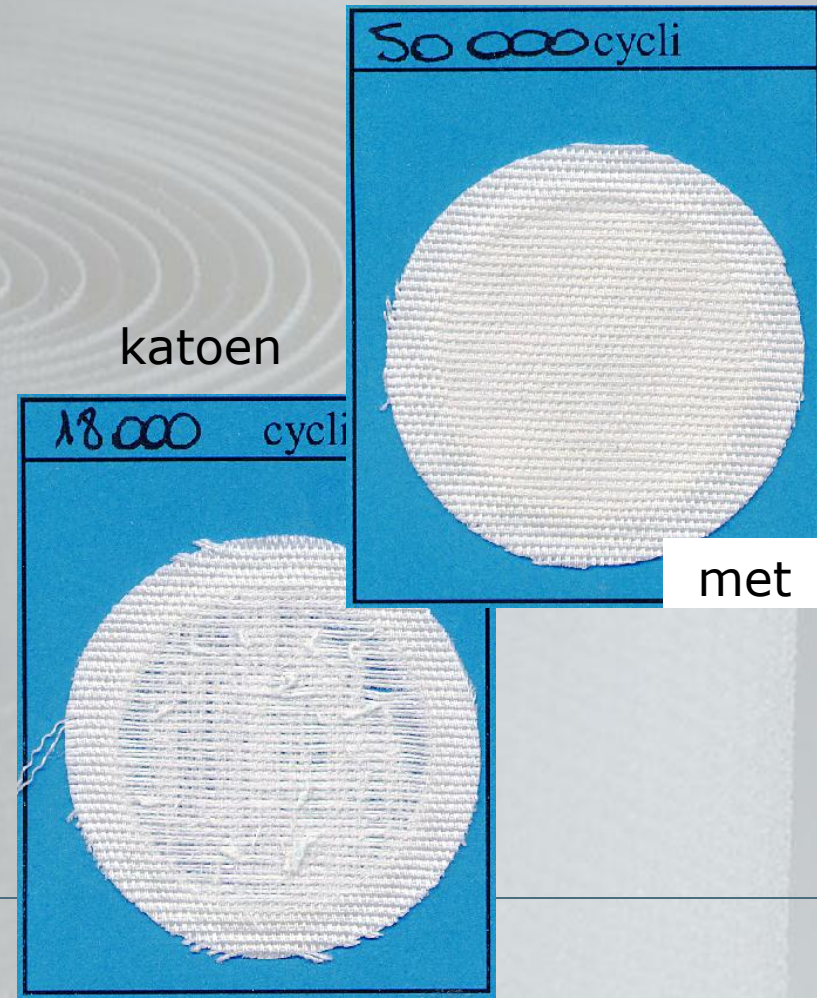
- Industrial trials

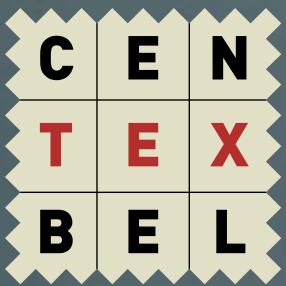
- technical textiles
 - Interior textiles

lycra

met

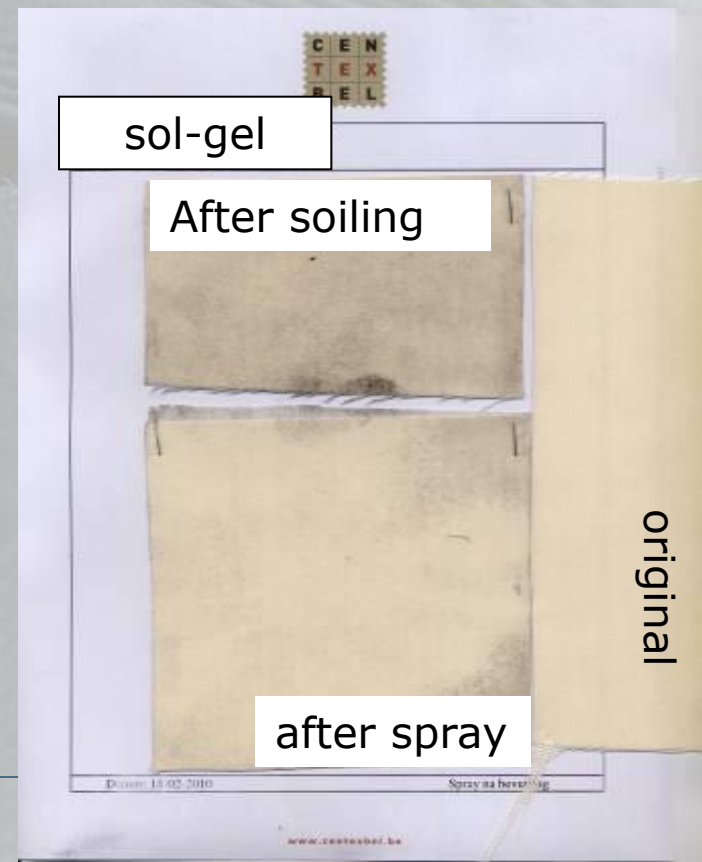
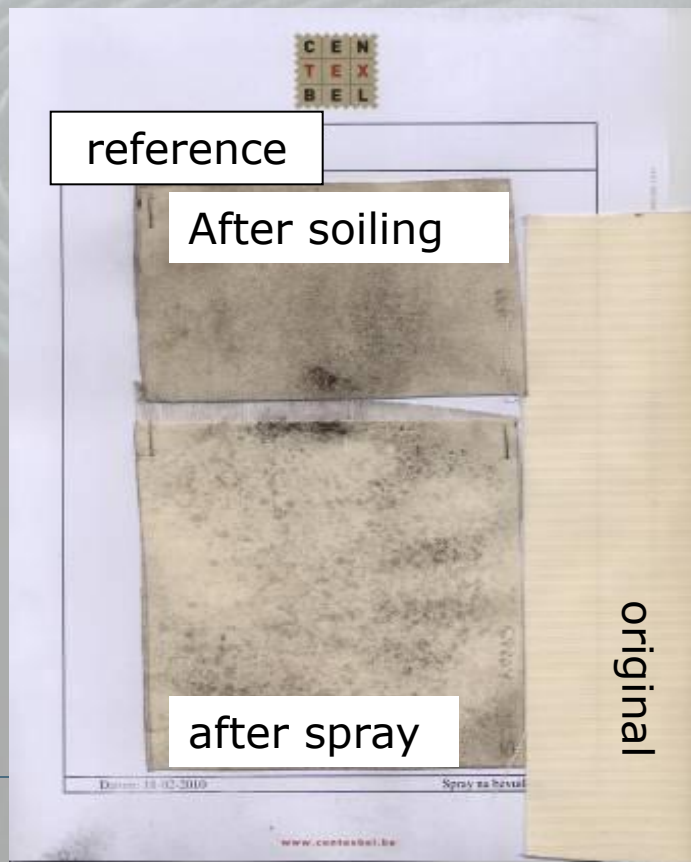
katoen





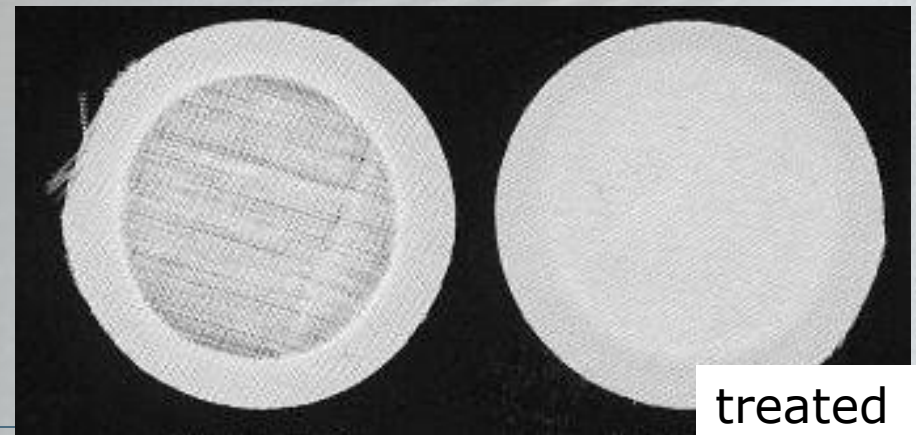
Sol-gel

- Easy to functionalise (dirt repellency)



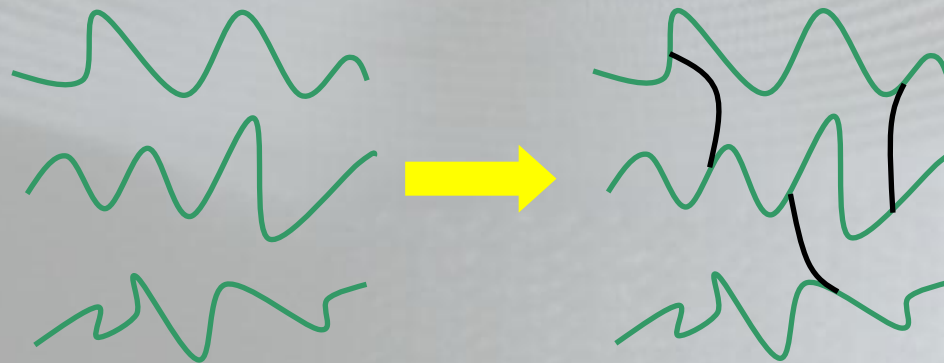
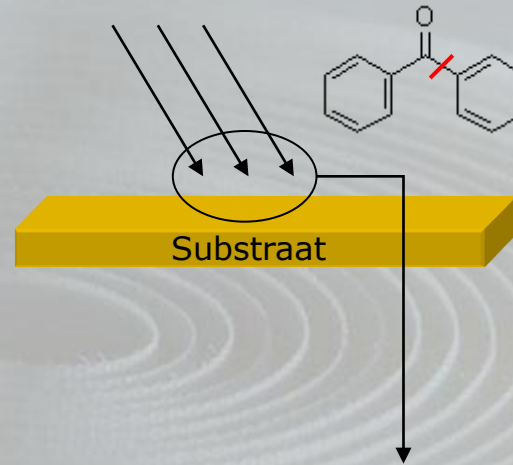
- Implementation in industry
 - 2 EC-projects: technical textiles & PPE
 - 2 O&O-projects: interior & technical textiles
 - 1 SME study: interior textiles
 - 5 feasibility studies: interior, PPE, technical textiles, clothing

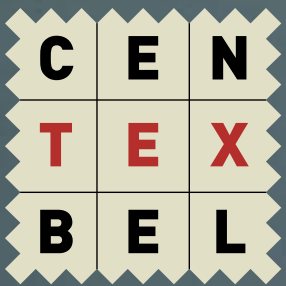
polyester – 100,000 t



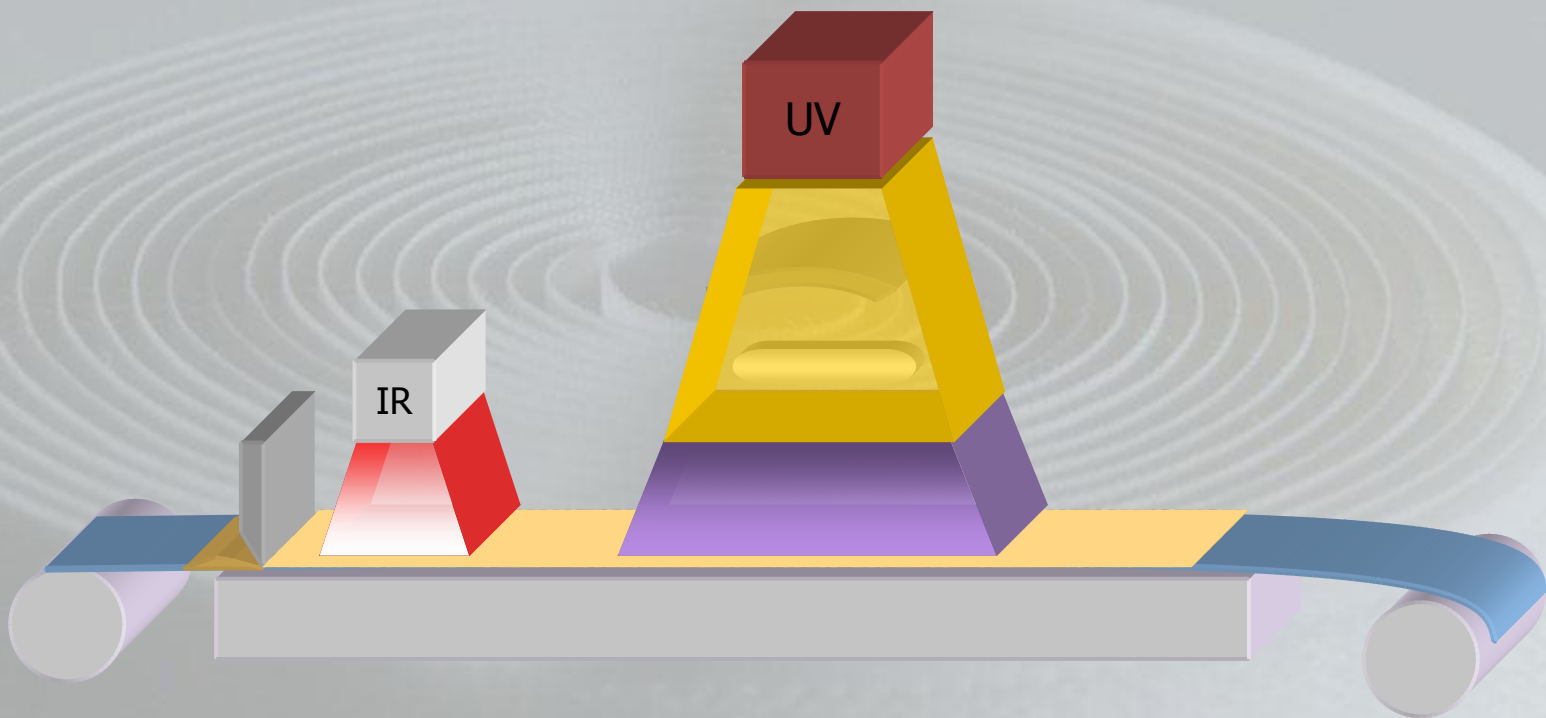
Radiation based curable coatings

Interaction with
elektromagnetic radiation
and linear polymer →
development of three
dimensional network





UV curing technology



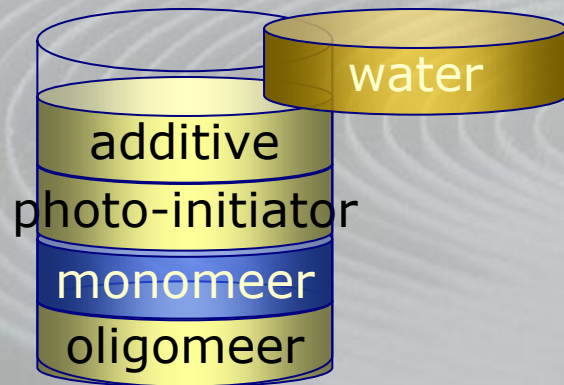
C E N

T E X

B E L

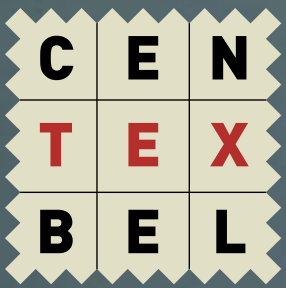
Types uv-curing systems

Liquid uv-coatings



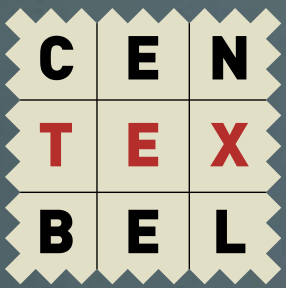
- 100 % uv-systems
- Aqueous uv-dispersion

- 100% systems
 - Most important group
 - monomeer for dilution
 - liquid
 - no solvent/water
- aqueous uv-system
 - aqueous dispersion
 - usually no monomeer
 - evaporation of water necessary



Challenges to resolve

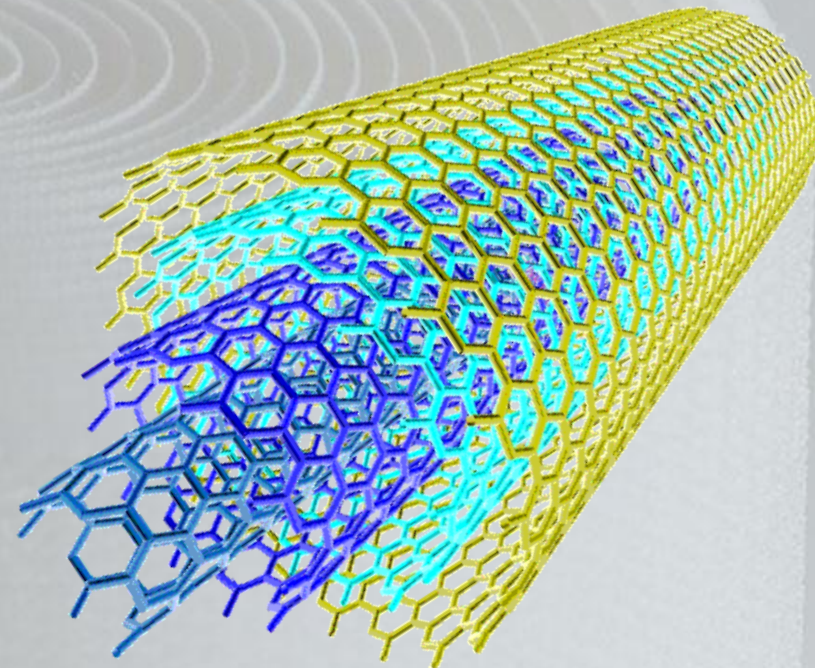
- Known technology for hard surfaces
 - How to modify the coatings for flexibility
 - Ensure sufficient curing to avoid volatile organic components
- Textile functional properties
 - Flame retardancy
 - Anti-static properties
 - Anti-bacterial properties
 -

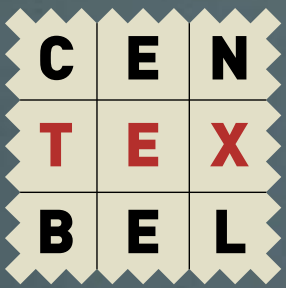


EXAMPLE 3

carbon nanotubes

- Graphite structures
 - With length \gg diameter
- Different types of CNT: number of layers
 - single-walled
 - double-walled
 - **multi-walled**
- interesting properties
 - Mechanical strength
 - Thermal conductivity
 - **Elektrical conductivity**



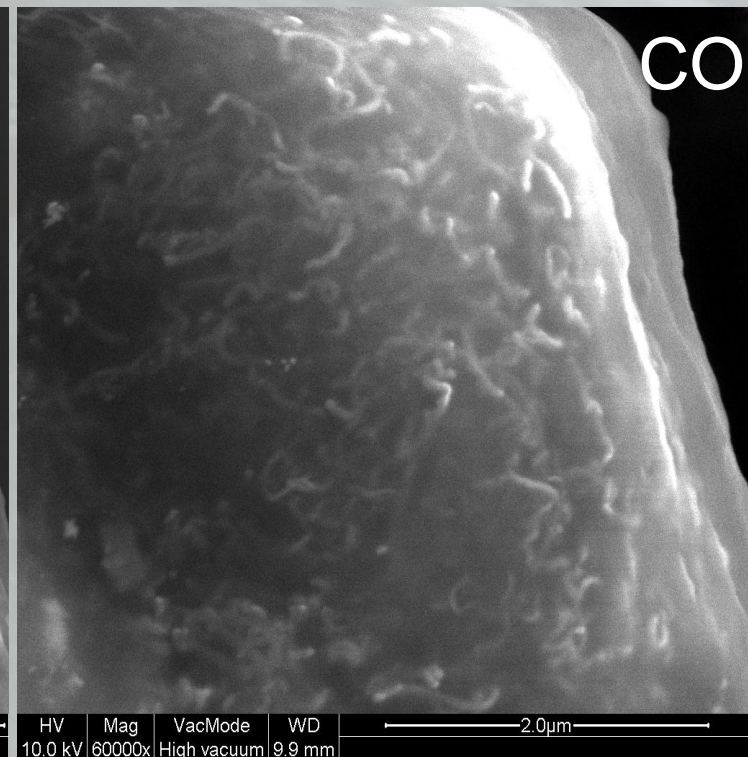
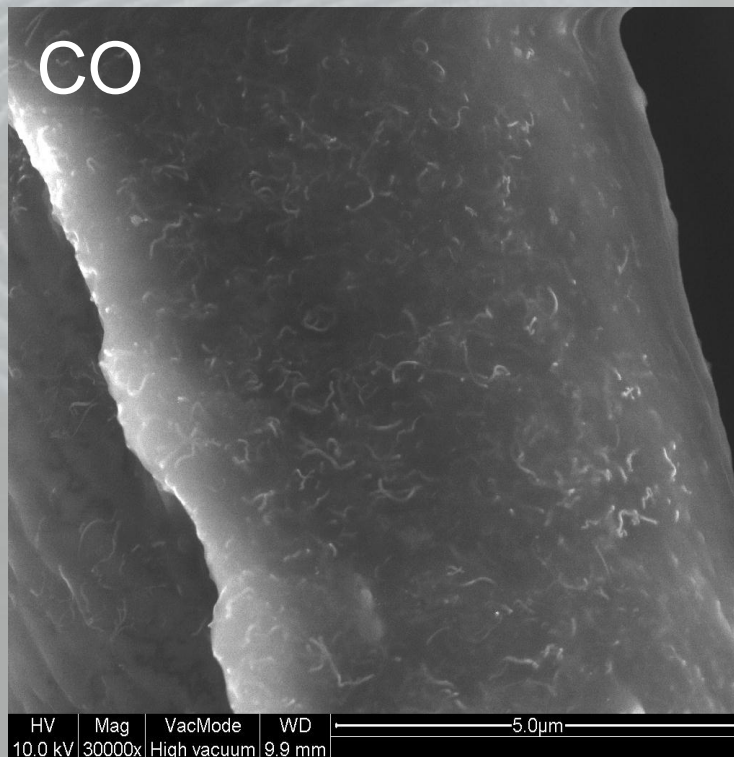


Challenges

- Compatibility problems with
 - Polymers (PP, PES, PA)
 - Coating pasts and padding liquids
- Solution
 - Modification of the CNT by attaching suitable chemicals
 - Danger to deteriorate other properties (e.g. UV stability, ...)

Onderzoek carbon nanotubes

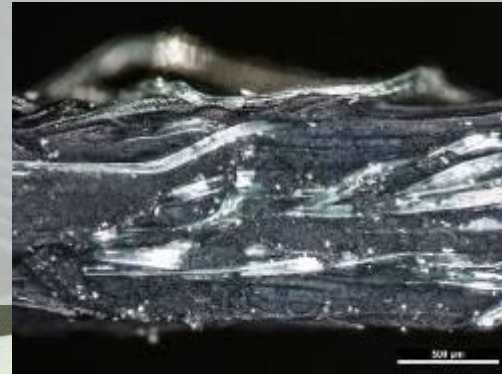
- Electron microscopy of cotton + CNT finish (padding)

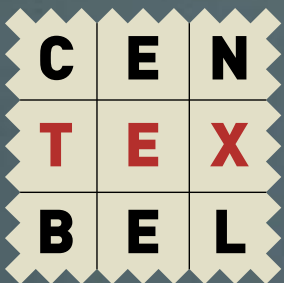


EXAMPLE 4

Textile as sensor

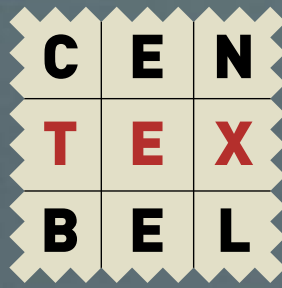
- Textile sensing in concrete
 - Detecting vibration
 - Detecting cracks



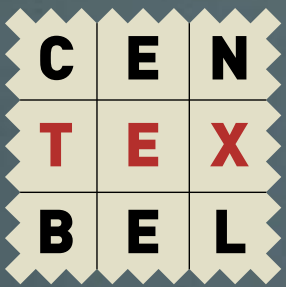


Instruments

- Support by funding is needed:
 - **Regional funding of R&D**
 - Flemish government (collective & private research)
 - Wallon government (collective & private research)
 - **National funding of R&D**
 - Federal government (Research to support standardisation)
 - **European funding of R&D**
 - FP7, CIP, cohesion funds
- Involvement of Belgian textile companies is a key performance factor

The background of the slide is a close-up photograph of a roll of white, textured material, possibly a geotextile or a type of fabric. The roll is unrolled, showing many concentric layers that create a series of overlapping, curved lines. The lighting is soft, highlighting the texture of the material. A semi-transparent grey horizontal band is positioned across the middle of the image, serving as a backdrop for the text.

Activity Consultancy



Activities Consultancy

- Technological support of companies
 - Technological consultancy (trouble shooting)
 - Sustainable development (environmental issues)
- Certification of products
 - Private labels (ökotex, GUT, ...)
 - Compulsary labels (CE-marking PPE, Carpets)
- Certification of systems
 - ISO9000, ISO14000
- Training & dissemination



SUSPRO³

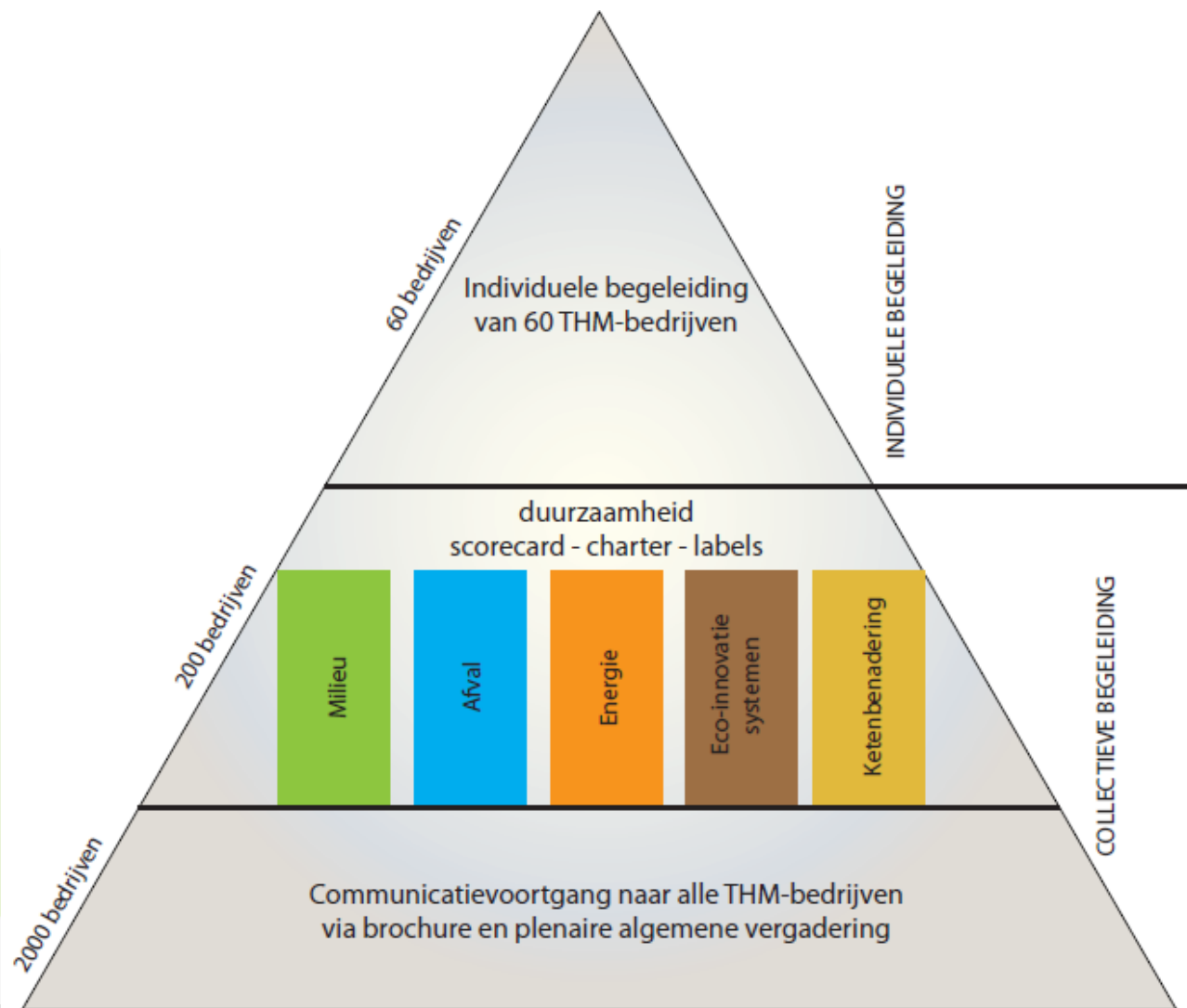
Sustainable Production, Processes & Profit

Support of textile companies to **develop sustainable products en processes**



SUSPRO³ support companies which integrate sustainability in their strategy and communicate this to all 'stakeholders'.

Do well and talk about it !!



- Accompanying collectively **120** companies
 - 5 interactive **workgroups**

milieu



ketenbenadering



afval



eco-innovatie



energie



- Bi-monthly meetings: 240 participants
- Development of practice guide

- Detecting and implementation of **actions to become more sustainable**
 - Signing of sustainability charter
 - At least 2 action
- Implementation **eco-innovation scorecard**

30 companies signed charter

milieu milieu energie energie eco-innovatie eco-innovatie afval afval ketenbenadering ketenbenadering

Duurzaamheidscharter <<bedrijf>>

Als directie van zijn wij ervan overtuigd dat het succes van ons bedrijf in een belangrijke mate bepaald wordt door milieutechnische, maatschappelijke en economische aspecten op een coherente manier te integreren in onze bedrijfsvoering. Overleg met alle belanghebbenden maakt deel uit van dit proces.

Wij zijn er tevens van overtuigd dat deze focus zal resulteren in een competitief voordeel voor ons bedrijf. Door deze inspanning collectief te voeren zal dit ook gelden voor onze sector en regio. In deze context ondersteunen wij dan ook ten volle het SUSPRO³-project van Fedustria, Centexbel en TCHN voor de sectoren textiel, hout en meubel.

Door het continu streven naar verbetering in al onze producten, processen en diensten willen wij zowel de tevredenheid van stakeholders vergroten, de arbeidsomstandigheden verbeteren, de milieu-impact minimaliseren als de bedrijfsresultaten optimaliseren. Bewust van deze verantwoordelijkheid verbinden we ons tot:

1. Het formuleren en evalueren van aantoonbare en significante doelstellingen m.b.t. duurzaamheid, binnen minstens twee van de volgende SUPRO³ pijlers milieu, energie, afval, eco-innovatie en ketenbenadering;
2. Het ondernemen binnen een maatschappelijk verantwoord kader
3. Het ter beschikking stellen van de nodige materiële en menselijke middelen voor het realiseren van deze doelstellingen;
4. Het intern bekendmaken van deze doelstellingen;
5. Het extern zichtbaar en bekend maken van onze keuze voor duurzame bedrijfsvoering;
6. De actieve deelname van onze bedrijfsmedewerkers aan tenminste 2 SUSPRO³-werkgroepen rond milieu, energie, afval, eco-innovatie en/of ketenbenadering;

Guide labels

- Overview most important labels
- 35 labels
- 4 groeps
 - Organic (verplicht)
 - Organic
 - Eco
 - Ethical

Overview matrix

	Organic criteria	Chemical criteria	Process criteria	Social criteria	Textile	Furniture	Wood
EU regulation No: 834/2007	Y	X	X	X	Y	X	Y
The Global Organic Textile Standard	Y	Y	X	Y	Y	X	X
Organic Exchange	Y	X	X	X	Y	X	X
International Wool Textile Organisation	Y	Y	X	Y	Y	X	X
KRAV	Y	Y	X	Y	Y	X	X
IVN	Y	X	X	Y	Y	X	X
Biogarantie	Y	Y	X	Y	Y	X	X
Naturland	Y	Y	X	X	Y	X	X
EU-Ecolabel	X	Y	Y	X	Y	Y	Y
Oeko-Tex100	X	Y	X	X	Y	X	X
Oeko-Tex1000	X	Y	Y	Y	Y	X	X
Nordic Ecolabel	X	Y	Y	X	Y	Y	Y
The Blue Angel	X	Y	Y	Y	Y	Y	Y
Blue Sign	X	Y	Y	Y	Y	X	X
Certipur	X	Y	X	X	(Y)	(Y)	X
euroLATEX ECO-standard	X	Y	Y	X	(Y)	(Y)	X
Milieukeur	X	Y	Y	X	X	Y	X
NF Environnement	X	Y	Y	X	X	Y	X
GUT	X	Y	Y	X	Y	X	X
Made In Green	X	Y	Y	Y	Y	X	X
C2C	X	Y	Y	Y	Y	Y	Y
Better Cotton Initiative	X	Y	(Y)	(Y)	Y	X	X
Proof of Trust	X	Y	Y	X	Y	Y	Y
FSC	X	Y	Y	Y	X	Y	Y
PEFC	X	Y	Y	Y	X	Y	Y
EPD	X	Y	Y	X	Y	Y	Y
Fairtrade Labelling Organisations	X	X	X	Y	Y	Y	Y
Max Havelaar	X	X	X	Y	Y	X	X
Belgisch sociaal label	X	X	X	Y	Y	Y	Y
Made-By	Y	X	X	Y	Y	X	X
Fair Wear	X	X	X	Y	Y	X	X
STEP	X	X	(Y)	Y	Y	X	X
BSCI	X	X	(Y)	Y	Y	Y	Y
SA8000	X	X	X	Y	Y	Y	Y



Introduction

This voluntary organic 'fibre only' standard offers two possibilities to certify the use of organically grown cotton fibres in textiles.

OE 100 Standard

The OE 100 Standard is for tracking and documenting the purchase, handling and use of 100% certified organic cotton fibre in yarns, fabrics and finished goods. A company labelling its finished products as containing organic cotton, may refer to the OE Standard by mentioning:

- "Made with 100% organically grown cotton" only for products containing 100% organic cotton
- "Made with organically grown cotton," for products containing 95% or more organic cotton, as long as the remaining content is not cotton.

Note that the OE 100 Standard can be applied to individual components of a product as long as all of the components containing cotton are certified to the standard. However, the care/content labels still have to name the actual percentages of each textile fibre. Organic Exchange has aligned itself with the GOTS system in order to reduce the complexities and costs for all parties involved.

OE 100 Standard requires that all of the cotton is grown organically and provides criteria for proper handling and tracking of the organic cotton through all textile processing steps. It does not have criteria for substances used during processing.

OE Blended Standard

The OE Blended Standard applies to all goods containing a minimum of 5% organic, or organic in conversion, cotton. The new version of OE Blended Standard does not allow for blends of conventional cotton and is only awarded when the cotton content is organically grown or in conversion.

Organic Exchange

DINA
Textile
Organic
US | Private, collective | 3rd party controlled

Criteria

The manufacturing operations may label finished goods as being "Made with X% organically grown cotton," where "X" accurately reflects the final blend in the yarn or fabric.

The Criteria depend on the market where the textile product will be sold. The environmental criteria refer to the organic regulations for the growing of organic cotton.

Organic Exchange also defines additional criteria for spinning, weaving and knitting, dyeing and finishing. The storage of raw materials is also regulated.

Accreditation

Organic Exchange has developed an accreditation system in line with the one recently developed for GOTS. By keeping the systems as similar as possible, both organisations reduce time and expenses.

Costs

Certification

- OE application fee: 1000 USD
 - OE certification fee: 50 USD
- OE collects upon reporting by the certification body.

Licence

- OE unit certification fee: 50 USD

Contact

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Introduction

Oeko-Tex® 100 was introduced in 1992 and has become the world's best known textile certificate with over 9500 certified companies in more than 80 countries worldwide, for a total of almost 100.000 certificates. It is owned by the International Association for Research and Testing in the Field of Textile Ecology (Oeko-Tex®) in Switzerland.

The Oeko-Tex® association is composed of 15 textile research and test institutes. These member institutes are active in over 50 countries worldwide and are responsible for the testing and certification according to the Oeko-Tex® Standard 100. A complete list of member institutes can be found on the website of the Oeko-Tex® association.

Oeko-Tex® 100 is a globally uniform testing system for textile, from raw materials up to finished garments at every step of the production. A product can only be certified when each and every component meets the requirements as stated by Oeko-Tex®.

Not only textile producers can obtain Oeko-Tex® certification, also producers of non-textile accessories, such as buttons and zippers, and dyes and printers.

The Oeko-Tex® 100 certificate consists of 4 products classes, depending on the intended use of the product. A class I certificate is for products for babies and small children under 36 months, while a class II certificate is for products with direct skin contact. Class III certificates are for products with no direct skin contact and Class IV is for textile products for decorative purposes.

An Oeko-Tex® certificate is not limited to one article. It can include an entire product range made up of similar components.

Criteria

The testing parameters are based on scientifically proven parameters and are updated annually according to legislation and research. The following requirements are used:

- substances which are prohibited by law, such as carcinogenic dyestuffs
- substances which are regulated by law, such as heavy metals and formaldehyde
- substances which are not regulated or prohibited by law, but that are known to be harmful to health
- parameters which are included as a precautionary measure to safeguard human health, such as colourfastness and pH.

The latest annual update of January 2011 includes the following new criteria:

- Short chained (C10 to C13) chlorinated paraffins and tri(2-chloroethyl)phosphate are explicitly placed on the list of banned flame-retarding substances. Both have a limit value of 0.1 per cent per mass.
- The limit value of total lead (Pb) content has been set at 90 ppm for all four product classes. This limit is well below the U.S. regulation of 300 ppm, or 100 ppm as of August 2011.



Intirio

30-01
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a total approach



our commitment
for the future

SUStainability
PROduct
PROcess
PROfit



An initiative of:



Supported by:



Communication/
visibility



MoOD

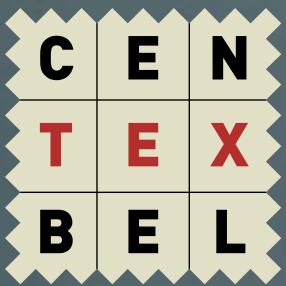
Meet only Original Designs

TEASING YOU WITH UPHOLSTERY, WINDOW AND WALL COVERINGS



MEUBELBEURS BRUSSEL

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Helping companies in dealing with REACH

- How to implement REACH in a textile company
 - REACH specific points of attention and obligations
 - Guide '**REACH for the textile industry**'
- How?
 - Company audit
 - Working group - communication
 - Working group - strategy
- Participation of 60 companies

VLARIP^{TEXTIEL}2, hoof

BEURTSAFDELING

- inventarisatie aanwezige chemicaliën en gebruik van persoonlijke beschermingsmiddelen
- analyse en geven van gewijzigde informatie (N en P-lijsten, generalisatie, ...) naar chemicaliën, etc. CLP en REACH-regelgeving
- voorbereidingen voor de opslag en transport van nieuw ingekochte chemicaliën

WERKGROEP 1 - productveiligheid doorheen de keten

- omgaan met kritische chemische stoffen
- strategie voor het gebruik van testlabo's en hergevoerde testlabo's
- informatie-afwisseling in de keten (op- en doornemen)
- eigenaar profiel en handling functie "product-evalueer"

WERKGROEP 2 - productveiligheid op de werkvloer

- strategie over de nieuwe toelating, etikettering en verpakking van chemische stoffen (CLP-regelgeving)
- begeleiding bij het toepassen van risicobeleidsmaatregelen in functie van de nieuwe veiligheidsmaatregelen
- navigeren van de impact van REACH en CLP op de toepassing van Vlaamse milieuregeling (Vlaamse, Vlaamse, Vlaamse) in de testlabo's

Deze werkgroepen vergaderen beurteilungen om de twee maanden bij Centexbel of Fedustria

WIL U ER MEER OVER WETEN?

Neem dan contact op met één van volgende personen:

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Neem ook eens een kijkje op www.vlariptextiel.be

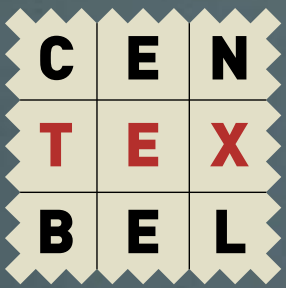
VLARIP^{TEXTIEL}2
VERVOLGPROJECT OP

Vlaanderen
Recht
Implementatie
Project
voor de **TEXTIEL** industrie

Met de steun van Europa en de Vlaamse overheid hebben Fedustria, Centexbel en vlassensia hun leden een belangrijke hand bij de implementatie van REACH en CLP

CENTEXBEL **Fedustria** **vlassensia**

VLA **WET** **WET** **WET**



Conclusion

- CENTEXBEL:
 - Regional research **collective** centre
 - Very close and strong links to regional textile industry
 - Shaped by its stakeholders
 - Supports the competitiveness of the regional textile industry
 - Collective industrial research
 - Collective support actions