


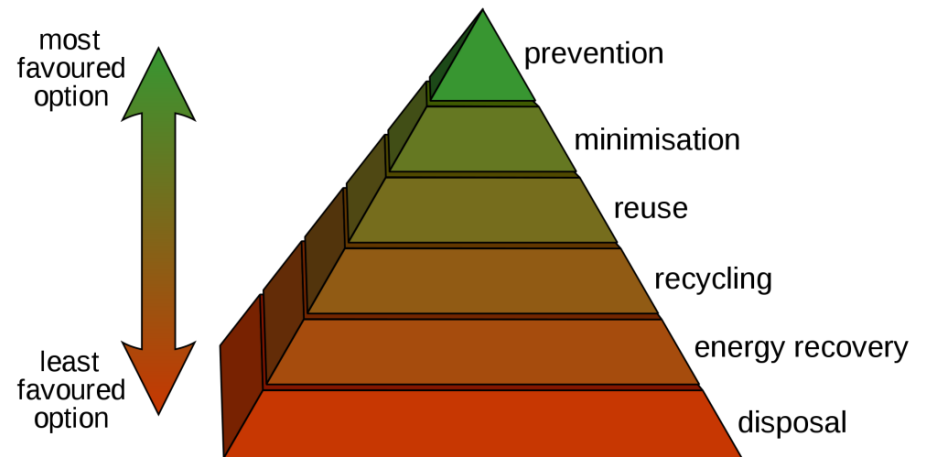
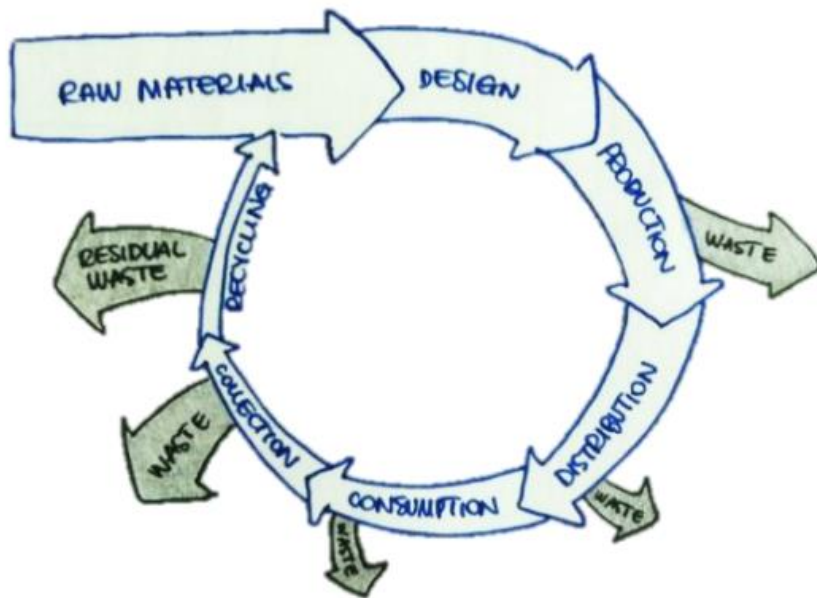
TAKING
COOPERATION
FORWARD

 **Final conference**
on-line, 10th November 2020

 **ENTeR Pilot cases for Circular economy**

 **Olga Chybová, INOTEX spol. s r.o.**

TOWARDS CIRCULARITY



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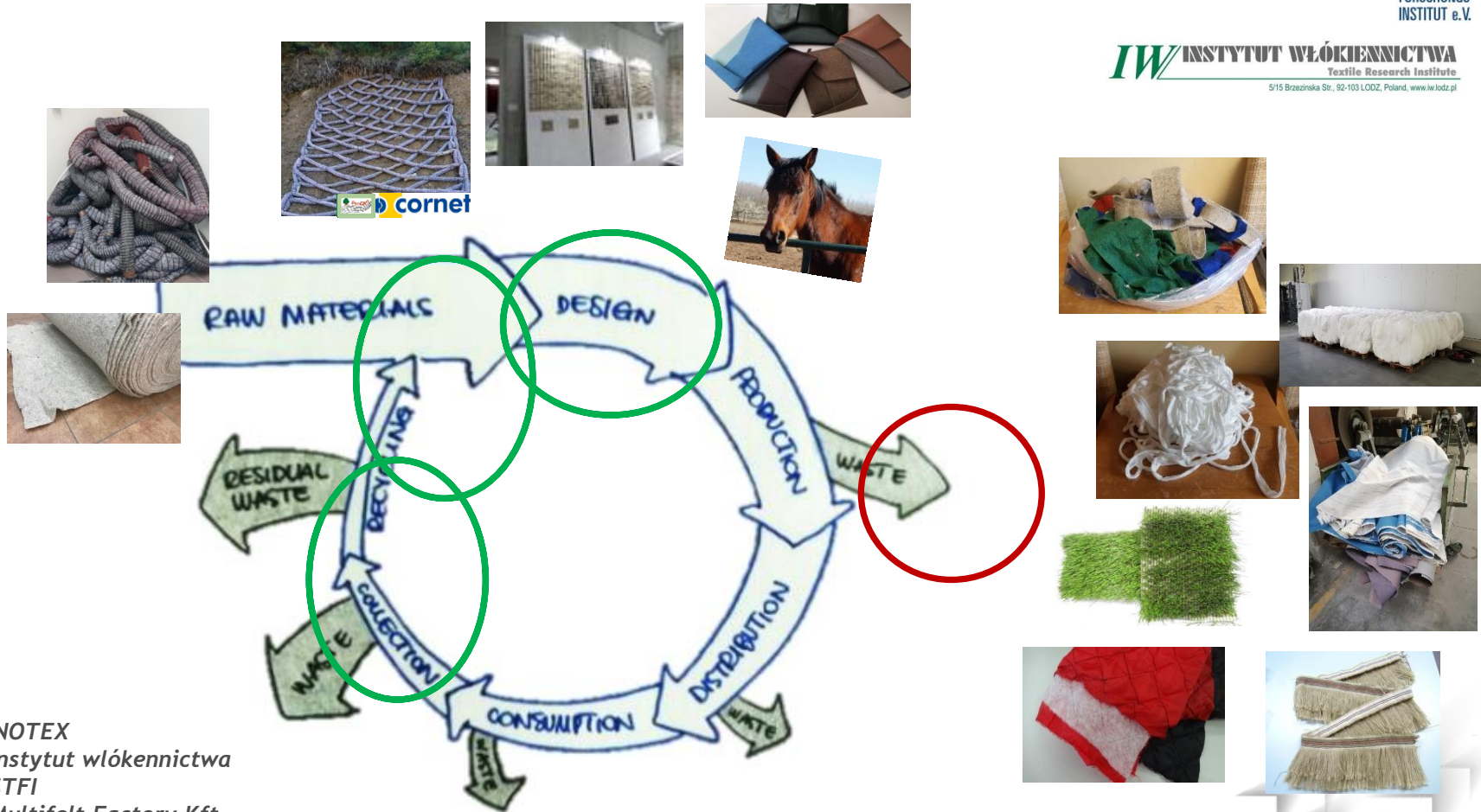


ENTER PILOT CASES

No.	Title of the Pilot Case	Partner
1	New recycling approach for textile waste from a finishing company	STFI (Saxony)
2	Waste generation from manufacturing of technical textiles	INOTEX (Czech Republic)
3	Waste reduction thanks to prolongation of the service life of textile products	INOTEX (Czech Republic)
4	Recycling Aramidic fibers from pre- and post-consumer garments	Centrocot, UNIVA (Lombardy)
5	Post production waste management and treatment system	IW (Poland)
6	<i>“Wool Waste”</i> raw material development	INNOVATEXT (Hungary)
7	Waste management for in-house logistic system	PBN (Hungary)
8	3D printing in textile industry	PBN (Hungary)
9	Guidelines for medical devices in the Pandemic Emergency	All

PILOT CASES - STUDIED SCENARIOS

Post-production waste of technical textiles

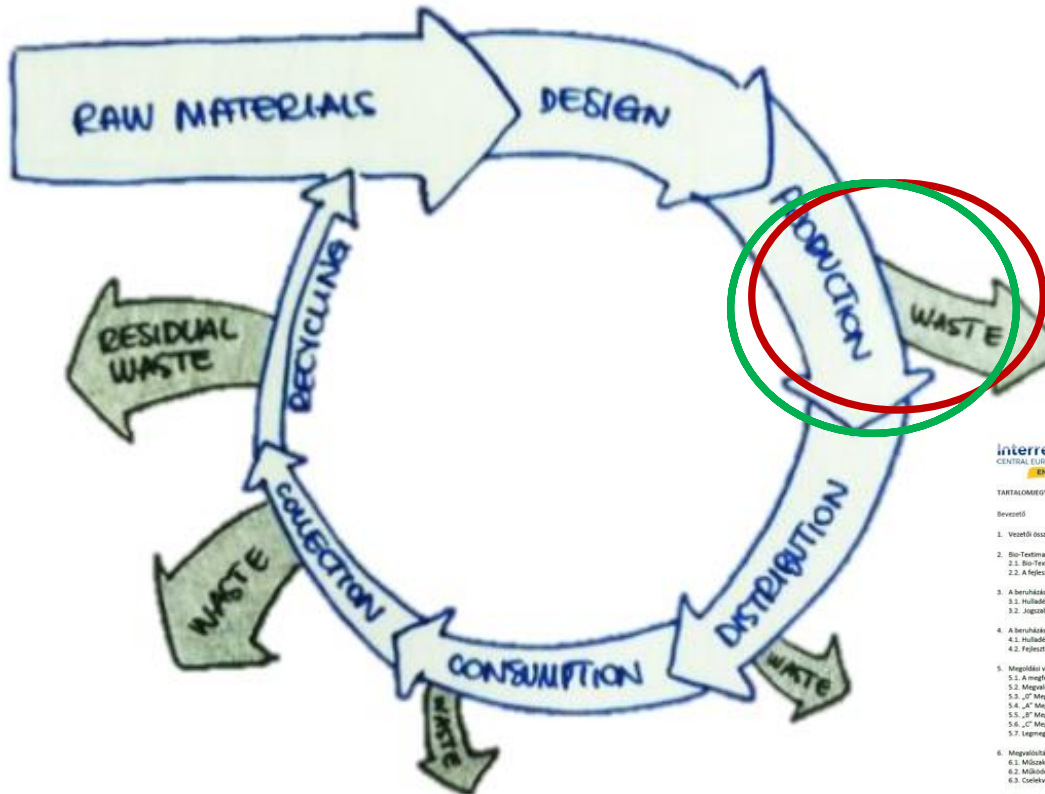


Photos: *INOTEX*
Instytut włókiennictwa
STFI
Multifelt Factory Kft.



PILOT CASES - STUDIED SCENARIOS

Waste management for in-house logistic system



TARTALOMEGYZEK

Bevetési

1. Vezetői összefoglaló
2. Bio-Textima Kft. bemutatása
 - 2.1. Bio-Textima Kft. korábbi fejlesztései
 - 2.2. A fejlesztés elhelyezése a Bio-Textima Kft. stratégiájában
3. A beruházás háttere
 - 3.1. Hulladékkezelés a textiliparban
 - 3.2. Jogszabályi, szakpolitikai háttér
4. A beruházás céljainak meghatározása
 - 4.1. Hulladékkezelés a Bio-Textima Kft.-nél
 - 4.2. Fejlesztés célkitűzése, elvárt eredmények, hatások
5. Megvalósítási változatok
 - 5.1. A megvalósítási változatok kiválasztási módszere
 - 5.2. Megvalósítási változatok meghatározása
 - 5.3. „0” Megvalósítási változat: beruházás megvalósítása nélküli változat
 - 5.4. „A” Megvalósítási változat
 - 5.5. „B” Megvalósítási változat
 - 5.6. „C” Megvalósítási változat
 - 5.7. Legmegvalósítható változat kiválasztása
6. Megvalósítási változatok költségvetése
 - 6.1. Működési költségek bemutatása
 - 6.2. Működési, működésbeli változatok
 - 6.3. Cselekvési tervtervezés
7. Pénzügyi elemzés
 - 7.1. Beruházás költségei becslése
 - 7.2. Működési költség
 - 7.3. Fejlesztési költségvetés
 - 7.4. Fejlesztés pénzügyi teljesítménymutatói
8. Hulladéktervezés

Photos: *Biotextima Kft. Development*
PBN

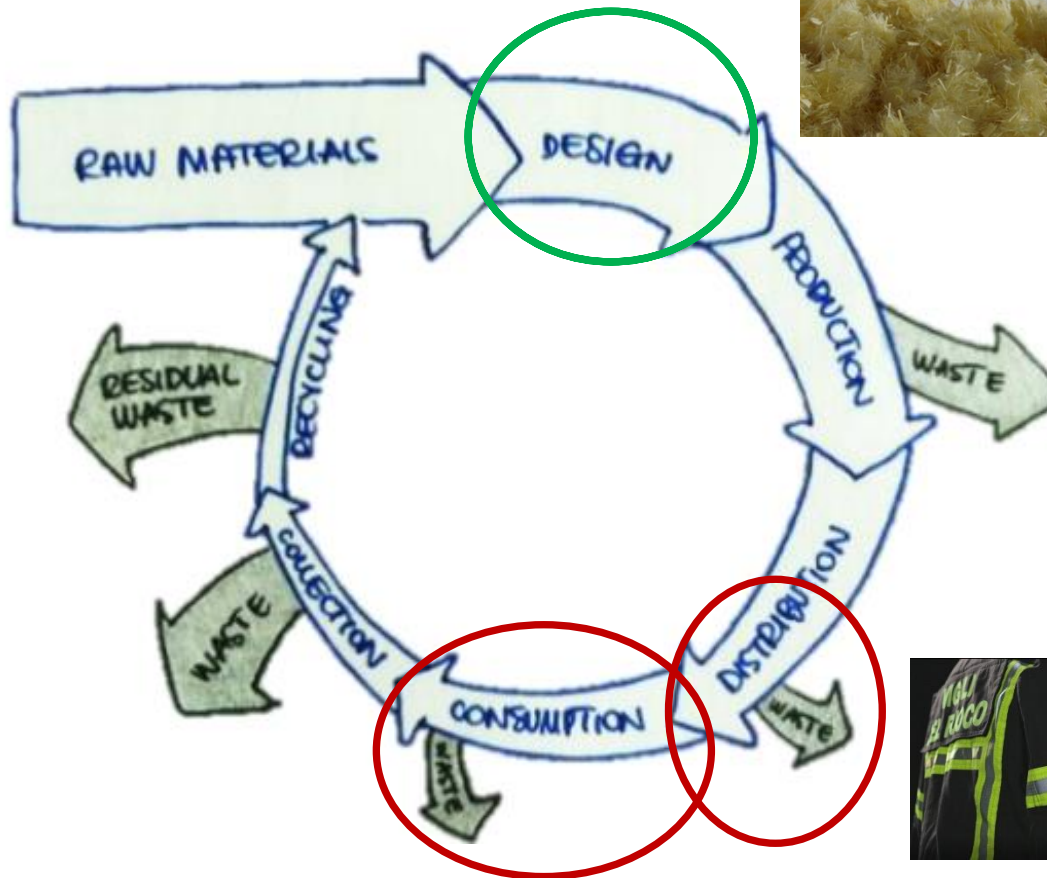


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PILOT CASES - STUDIED SCENARIOS

Recycling Aramidic fibers from workwear garment

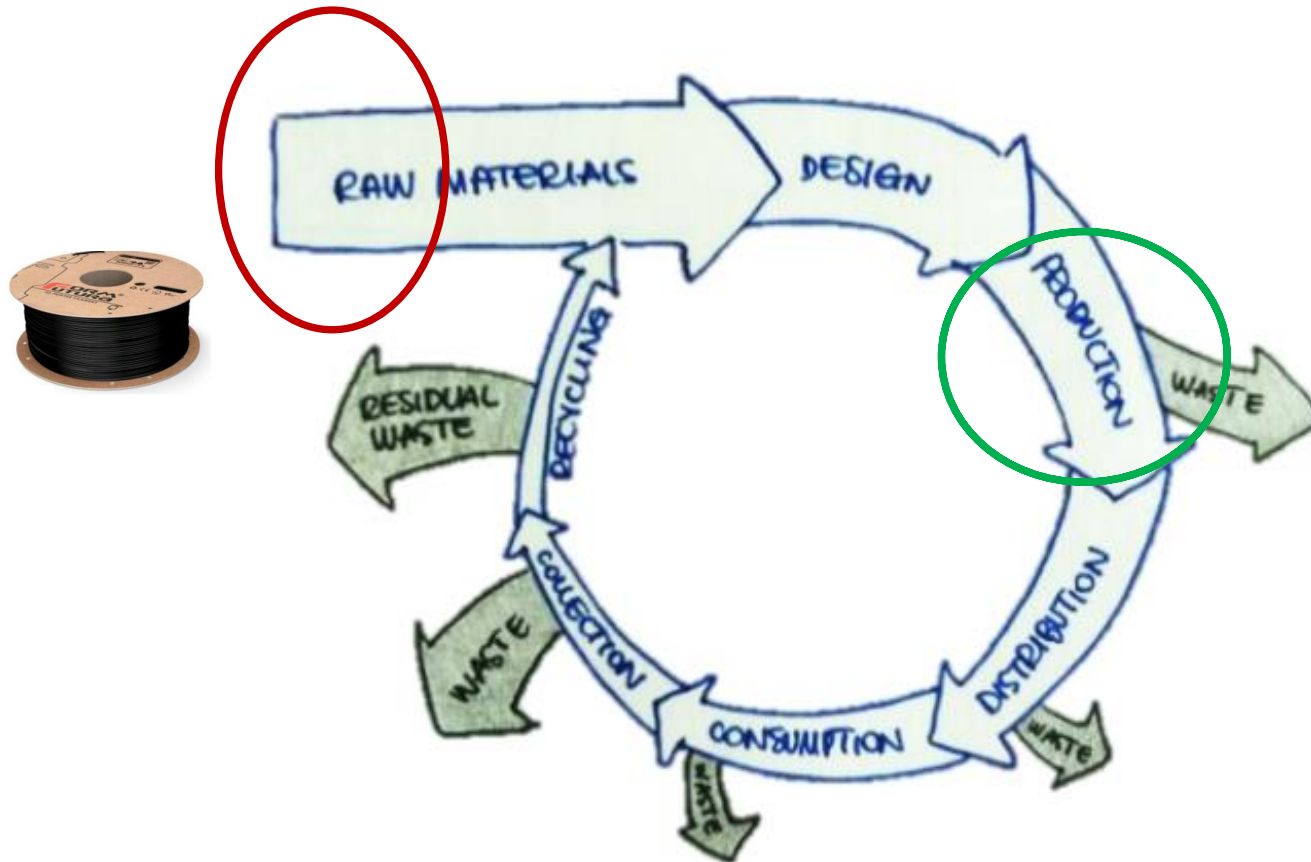


Photos: Grassi (Twitter)



PILOT CASES - STUDIED SCENARIOS

Waste plastics for 3D printing of textiles



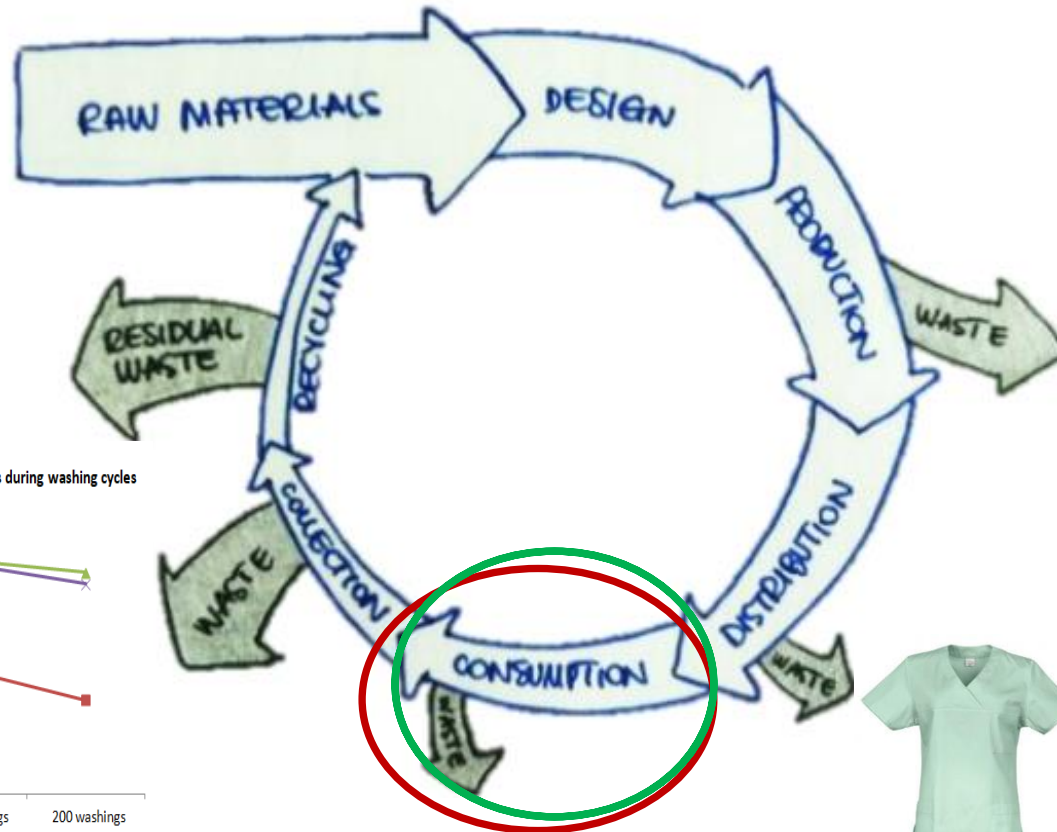
Photos: PBN



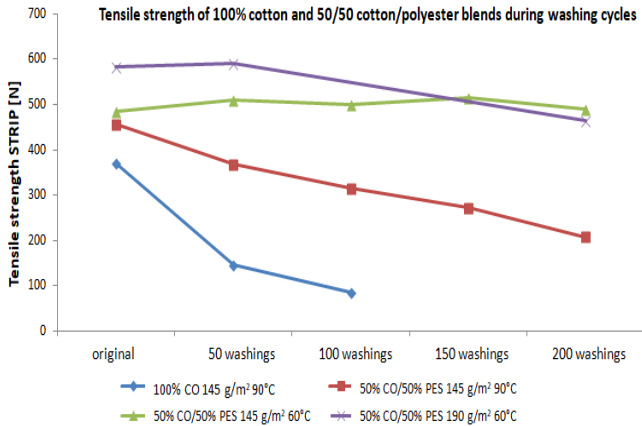
PILOT CASES - STUDIED SCENARIOS

Waste reduction thanks to prolongation of the service life of textiles

inoTEX®



Photos: www.p-servis.eu
Zakl s.r.o.



LEARNINGS FROM THE PILOT CASES



✓ Post-production waste of technical textiles

IW INSTYTUT WŁÓKIENICTWA
Textile Research Institute
5/15 Brzezinska Str., 92-103 LODZ, Poland, www.iw.lodz.pl

□ Waste streams

- Post-production textile waste from production of carpets, woven grass and quilted textile materials (jute, wool, PP, PES)



□ Solution

- Pre-treatment for recycling purposes (waste cutting, defibering), mechanical recycling
- Nonwovens and ropes production (KEMAFIL technology)

□ Potential application areas of new obtained products

- geotextiles • construction industry • heavy industry (sorbents) •
- sealing used for construction of wooden houses forestry • transport •
- decorations •



✓ Post-production waste of technical textiles

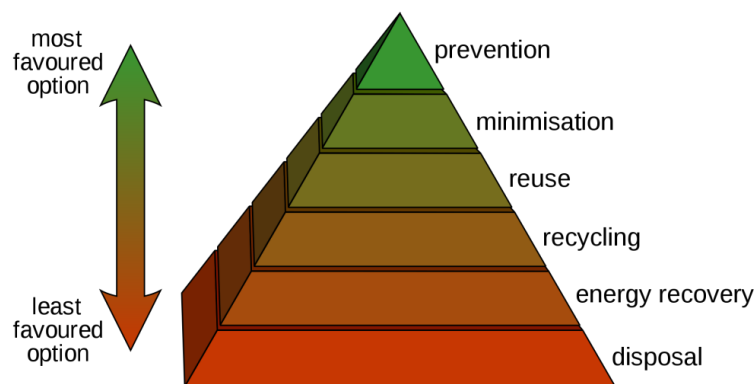
- ❑ New local value chains
 - Solution found thanks to the collaboration of local textile companies, recycling company, experts and research unit
- ❑ Different approach to textile waste streams
 - Engagement of two textiles companies with similar waste streams in terms of their processing possibility, not their composition
- ❑ Solution of the problem of feedstock (small quantities, no regular waste generation)
 - Different textile waste streams from two textile companies were processed in one textile product



- ❑ Solution towards circularity - not only reuse/recycling of textile waste
- ❑ More effective is to avoid/reduce waste generation

➤ DEMATERIALIZATION

- ✓ Prolongation of the service life of textile products



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- Change of the material composition
(pilot case by INOTEX)
- Re-activation of functional finishing
(re-activation of functional effects in laundry service regimes)
- Replacing the disposable products by products for repeated used
(pilot case COVID-19, study by INOTEX)



DEMATERIALIZATION

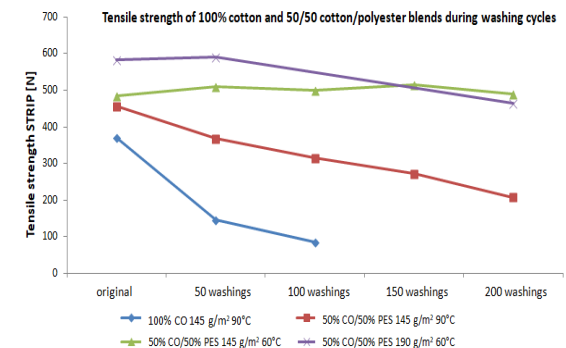
✓ Prolongation of the service life of textile products

inoTEX®

- ❑ Prolongation of the service life thanks to changed material composition
 - 100% cotton vs. blends PES/cotton
- ❑ Waste stream
 - End-of-life medical rental laundry
- ❑ Results
 - Use of blended material can extend the service life by almost 30%
 - Service life (number of washing cycles) as a main parameter in public procurements (x now - the lowest price)



Photos: www.fibertex.com
www.p-servis.eu
www.fnplzen.cz



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- ❑ Companies are interested in looking for solution for their waste
- ❑ Companies are already active and have solution for waste when available

- ❑ MAIN DRIVER = ECONOMY
 - companies *are ready to avoid only discarding* the materials and welcome any opportunity to make these materials profitable

 - it includes also *optimization of the in-house waste management* = costs reduction and efficiency increase in internal waste management

BUT



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KEY PRACTICAL FACTORS DETERMINING THE SUCCESS OF THE STORY

□ ECONOMICAL SUSTAINABILITY

- Regular deliveries of a sufficient quantity of material of constant composition and quality
- In some cases
 - although very valuable waste material
 - although processing company would be interested in,

BUT

processing not profitable due to the

- small production volume of waste
- long distance from waste producer to processing company



KEY PRACTICAL FACTORS DETERMINING THE SUCCESS OF THE STORY

❑ MATERIAL COMPOSITION AND STRUCTURE of processed waste

✓ Recycling Aramidic fibers from workwear garment

❑ Studied pre-consumer materials

- 15 firefighters uniforms - jackets+trousers - only outer shells, no linings

Composition: 70% meta-aramide / 28% viscose FR / 2% antistatic

Total weight: 16,7 Kg

- 26 forest firefighters trousers

Composition: Outershell: 93% meta-aramide/5% para-aramide/2% antistatic

Lining: 50% preox / 25% meta-aramide / 25% viscose FR

Total weight: 34,8 Kg

❑ Main achieved results

- dismantling and selection - fraying - garneting - re-spinning
- resulting recycled yarns with acceptable technical characteristics for reuse for knitting or weaving or non-woven application



KEY PRACTICAL FACTORS DETERMINING THE SUCCESS OF THE STORY

❑ MATERIAL COMPOSITION AND STRUCTURE of processed waste

✓ Recycling Aramidic fibers from workwear garment

Big impact on the yield and cost of the dismantling phase - structure of the garment (number of accessories, labels, different layers, etc.)

- In case of many kinds of pilot waste, available processing technologies were not suitable due to the material composition of waste (complex character, material structure)



□ LEGISLATION



- Waste vs by-product definition
- Cross-border transport of waste

- Good understanding to comply with all obligations - expert advice / legal /administrative support needed
- Impact in terms of availability of materials to be treated (particularly if post-consumer), logistics and related costs



□ INDUSTRIAL SECRECY

- **Company know-how to be protected**
 - Often waste, above all technical textile waste are protected by patents
 - Specific Non Disclosure Agreement to be signed before disclosure of production processes or delivery of samples



Source: <https://fotomelia.com>



- ❑ Raising the close cooperation with other project partners to solve the pilot case
- ❑ Exchange of experience and know-how
- ❑ Establishing business contacts between companies producing and processing waste thanks to cooperation between project partners



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della Provincia di Varese

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Innovation experience

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Textile Research Institute
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THANK YOU FOR YOUR ATTENTION



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