Telaketju
4. open R&D Webinar
16/11/2020

RETEX:
industrial recycling of textile waste streams

ir Daniël Verstraete, Centexbel

RETEX: recycling of textile waste streams

- RETEX

- Partners: UPTEX (EURAMATERIALS) (F)
  CD2E (F)
  FEDUSTRIA (W)
  CENTEXBEL (VL)

- 1 october 2016 -> 30 september 2020 (31/12/2020)

RETEX: recycling of textile waste streams

- Ultimate aim: transformation of textile waste streams into raw material (fibres, filaments) for the local textile industry

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- Textile waste streams (cotton, polyester)
- Textile recycling processes

Textile waste streams (cotton, polyester)

- E.O.L.

- I.W.

Textile recycling processes

- Chemical recycling
- Thermoplastic recycling
- Mechanical recycling

Chemical textile recycling

Transformation of textile waste via **chemical processes** into elementary component(s) (molecules) + polymerisation

- Several projects running (PES, CO)
- PA6 (Econyl)

Thermoplastic textile recycling

Convertion of textile waste via **mechanical and thermal processes** into raw material for extrusion

- Fusible
- Pellets, granulate
- Extrusion filaments (mono/multi), injection molding

Mechanical textile recycling

Convertion of textile waste into spinnable fibres through **mechanical processes** (cutting / tearing / unravelling)

- Woven fabrics and knitwear
- Fibre length

RETEX actions textile recycling

- Chemical recycling: technology watch
- Thermoplastic recycling: labtrials en (test)value chains
- Mechanical recycling: industrial (test)value chains

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RETEX: thermoplastic textile recycling

100 % POLYESTER

RETEX: thermoplastic textile recycling

- Labtrials at CTB-VKC
- Mechanical en thermal processes:
  - Preparation (cutting, cleaning, ...)
  - Shredding (fluff, flakes, ...)
  - Compacting (=>pellets) => crystallizing and drying
  - Thermogranulation/compounding (=>granulate)
  - Extrusion / injection molding=> filtration

UPGRADE RHEOLOGICAL PROPERTIES

Interreg
France-Wallonie-Vlaanderen
GoToS3
RETEX

RETEX: thermoplastic textile recycling

97,5% + booster

EXTRUSION

75% / 50%
35% / 25%

MULTIFILAMENT

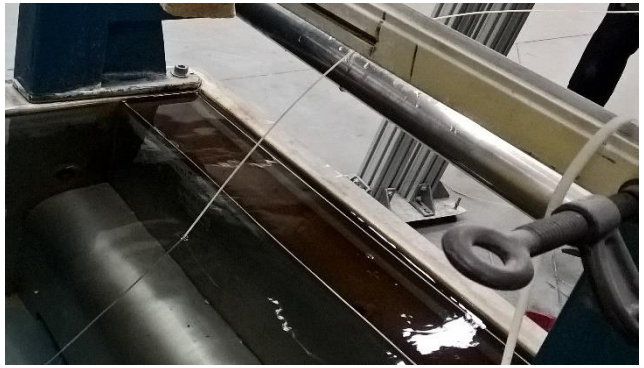
MONOFILAMENT / TAPES

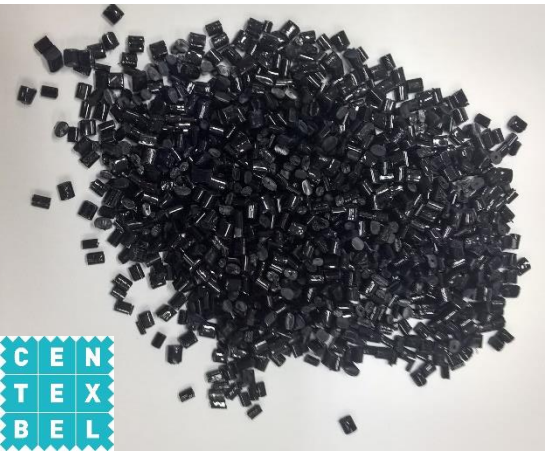
100%

INJECTION MOLDING

100%

RETEX: thermoplastiC textile recycling





RETEX actions textile recycling

- Chemical recycling: technology watch
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RETEX tests pilot line @ LAROCHE

CO, PES, PES/CO E.O.L.
Mixed
Buttons, zippers

EXEL → CADETTE → FIBRES

100 % CO E.O.L
Sorted
No buttons, no zippers

CADETTE → FIBRES

PES/CO E.O.L.
Hospital clothing
Buttons, zippers,
coloured collars &
cuffs

EXEL → CADETTE → FIBRES

CETEX BEL

Retex

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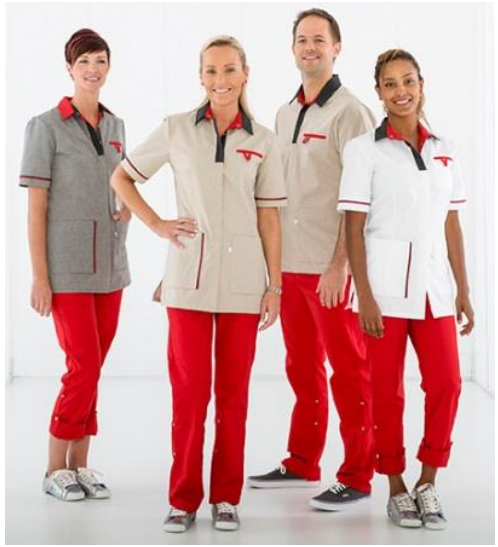
GoToS3
RETEX

RETEX tests pilot line @ LAROCHE

utexbel
PASSION>PROCESS>PROGRESS



eurofrip
SECONDHAND CLOTHING - FRIPERIE

CENTEXBEL

40/60
PES/CO

utexbel
PASSION>PROCESS>PROGRESS

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RETEX (test)value chain PES/CO

VAN MOER

MINOT RECYCLAGE TEXTILE

utexbel
PASSION>PROCESS>PROGRESS

CENTEXBEL

65 % PES
35 % CO

CENTEXBEL

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RETEX (test)value chain PES/CO

- Collecting ±2t EOL jackets and trousers via industrial laundry
- Removal of hard points (buttons and tags) by social employment company
- MINOT: unravelling => fibres
- UTEXBEL: spinning **=>** yarn
- UTEXBEL: weaving & finishing => fabric
- VAN MOER: making up => hospital jacket

RETEX (test)value chain PES/CO

80/20 PES/CO

30/1 Nm
67/33 PES/CO
>50%

210 gsm
67/33 PES/CO
>50%

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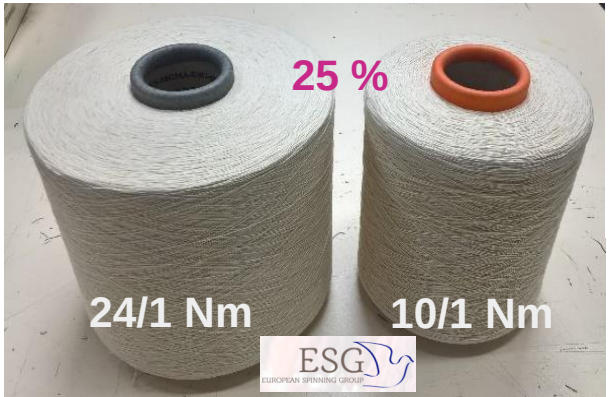
RETEX (test)value chain 100% CO

RETEX (test)value chain 100% CO



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25 %

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RETEX actions textile recycling

- Chemical recycling: technology watch
- Thermoplastic recycling: labtrials en (test)value chains
- Mechanical recycling: industrial (test)value chains

RETEX: some of the conclusions

- Technical feasibility:
  - Thermoplastic recycling of 100% PES (IW & EOL)

    (Machinery for recycling of plastics / upgrade of rheological properties)
  - Mechanical recycling of EOL (PES/CO) & IW (CO)

    (Machinery for recycling of textiles / fibre length)
- Homogeneity of the textile waste stream => sorting !
- Cotton:

  high DP => mechanical / low DP => chemical

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SIOEN

VdSWEAVING
innovative partnerships

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BERGER

De Poortere

PEIGNAGE DUMORTIER S.A.S.

Berry

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Complete Solutions for Plastics

sarco

procotex
SA CORPORATION

MINOT RECYCLAGE TEXTILE

EVADAM N.V.

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TACOTEX

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Fabricant français
LEMAHIEU
depuis 1947

Terre

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CLOSING EVENT
FREE WEBINAR
3/12/2020
15H00 – 18H00

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