Municipal waste management for textile circularity

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Municipal waste management company

- Located in South-West Finland
  - Co-owned by 17 municipalities
- Collecting post-consumer textiles since 2016

- Goal is to:
  - establish a nationwide model for handling post-consumer textiles
  - provide opportunities for textile circularity in Finland

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Textile is the only high value fraction left in mixed municipal waste

Municipal waste management companies

- Are responsible for residual household waste - also textile waste
- Guided by waste hierarchy and waste prevention
- Can act as neutral circular economy platforms
- EU requirement for separate collection of textile waste in 2025
  - 2023 in Finland?
- National and international cooperation
  - Between public waste management / research / industries
  - Member of Telaketju -network
Comprehensive solution requires simultaneous development

- Separate collection and pre-sorting of post-consumer textile
- Sorting and refinement plant
- Cooperation with stakeholders and industrial partners
Comprehensive solution

Collection

Pre-sorting

Optical material identification and sorting

Refinement plant

From fibers to final products
Nationwide operating model
- mutual practices in collection

- Collection at waste treatment centers / sorting stations

- Supplementary collection schemes:
  - Second hand markets
  - Supermarkets / shopping centers
  - Clothing and fashion stores
    → Transparent collections models in cooperation with municipal waste management
    → Possible EPR models

- Handling services for businesses
Nationwide operating model
- mutual practices in sorting operations

- Regional pre-sorting with local partners
  - All textiles to be sorted with same instructions
- Sorted textiles are transported to the pilot refinement plant in Turku region
  - Handling contracts and shared costs between MWMC’s
- Development of collection and presorting is synchronized with the refinement plant schedule
  - Expansion to nationwide textile collection is to be organized in phases by 2023

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Optical material identification

• Hand-held NIR devices to supplement manual sorting
  • Development with Finnish technology partner Spectral Engines

• Able to separate monomaterials from blended textiles
  ✓ purity requirements for recycling technologies

• Schedule:
  • 2019: development, testing and validation of results
    ➢ Evaluation for operational suitability
  • 2020: operational test phase
    ➢ Devices shared with partners in multiple locations
Refinement plant

- Sorting
- Cutting
- Hard parts removal
- Opening the fibers
Industrial partnerships

• Sorted textiles to be mechanically refined into recycled fibers
  ▶ Yarn, non-wovens, composites, chemical refinement...

• High added value ensured by high quality sorting systems

• Ability to supply the textile industry with recycled raw material
  • Process and product development in cooperation with customers/partners
Schedule and possibilities

• 2019 - 2021 Pilot phase
  • Scheme development, handling contracts, procurements, facility + operation start-up
  • Capacity 1 000 ➤ 5 000 t/a

• 2022- 2024
  • Scale-up to match national textile volumes and needs
  • Possible public/private/nordic/baltic partnerships
  • Capacity 5 000 ➤ 20 000 t/a

• 2025 ➤
  • Services for Baltic Sea region
  • Capacity 20 000 ➤ 100 000 t/a?
Comprehensive solution

Found yourself? Please take a contact!

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