NordicBio

Circular bio-based nonwoven products in MedTech applications

NordicBio project financed by:

BIO INNOVATION

BUSINESS FINLAND

Med stöd från: VINNOVA Energimyndigheten FORMAS STRATEGISKA INNOVATIONS-PROGRAM

WARGÖN INNOVATION

Fyrbodal

Vänersborgs kommun

VÄSTRA GÖTALANDSREGIONEN

EUROPEISKA UNIONEN
Europeiska regionala utvecklingsfonden

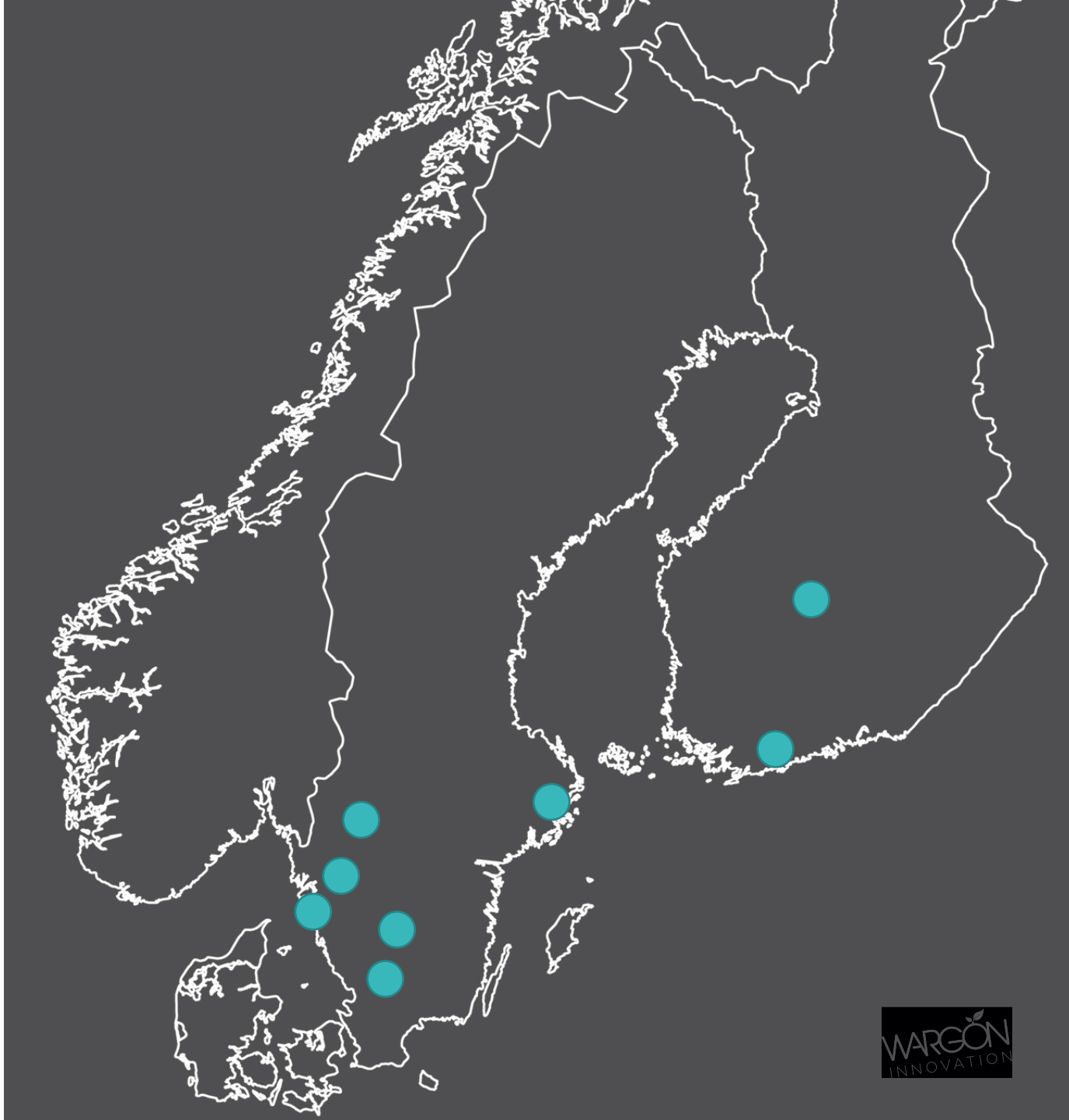
Project partners

FINLAND

- VTT, research institute
- Pure Waste Textiles, SME focusing on garments from 100% recycled fibres

SWEDEN

- Wargön Innovation, test- and demo facility, part of Innovatum Science Park
- RISE, research institute
- Cellcomb, SME focusing on healthcare and food products
- Sporda, SME high-loft nonwovens
- Fiber-X, SME development partner
- Södersjukhuset, large hospital and customer



Budget EUR 353 914
Financer Business Finland
& project partners

Budget SEK 2 300 000
Financer BioInnovation/Vinnova (50%)
& project partners

Addressed challenges

- Huge amounts of fossil-based disposable nonwoven MedTech products on the market
- Huge amounts of post-consumer and post-industrial textile waste to incineration
- Fossil-based textile fibers are predominant globally with a market share of about 65%
- Some technologies exist to address the challenges, but they need to be developed and connected in new systems

Purpose and aim

- Demonstrate bio- and circular material flows in nonwoven-based MedTech applications
- Develop yarn and garment production using plant-based textile fibres and shredded post consumer textile waste
- Develop prerequisites to scale and commercialize the above using Finnish and Swedish key technologies

Key technologies were tested

FINLAND

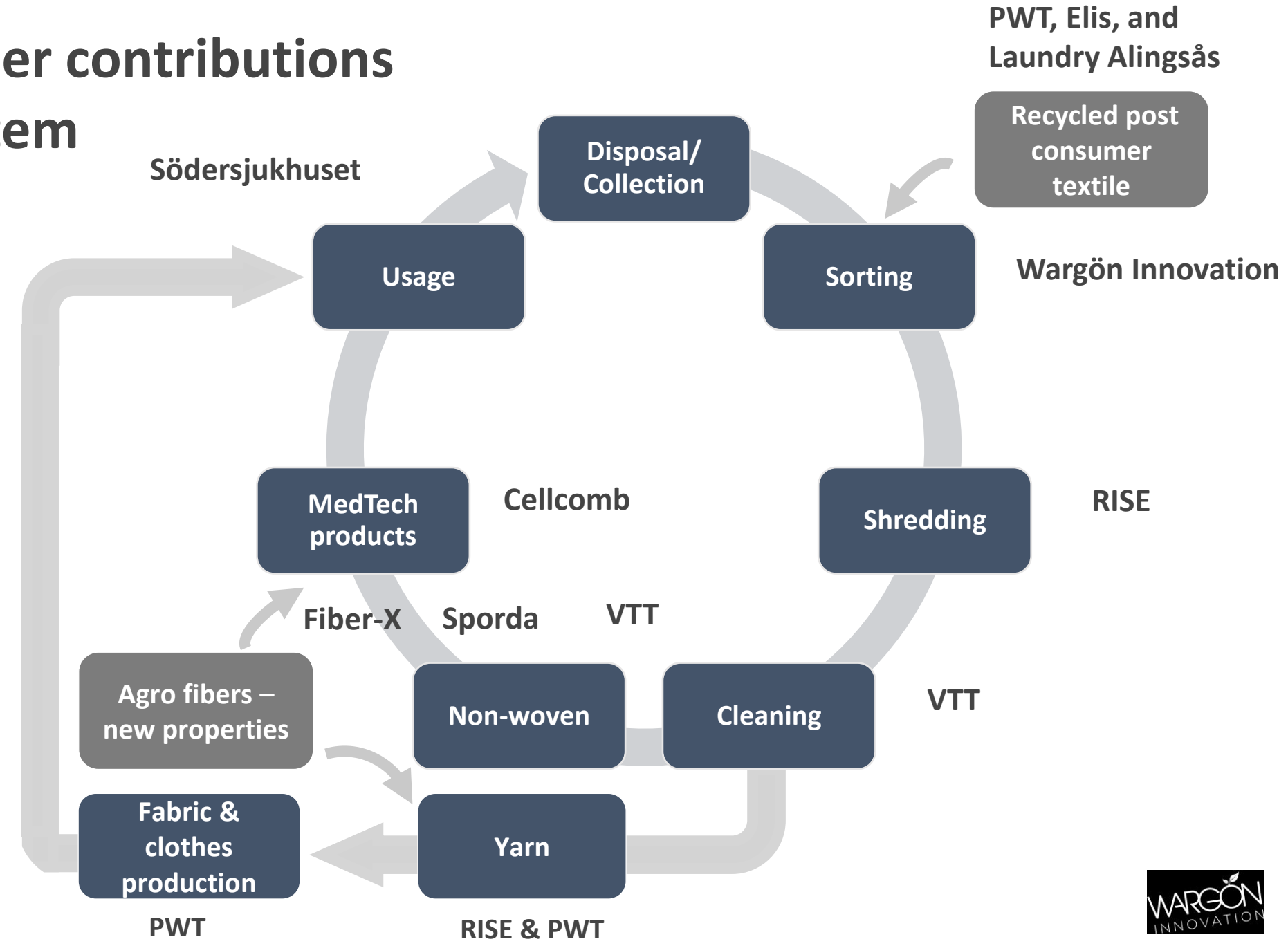
- Foam forming at VTT, Lab and pilot scale
- Cleaning at VTT, Lab and pilot scale
- Ring-spinning at PWT, Lab scale

SWEDEN

- Textile sorting/preparing at Wargön Innovation, pilot scale
- Shredding at RISE, pilot scale
- Open-end Spinning at RISE, pilot scale
- Lamination at Cellcomb, industrial scale
- Carding at Sporda Nonwoven, industrial scale
- Wet laying at Fiber-X, pilot scale

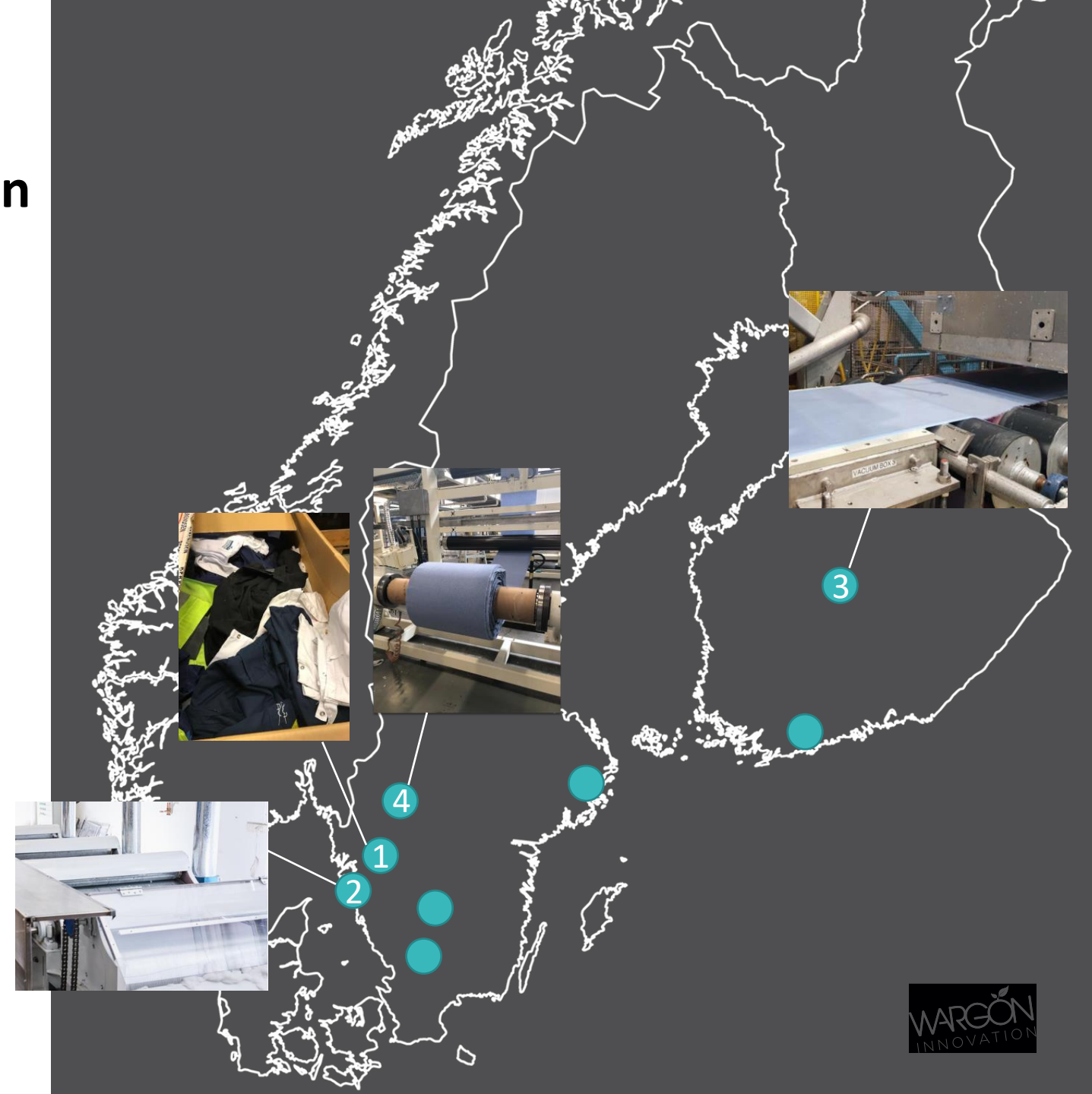
Open-end spinning at RISE

NordicBio partner contributions in a circular system

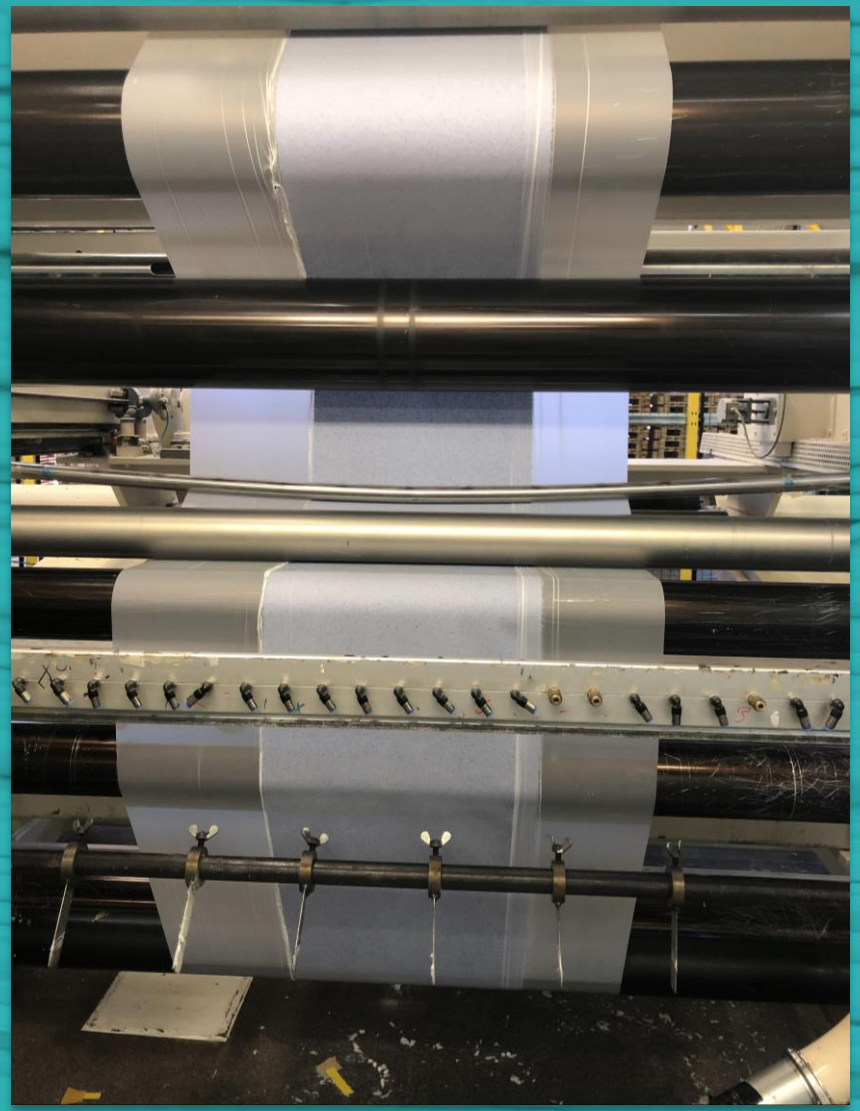


Non-reusable workwear and cellulose fibres goes nonwoven

1. Elis Textil Service AB and Swedish laundry Alingsås provided about 400 kg non-reusable workwear that was prepared for shredding at Wargön Innovation
2. Prepared textiles were shredded at RISE in pilot shredder
3. About 250 kg shredded textiles were delivered to VTT for foam forming in pilot plant
4. Two rolls were sent to Cellcomb for lamination in industrial plant



Starched-based lamination for nonwoven containing recycled textiles, cellulose pulp and BiCo binder



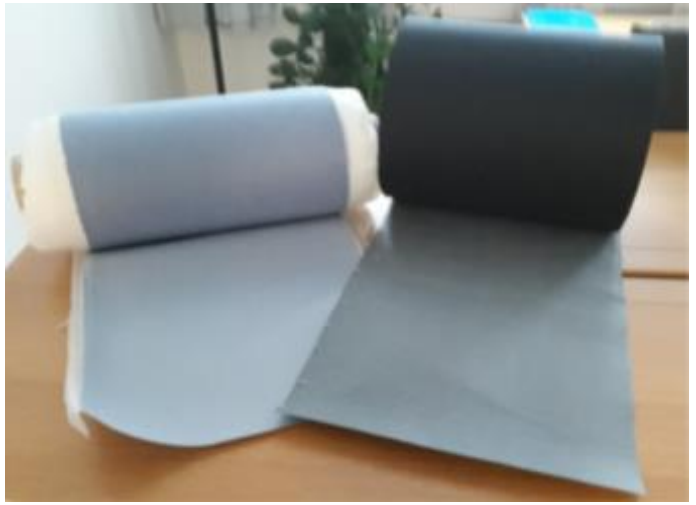
Starch-laminated rolls as material in MedTech has potential

Results starch-laminated rolls

- Foam forming: same level of strength as in commercial samples (note higher grammage)
- Lamination: Good runnability

Next step

- Challenges: too high grammage and too stiff
- Opportunities:
  a) Add values like absorption
  b) Use strength additives
  c) Use and develop refining
  d) Make cost-environment-quality analysis



50% recycled polycotton	25% unrefined cotton
20% BSKP*	45% refined cotton
30% BiCo	30% BiCo

Examples of other results

Yarn from recycled post consumer --- Knowledge about laundry processes & nonwovens --- New collaboration opportunities

* Bleached Softwood Kraft Pulp

Thanks!

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