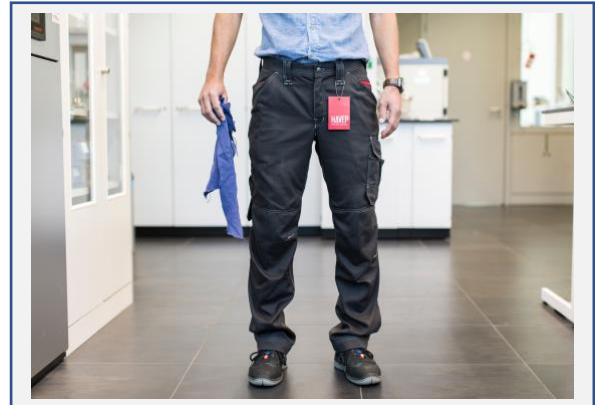


GRADUATION ASSIGNMENT SIGNWEAR

Saxion started the research with an inventory for the state-of-the-art of various recycling techniques and the expected developments in the next 5 years. A distinction is made between mechanical textile recycling (including extrusion as a processing method for 100% synthetic fibers) and chemical recycling of cotton and polyester. Based on this inventory, the requirements that the recycling processes (often still under development) impose on the textile to which designer will have to conform as much as possible, taking into account the functional properties that the products must have.



In addition, research will be conducted into sustainable fibers, haberdashery, nonwoven, laminates, constructions and sustainable processing processes, whereby the sustainability will be calculated using tools (such as the MODINT Ecotool) or compared qualitatively with less sustainable alternatives. It is important that the producers of the products document the materials and processes used in a so-called materials passport. This includes information regarding the traceability of the materials, as well as the operations that the materials undergo. It will be investigated whether a tracer (and if so in what form) could have added value here.

TASK DESCRIPTION

1. Preliminary research into state of the art and future developments with regard to textile recycling and technologies, and determining the scope of the research (which categories of clothing are involved)
2. Technical research into state of the art and future developments of textile recycling and preconditions for the input:
 - Mechanical recycling
 - Recycling by means extrusion
 - Chemical recycling
 - Polyester
 - Cotton
 - Polyester-cotton blends
 - Sorting, separation and pre-treatment techniques for discarded textile products
3. Set requirements for the product design with a view to material recycling:
 - Choice of materials (including recycled materials, haberdashery, constructions etc.) and processes (yarn and cloth production, finishing)
 - Procedure for determining the potential environmental impact of products design
 - Making examples (prototypes or parts of prototypes) of sustainable alternatives (if possible, in collaboration with ROC students)
 - Traceability of textile raw materials in all phases of the life cycle
 - Prop for a materials passport for textile products
4. Develop a strategy with the corporate clothing category and KPU company with regard to tendering for circular textiles:
 - Requirements for tenders for circular textile products
 - Which technical specifications can be replaced by functional specifications? (reformulate 3 specific tenders)
 - Determine which products (or products groups) qualify for circular tendering
 - Potential role of BIGA group in circular objectives

PRACTICAL INFORMATION

- **Student profile:** We are looking for students who are going to work on their final thesis:
 - Master students Innovative Textile Development
 - Bachelor students Fashion and Textile Technology
- **Contact person(s) for this assignment:** Theresia Grevinga, t.h.grevinga@saxion.nl
- **Research group Sustainable and Functional Textiles:** saxion.edu/sft