

# ROADMAP TOWARDS MORE REUSABLE TEXTILES AT HOSPITALS

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**Abstract:** medical applications of textiles are a huge market. However, many products are disposable, causing considerable sustainability challenges. This paper reports on a roadmap to reduce the amount of disposable textiles by adopting reusables. The study addresses reasons for (not) choosing reusables, but also addresses their sustainability issues.

**Keywords:** *reusables, disposables, comfort, sustainable design, hospital.*

Textile products find many applications in the medical field. They cover a very broad range of fibre types, textile structures and functionalities. The market is expected to reach 23.3 billion US dollars by 2025 representing an annual growth rate of more than 6% [1]. Almost one third are disposables [2]. Consequently, this market has a huge potential to increase sustainability.

However many factors stand in the way of switching from disposables to reusables. This concerns price, cleaning, washing, decontamination, logistic handling, just to name some.

Yet compared to disposables, reusables could be more comfortable and include intelligence. Overall, technical, financial and psychological factors have to be considered to enhance the use of reusables at the hospital.

The Flemish project ReCure [3] aims to elaborate a roadmap towards smart reusable high quality care products. The project includes a part on mapping the use of textiles at the operation theatre from the different points of view. Ghent university focuses on the value added by improved comfort and introduction of smart textiles, whereas Antwerp University studies the practical factors related to using both disposables and reusables. Case studies in collaboration with industry are to demonstrate the feasibility and added value of switching to reusables.

Research has identified one key barrier to the adoption of reusable medical textiles: the negative perceptions held by healthcare staff. To tackle this issue, we conducted an investigation into the tactile and thermophysiological comfort of surgical reusable gowns, comparing them with their disposable counterparts using both subjective and objective evaluation methods. Our findings revealed that reusable gowns offer several comfort-related advantages over their disposable counterparts.

The study aims to address end-of-life challenges in the domain of smart textiles, thereby enabling the recycling of

textile components and reducing the environmental impact. In our approach, a copper-coated electrically conductive fabric was bonded to a non-conductive fabric using a thermoplastic polyurethane (TPU) hot melt technique to create a heating garment. This method was chosen to enable effortless separation of the components when necessary, while also ensuring secure attachment capable of withstanding the mechanical and physical stresses associated with regular wear

Various smart components can be integrated into medical textiles to enhance their reusability. These components could have active and non-active features, which serve diverse functions such as tracking the product's usage and monitoring its lifecycle. For instance, these components can facilitate the tracking of how many times the product has been utilized and laundered. This tracking capability offers invaluable insights for managing inventory, ensuring hygiene standards, and optimizing the lifespan of the textile products.

Radio Frequency Identification (RFID) represents one such component.

Last aspect of the study was methods to follow up the performance of the product. It is indeed important to take out products that don't perform good enough anymore due to wear.

The result of this study is a roadmap that describes actions to be taken on short and long term, including information to stakeholders as well as product and process innovation.

## REFERENCES

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