

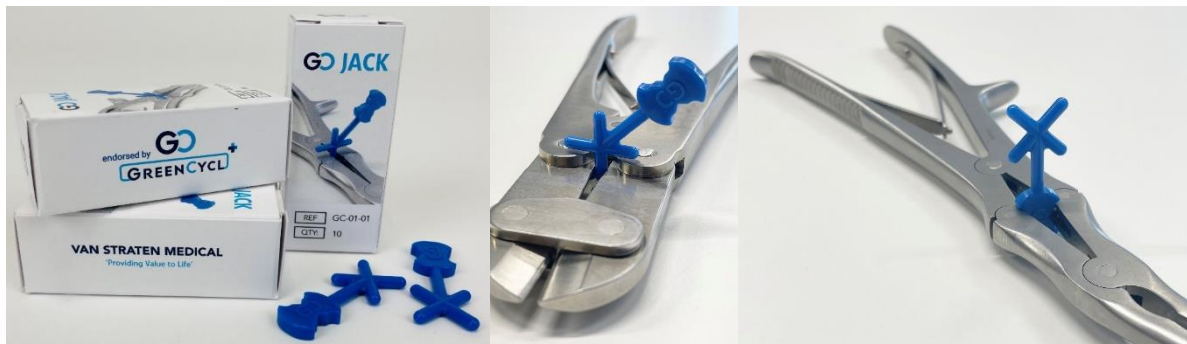
Title

Developing an automated packaging process to package a new generation of medical products made out of waste

Problem statement

Medical devices are often designed according to mass-production incentives. Aimed cheap, for global use and produced fast and in high volumes. Sustainable design has not been used widely and due to growing use of disposables, medical waste streams have grown significantly over the years. Packaging is an important aspect with often multi-layer packaging and growing use of materials. In line with the Green Deal and the climate goals, it is important to reinvent medical devices including its packaging.

For the first time in 2021, a medical device - an instrument opener called the GO Jack - was made from 100% blue wrapping waste, recovered from the Maastad Hospital in Rotterdam. This instrument opener received a CE approval on 22 March 2022. The packaging for this instrument was designed out of grass carton in order to ensure sustainability of the product. Currently, the instrument openers are packaged manually. This process is currently not sustainable and needs improvement and investigated if it's a viable large scale solution for other branches.



Research question(s)

How can an automated packaging process be designed creating the highest level of sustainability?

1. What possible scale-up and other sustainability improvements may contribute in comparison with a classic plastic packaging?
2. What packaging steps need to be developed to ensure automated packaging of the GO Jack instrument opener?
3. What other aspects can contribute to the highest sustainability level of the GO Jack?



Expected type of work

Interviews in combination with material flow analysis, stakeholder analysis and process optimization. Design improvements of current packaging.



Remarks

A high level of creativity will help with this assignment combined with interest in process engineering and sustainable solutions.

References

- B. van Straten, D.R. van der Heiden, D. Robertson, C. Riekwel, F.W. Jansen, M. van der Elst, T. Horeman, Surgical waste reprocessing: Injection molding using recycled blue wrapping paper from the operating room, Journal of Cleaner Production, Volume 322, 2021, 129121, ISSN 0959-6526, <https://doi.org/10.1016/j.jclepro.2021.129121> .

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