

# Designing a process for manufacturing bicycle inner tubes into a sheet material for the production of products from Het Nieuwe Logisch

## *Public summary*

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### **Project aim**

Het Nieuwe Logisch is a brand that sells bags made out of recycled materials, like tarpaulin and bicycle inner tubes. Currently the production process of these inner tubes is time consuming and the results deviate between the bags. The goal of this thesis is to optimize the production process of inner tubes into a sheet material that looks professional and refined. The focus product used for this is their existing fanny pack because it is expected that the changes would be most visible on the fanny pack and it is currently the most produced product, making prototyping faster.

### **Research**

The research questions that guided this thesis are; “What is the best process to open, clean and process bicycle inner tubes into a sheet material for the production of products from Het Nieuwe Logisch, using the fanny pack design as reference?” and “How to make bicycle inner tubes into a material that has professional and refined qualities according to customers?”

To answer these questions research was done into the current process and alternative methods that other companies. The current process includes cutting the tubes open and cleaning them by hand, after which they get sewn together to make a sheet. Alternatives to this include sewing the tubes together without opening and cleaning them in washing machines (Nukak, n.d.).

To test if these alternatives would work for Het Nieuwe Logisch, experiments were conducted with washing machines and different ways of opening the tubes. It was found that when opening a tube it is difficult to be fast and create a neat cutting edge at the same time.



*From bicycle inner tube to sheet material*

### Ideation and conceptualisation

After the experiments ideation was done into tools to open the tube and into different methods of connecting the tubes into a sheet. This resulted in two concepts for the look of sheet, a closed sheet that uses unopened tubes and a combination of closed tubes sewn on small strips of opened tube. These two concepts were made into a fanny pack after which they were compared to the original version. This was done by asking potential customers on the street about their preference and digitally with an Instagram poll. Besides that they were compared on the time it cost to make the fanny packs, on the costs and on how well they fulfilled the requirements that were set earlier after the research phase. From this it could be concluded that the final cost between the fanny packs did not differ that much and that visually the combined fanny pack was preferred. Because it is important that the sheet can also be used on their other products, a prototype of the travel bag was made as well. Here too, the combined sheet was visually preferred.

### Final design and recommendations

The combined sheet is thus the recommended sheet for the production of products of Het Nieuwe Logisch. The sheet gets made by cutting the round tubes into three strips, to which flat tubes are sewn close together. After that the sheet can get cleaned in a washing machine or by hand. From the sheet the needed templates can be cut by hand, because only straight lines need to be cut. The final prices should be determined by the sewing workshop, but the production cost for the fanny pack is expected to at least increase from €15,-, to €16,-, excluding the sewing supplies. This is mostly because more time is spent on making the fanny pack look more refined. Because the company wants to upscale their number of products sold, they could look into making their customers more aware about the qualities of their product, which could result in a larger willingness to buy from the customer (Deloitte, 2023). With this new design the production time of the sheet reduced with 35% and according to the customer the new material looks more professional, durable and refined.

### References

- Deloitte. (2023). *Conscious Consumerism, Understanding the dilemmas of today's consumer*.
- Nukak. (n.d.). *Production*. Retrieved May 11, 2023, from <https://www.nukak.es/en/content/33-produccion>



*Het Nieuwe Logisch fanny packs*