Public summary

According to a research of Fishman, Böcker and Helbich (2015), the Netherlands is the number one country when it comes to cycling as a means of transport. Many people take the bike to go to work or while doing groceries. A downside of this lifestyle is that the streets of big cities are filled with lingering bicycles. A solution would be to place stationary bicycle racks, but this is not always an option. This is because space can be scarce, especially in urban areas. In this report a design process was done in order to find a solution for flexible bicycle parking. A design method was used, consisting of research, concept ideation and concept development. During the research phase several design requirements were devised. A concept was designed based on these requirements, and this concept was developed for production. Two models were made: model O and model Triangle. Both models can be seen below:

Figure 1: model Triangle (left) and model O (right).

The product that was designed in this report is a folding bicycle rack. This means that the product can be folded in or out, depending on the wishes of the owner. It works as follows: the product can be folded out, until it is in a vertical position. In the vertical position it can be used as a support, where bicycles can be parked onto it safely. If the product is not being used for the moment, the rack can be folded in until the rack is in a horizontal position. In horizontal position, the rack fits exactly into the bottom plate and is therefore completely levelled to the ground. Pedestrians can simply walk over the product and cars or trucks can drive over it. Furthermore, the space allotted for the product can be used in other ways: people can place a terrace on top of it, place advertisement, or use the space in another way.

The rack is placed inside a bottom plate. The bottom plate contains a notch in the shape of the rack, but slightly bigger. This way, the rack can easily be folded into the bottom plate. A lock in the bottom plates makes sure that the rack cannot be folded out by anyone other than the owner of the product. Furthermore, there is an administrator lock inside the rack which allows the owner of the product to quickly open the rack. By opening the rack he can remove unwanted bicycles from the rack if this is needed.

The product contains a custom made hinge. This hinge makes sure that the rack is stable in both the vertical and horizontal position. The rack can be folded in and out easily, even though the hinge is located beneath the ground. The hinge is made in such a way that the product can easily be assembled and disassembled. If the rack or another component is broken, the broken part can easily be replaced.

Figure 2: one of the models, in different positions.

The product is intended to be used for temporary bike parking during shopping hours. It is an alternative and additional parking solution. Shop owners can put this bike rack in front of their shop to provide an extra service to their customers, or to lure in new customers. Shop owners can choose to fold out the rack during the day, and clear space during the night. Owners of night shops, clubs and bars may want to fold out the rack during the night instead.

The product is an alternative to filling the streets with stationary bicycle racks. A bicycle rack guides the parking behaviour of cyclists, which will free up certain parts of the street. It also provides more insight into bicycles that are not being collected by their owner. The product was designed to be used in shopping streets, but it can also be used in other ways. It can for example be used on car parking spots in order to regulate the amount of parking spaces between cars and bicycles. Another option is to transform public squares into temporary bicycle parking spots by merely opening the racks. Lastly, the product can be used to replace existing bicycle racks. The folding bicycle rack can easily be removed from the streetscape by folding it in, while stationary bicycle racks have to be taken out of the street completely; an operation that costs significantly more effort and money.

The product was designed to provide flexible parking space in shopping streets, but it has proven to be a valuable product in many other situations. Furthermore, the product is competitive in the market and it has proven to be popular among the potential customers.

References

Fishman, E., Böcker, L., Helbich, M. (April 7, 2015). Adult active transport in the Netherlands: an analysis of its contribution to physical activity requirements. PLoS One. Retrieved April 30, 2019 from https://www.ncbi.nlm.nih.gov/pubmed/25849902