

The design of a disposable biodegradable tea bag for loose leaf tea

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TeaWall is a start-up company whose aim is to provide high quality tea, in a similar manner as is currently done for coffee. Coffee went from simple filter coffee to the current high-end machines with many different options and high quality beans, yet those who want tea are often resigned to supermarket bought boxes or tea prepared on the basis of instant powder. Consequently, TeaWall has created a tea machine with high quality loose leaf teas. The loose leaf tea and brewing that TeaWall provides is much better in terms of taste and sustainability than tea made with square prepackaged tea bags. Characteristics like the type of water, diffuse time, and leaf quality all have an influence on the quality of the tea, but a lot of people are not aware of this yet.

To filter the loose leaf tea, TeaWall currently offers their customers a choice between a reusable stainless steel tea infuser and a single-use tea bag to use with their machine. The assignment's objective was to design the single-use tea bag which enables the user to easily consume the tea from the tea machine. Furthermore, a storage box had to be designed which can hold the tea bags next to the tea machine, so the user can easily access the tea bag.

The tea bag had to be cost-effective, easy to use, producible, disposable as organic waste, fit all common cup sizes and had to work with the machine of TeaWall. The design challenge that arose was the trade-off between creating a product that is sustainable and easy to use, while also making it easy to produce and cost-effective.

Through analysis of existing products, materials and production techniques and the creation of several concepts, it was possible to come up with a design which solved this design challenge. By creating a fold-out cardboard border at the top of the tea bag, it can fit multiple cup sizes and can be made compact enough to store it in the storage solution which was designed. Sustainable biodegradable materials are used, which contain additions of PLA, a biodegradable plastic material. This made it possible to create a product which can be thrown away with organic waste and is producible due to its heat sealable characteristics. Heat sealing the tea bag is a cost-effective and fast production method which allows the cardboard border and the tea filter paper of the tea bag to be connected.

The usability aspect of the tea bag, which was part of the aim, was tested by performing two user tests. These user tests proved that the concept could be considered as easy to use. Even though its form is kept simple, taking the price and producibility of the tea bag into account, the design was still considered as intuitive and user friendly by the participants of the user tests.

Although the design meets most of the established requirements and was proven to be effective with the user tests, it was only tested with a limited amount and variety of users. This means that for proper validation of the design, it is advisable to do more user testing. Furthermore, the use of materials proved to be cost-effective, the material cost was kept low. However, the production costs of the tea bag still need to be established.

The storage box which was designed, was only developed up to the concept phase. Therefore, details like its production, cost and usability have to be investigated and determined.