



저작자표시-비영리-변경금지 2.0 대한민국

이용자는 아래의 조건을 따르는 경우에 한하여 자유롭게

- 이 저작물을 복제, 배포, 전송, 전시, 공연 및 방송할 수 있습니다.

다음과 같은 조건을 따라야 합니다:



저작자표시. 귀하는 원저작자를 표시하여야 합니다.



비영리. 귀하는 이 저작물을 영리 목적으로 이용할 수 없습니다.



변경금지. 귀하는 이 저작물을 개작, 변형 또는 가공할 수 없습니다.

- 귀하는, 이 저작물의 재이용이나 배포의 경우, 이 저작물에 적용된 이용허락조건을 명확하게 나타내어야 합니다.
- 저작권자로부터 별도의 허가를 받으면 이러한 조건들은 적용되지 않습니다.

저작권법에 따른 이용자의 권리는 위의 내용에 의하여 영향을 받지 않습니다.

이것은 [이용허락규약\(Legal Code\)](#)을 이해하기 쉽게 요약한 것입니다.

[Disclaimer](#)

Master Graduation Project

Adding Value to 'Boksoondoga' through
Product (re)Design

Sung Keun Lee

Department of Creative Design Engineering

Graduate School of Creative Design Engineering, UNIST

2017

Adding Value to 'Boksoondoga' through
Product (re)Design

Sung Keun Lee

Department of Creative Design Engineering

Graduate School of Creative Design Engineering, UNIST

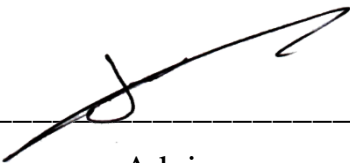
Adding Value to 'Boksoondoga' through Product (re)Design

A report submitted
to the Graduate School of Creative Design Engineering, UNIST
in partial fulfillment of the
requirements for the degree of
Professional Master of Design-Engineering

Sung Keun Lee

01. 04. 2017

Approved by



Advisor

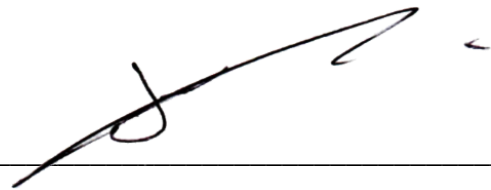
James A. Self

Adding Value to 'Boksoondoga' through Product (re)Design

Sung Keun Lee

This certifies that report of Sung Keun Lee is approved.

01.04. 2017



Advisor

James A. Self



Committee Member

Chajoong Kim



Committee Member

KwanMyung Kim

Adding Value to 'Boksoondoga' through product (re)design

Copyright © 2017 by Sung Keun Lee

A MGP report submitted to the faculty of UNIST by

Sung Keun Lee

In partial fulfillment of the requirements for the degree of Professional Master in the Graduate School of Creative Design Engineering. The study was conducted in accordance with Code of Research Ethics.

Graduate School of Creative Design Engineering, UNIST
2017

Approved by:

Professor, Dr. James Andrew Self, Advisor
Graduate School of Creative Design Engineering, UNIST

Professor, Dr. ir. Chajoong Kim
Graduate School of Creative Design Engineering, UNIST

Professor KwanMyung Kim
Graduate School of Creative Design Engineering, UNIST

Executive Summary

Identifying and exploiting local specialties are effective and useful strategies for local development. In Korea, the government promotes local industry, and developing a local specialty is a part of this. A specialty product not only improves local industry from an economic standpoint but also increases the design of cultural contents. One company called Boksoondoga has a certificated field specialty as an alcoholic beverage brand in Ulju-gun, Ulsan. Moreover, the company's representative product rice wine is a kind of brewed rice wine of traditional Korea. This product earned local-specialty-wine approval from the ministry of agriculture and forestry in 2010. Boksoondoga rice wine could not be produced in large quantities due to the traditional brewing method of achieving natural fermentation by using local newly harvested rice and malt instead of using preservative and artificial yeast. This product is so unique because of its naturally occurring carbonic acid. It is refreshing like champagne and offers a deep, smooth flavor. Moreover, contrary to other brewed rice wines, it can be blended naturally even though it cannot be shaken when opened. A company has several national ongoing projects, not just focusing on a representative product but also using its brand value to engage in storytelling in the cottage industry rather than just concentrating on mass production in the factory setting. A company with such a characteristic faces the disadvantage that it is difficult to use mass production and large-scale marketing methods, unlike the situation facing other competitors in the same product line. However, it has the advantage of expanding and challenging its business, with there being a high degree of freedom regarding risk. Boksoondoga wants to bring a high-class touch to making rice wine, one of the traditional wines, the representative drink of Korea, like Japanese sake. Making the appearance of the bottle distinctly different from those of other companies' products is also part of this goal. The initiative, which began six years ago, has been spectacularly successful and has more capacity than do those of the company's competitors. Its relatively high-priced sales method has also provoked a positive response from consumers.

Currently, trends in the domestic alcohol-consumption market have become more accessible; the age group of consumers has been lowered, and the distribution channel for alcohol is widening. Efforts have been made to bring Korean traditional alcohol to all consumers, not just the enthusiasts who

enjoy the drink. Boksoondoga likewise is looking for a way in which to appeal to consumers who are more luxurious. This includes doing marketing, doing research and development, and upgrading existing products. The project aim with this specialized company is to suggest the possibility, from various points of view, of making the core product a representative one of Korea. However, it could be insufficient in the expansion of the business. There have previously been no quantitative data based on respondents in various fields because of the cottage industry situation. In this study, however, we had to enhance the reliability by using systematic market analysis to test parallel products and the sufficient samples of participants for meaningful results. The participants' responses reflect their views of the prototypes (stimuli). As a result, the findings are expected to help the company to know what to concentrate on and how to lower its risk of failure during the expansion of the business. They will also increase the stability of the existing business base at the same time. In conclusion, the design outcome of this project involves a new product line based on design and engineering knowledge centering on the brand value that the company pursues, the product market trend, future possibilities, and problem solving. Along with introducing a low-volume beverage bottle that more consumers can access, I introduce a solution involving a new design of the lid part together with a solution to the overflow problem caused by carbonic acid leaks. In comparison with existing products, the patent application is under way to increase the possibility of expansion. I think this will be possible due to contributing to schools, the company, and industry.

Keywords: Product development, Bottle lid design, Industrial design, Brand identity, Packaging design

Table of Contents

- 1 Introduction
 - Background
 - Vision and core value
 - Report structure

- 2 Problem Definition
 - The assignment
 - Design brief
 - Target group
 - Context of use
 - Studies

- 3 Concept Solution
 - Easy-open bottle
 - New product line
 - Summary

- 4 Discussion
 - Design implication
 - A patent application

- 5 Conclusion
 - Expected Contribution

References

Appendices

Summary in Korean

Acknowledgement

List of Tables

Table 1. Important factors to leverage concept design	27
---	----

List of Figures

Figure 1. Korean traditional rice wine manufacturing company, Boksoondoga	2
Figure 2. The fermentation brand of Boksoondoga	3
Figure 3. English sub company brochure	5
Figure 4. Product line package design	6
Figure 5 Bottle Base Design and Optimization (Bilal Demirel) 2008)	12
Figure 6 Screw of plastic bottle structure	13
Figure 7 The sool gallery in Insa-dong, Jongno-gu, Seoul	15
Figure 8 Interviewee: Korean Traditional Sommelier, Ko moo-Jeoung	15
Figure 9. Liquorium in Chung-ju, Chung-buk	16
Figure 10. Interviewee: Museum Educator and commentator, Kim Yun Kyung	16
Figure 11 3C Analysis regarding the customer	18
Figure 12 3C Analysis regarding the competition	19
Figure 13 3C Analysis regarding the company	19
Figure 14 Global liquor market volume and value	20
Figure 15 Soap opera deal with the alcohol culture	21
Figure 16 The propensity to consume and RTD liquor	21
Figure 17 Statistics of drinking age composition	22
Figure 18 New release and package of traditional liquor	22
Figure 19 Meeting with boksoondoga's head researcher Kim	27
Figure 20 Investigate of existing bottles	27
Figure 21 Applied concept bottle shape variations	28
Figure 22 Material property function	28
Figure 23 Initial lid idea sketch	29

Figure 24 Concept lid	29
Figure 25 Detailed description	30
Figure 26 Zotrax m200 3D printer and its printing	30
Figure 27 Main function of new concept lid	31
Figure 28 Assembly the parts and cover cap	32
Figure 29 Tamperproof rip label on the bottle	32
Figure 31 New label embedded concept solution	33
Figure 30 Usability testing on opening the cap	33
Figure 32 Final concept design	34
Figure 33 KSDS International invitation exhibition entry poster	39
Figure 34 Patent application document	40

1

Introduction

- Background Information about Boksoondoga
- Vision and Core Values
- Understanding the Company through Internship Activity

Introduction

Background Information about Boksoondoga



Figure 1. Korean traditional rice wine manufacturing company, Boksoondoga

Boksoondoga rice wine could not be produced in large quantities due to the traditional brewing method of achieving natural fermentation by using local newly harvested rice and malt instead of using preservative and artificial yeast. This product is so unique because of its naturally occurring carbonic acid. It is refreshing like champagne and offers a deep, smooth flavor. This strong point has not been expressed well to customers due to the difficulty of conveying this information. In the past, company officials thought this problem was occurring owing to the instruction limitations of the product. Through an industry-university cooperation, it developed an awesome bottle shape in 2012. Again, the company is proceeding with a technical-solution project with UNIST(Ulsan National Institute of Science and Technology) involving the proper method of opening for preventing an explosion. I also received the same proposal and heard that undergraduate-level students are included. I want this project to include a graduate-level research process, not just focus on the bottle shape and one-direction problem solving. Three previous meetings showed the ongoing businesses and opportunities that the company has. They are focusing on product packaging now because it might open up new markets both domestically and overseas. In the domestic arena, Korea has many special traditional holidays. Moreover, during holiday season, there is a custom of sending a present to an important person. An alcoholic beverage, especially one that is unusual, is considered an appropriate present. In reality, the quantity of rice wine orders is high during the two biggest holidays in Korea. As such, the company wants to release a

new package when producing orders during exceptional times. At the same time, in overseas business, it has been exporting its product to Japan. Although the period of circulation of the product has been short, it has received a favorable evaluation. Moreover, considering today's differing social circumstances, the business should make the packaging method more suitable. These reasons form the foundation of packaging considering the current situation of the company.



Figure 2. The fermentation brand of Boksoondoga

Vision and Core value

2.2 Vision

The vision of Boksoondoga is to become one of the premium Korean traditional liquor producers in Korea, recognized for its high-quality products and brand-value-extension activities.

2.3 Core Values

In fulfilling its purpose and achieving its vision, Boksoondoga will uphold, promote, and be guided by the following core values:

High-quality- Boksoondoga products should be of high quality. The company continuously strives for excellence via the traditional manufacturing method.

Gentrify- The company offers only limited quantities due to hand brewing and focusing on maintaining the highest quality possible.

Rarity- Natural carbonation that is produced from the process of fermenting traditional Korean yeast provides a refreshing sensation (like champaign) along with rich and mild tastes. Unlike other rice wine, Boksoondoga's product mixes well simply via opening the bottle, even without shaking the bottle.

Slow food- In all processes, the goal is to pursue healthier nutrients and to minimize hangovers. Rice wine is slowly fermented at low temperatures without any preservatives or artificial bacillus.

Harmony- Boksoondoga rice wine is made exclusively out of the newly harvested Korean rice of the farming year from surrounding farms and is fermented in traditional Korean pottery.

Traditional- Boksoondoga rice wine is an original home-brewed rice wine made from a traditional family recipe. A grandmother's recipe was passed down to our mother.

Fermentation brand- The company's identity is based on the word "fermentation." It essentially re-enacts the ancient farming method of cultivation via burning to return rice paddies after the harvest to the land. Rice wine is mainly produced using this method.

Understanding the Company through Internship Activity

Introduction

This section explains what I did and learned during my internship period with Boksoondoga company. The main purpose of the internship was to learn by working in the practical environment and to apply the knowledge acquired during the studies in a real-world scenario to handle problems using the knowledge and skill learned during the academic process. Internship work was performed over six weeks, from 11 July 2016 – 19 October 2016. The backgrounds of activity are the overall framework of the business, branding management, and the project process.

1) Translation brochure

Business direction of 복순도가

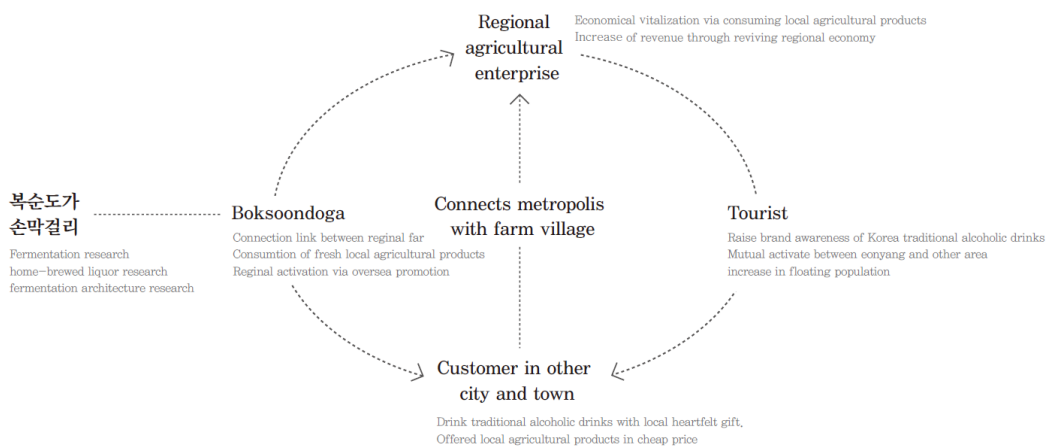


Figure 3. English sub company brochure

The publicity brochure includes a branding story, product experience, and additional information to foster an understanding of the company. First, translation work involving the pamphlet must be highlighted. The company has a publicity brochure that includes the company's branding story, product experience, and additional information to foster an understanding of the company. However, it is published in Korean. The company tries to invite foreigners to offer their experience and wants to introduce rice wine, which is a representative product of Korea. Translating the contents into English is necessary to globalize the company's motto and brand strategy. Furthermore, we included detailed visual information for the reader to understand and easily see the company history—for example, the growth rate, in-progress projects and how they are related, and compositions of themselves.

2) Package design outsourcing

Product package project involving the food and kindred products package, and the use of local ingredient products

The second achievement is package design outsourcing involving the food and kindred products package. The company has a product that features local ingredients. Red pepper paste is one of the related brand products of the company. It needed a new package. I carried out management work, got in touch with designers, mediated between the company and the contractor, and handled the budget compilation.



Figure 4. Product line package design

Report Structure

In this chapter, I describe the background, brand value, and ideology of a collaborating company in a master graduation project. We started the project based on the knowledge and experience gained through internship activities as well as via research methods through several meetings and sample surveys.

In Chapter Two, to understand the kinds of problems the company has, we conducted market research, expert interviews, and trend research to better understand the product known as Korean traditional alcohol. Also, we wanted to understand the feedback and utility of the results by including the brand value that the company pursues and by prototyping the results reflecting the needs of consumers. We tried to find solutions and directions from various perspectives, such as containers for drinks, packaging boxes, and so on food and kindred products package.

In Chapter Three, based on the previous research studies, we tried to make the school and company group satisfied with trial and error and with concept change. The company wanted an output that could be tailored to the actual product (which could be later or right now), and the school wanted to learn the basics of design and engineering as well as the corresponding courses and outcomes. Accordingly, we solved the overflowing problem of naturally carbonated beverages, which have advantages and disadvantages differentiating them from the products of other competitors. At the same time, we have been able to bring out “Gentrify,” the brand value of the company being pursued, as a design element. It has the potential to be used not only for the newly proposed small-capacity containers but also for various carbonated beverage bottles, as it has high scalability.

2

Problem Definition

Various-aspect studies for understanding product

- Literature Study
- Expert Interview
- Market & Trend research

Problem Definition

In this chapter, I explain what we have done to discover the company's problem. We went to the collaborative company during the project, talked about what I needed for the products, asked to see the sample, took it to the school, and started the survey. First of all, I asked various users to experience the product, and I examined how their experiences were different considering the background knowledge that the users had. After that, I felt I needed more professional opinions and knowledge, so I interviewed two experts in liquor history and Korean traditional liquor. Then, I surveyed the current status and trends of the domestic liquor market, predicted future directions, examined what factors affect consumers, and examined what is needed. Finally, I analyzed all of these and organized a table to list the requirements for future product design. There are 13 needs, but, by extension, I picked out five (not too abstract and wide) to leverage concept design intervention.

The Assignment

Creative design engineering special master's degree: The final assignment of the master graduation project was aimed at fostering competent design engineers who have integrated perspectives, creative problem-solving knowledge, and skills and a business mind. We should define a problem and deliver a practical solution using various methods and techniques coming from design, engineering, business, and so on. The partner company can share the technology, capability, and problems of the company while developing the project together to develop problem-solving skills, development and potential, and have a significant influence on the use of the project results in the future. Also, we were able to gain an understanding of and experience in the industrial field through all of the research materials, concept development, and internship.

Design Brief

The design briefs during the early term and mid-term of the project include what products consumers want to make and what requirements are needed. As the project progressed, it allowed for applying the project's goals, excluding the specifications that were modified, refined, abstracted, and broadly disseminated, as well as specifications that should not be considered immediately. Moreover, the most important consideration was to place the three keywords of "Quality, Gentrify, Expensive," which make up the company's brand concept, as a top priority. Keywords also involve meeting specific needs related to shape and size and has been given priority in the concept design process to follow.

Target group

Boksoondoga wants to introduce Korean rice wine, which is the flagship product of the company, as a representative wine of Korea and to present it overseas. Thus, the target audience is everyone who can drink, but this study will focus on younger people and women as a more focused case. Setting a target group started with catching up with market research and the company direction. This study looked at what strengths and weaknesses the company's current products have compared to their competitors' and what the trends and preferences of consumers are for a particular group of strengths. Alcoholic beverages make up a very complex and diverse product line that considers the age spectrum of consumers, except for gender, gender differences, regional differences, and individual characteristics. Another reason is that alcohol is also used as food that plays a role in improving one's mood or in alleviating a negative mood, so it is something that the consumer can enjoy (Jane E. Clark, 1998). Thus, Boksoondoga wants the product to be for everyone but also is pursuing product development and production for a specific group of users, such as a product satisfying each of the above. It is basically for all consumers, but it is marketed with a younger, female focus and has a certain symbol on it.

Context of use

The outcome of the project includes new products that will provide a better way of enhancing the user experience, and this could be for a target group, such as young people, women, and everyone except minors. Consumers of this age group, then, needed to contemplate what products they would like to buy in the present and in the future. Also, the survey of the market and social trends were carried out based on the fact that consumers' decision to purchase products was influenced by the marketing of the products (J. Pickett-Baker et al., 2008). Moreover, a package or product design can arouse aesthetic appreciation in consumers, which has a positive influence on decide (Bloch, 1995; Creusen and Schoormans, 2005; Landwehr et al., 2013; Patrick and Hagtvedt, 2011; Radford and Bloch, 2011; Reimann, Zaichkowsky, Neuhaus, Bender, and Weber, 2010). The recognition of existing products for consumers involved a wealthy and expensive image differentiated from those associated with other competitors' products, and the evaluation of the taste, sweetness, and softness of the taste was one of the contexts. Moreover, the fact that the company does not mass-produce makes it difficult for consumers to get to the product easily. From this point of view, the process of ordering and shipping was done online instead of offline, and it was better to get online product evaluations and information than those from face-to-face consumers. It means that, unlike most other liquors, where the context of the use takes place in a professional restaurant or pub, Boksoondoga's products made in a more personal and private space. In fact, because more than 100 bottles are produced per day, distribution channels are very different from those of similar products that can easily be purchased anywhere.

Furthermore, regarding the user experience, which was the focus of this project, Boksoondoga's products have been overflowed due to excessive internal carbonic acid contained in beverages, and it has been experiencing the inconvenience and unpleasantness of consumers. It is not a problem stemming from a defect in the product but rather the strong inclusion of the characteristics of the product. The continued presentation process of yeast at the bottom of the beverage is characteristic of rice wine, which produces natural carbonic acid. This carbonic acid is compressed, and the phenomenon that happens once is a special and inconvenient experience for consumers who consume the product.

Various aspect studies for understanding product

Literature Study

The packaging design is necessary for an own-brand food product, by developing an understanding of how consumers evaluate its packaging and identifying the factors that influence their purchase decisions (L.E. Wells et al). Also, the Brands visually differentiate from others and deliver distinct positioning of products. (Butter and Krippendorff, 1984; McCormack and Cagan, 2004; Monö, 1997). Moreover, the role of packaging and the basic function of it is to preserve the product identity (Paine and Stewart, 1994). It was clear that consumers set a high dependence on the external attributes of packaging to aid in the purchase decision from the observation and consumers' comments. More than 73 percent of consumers agreed to use packaging to assist in their purchase decision (Ibid). As I can see from this, the package and brand are included in the contents of the product.

Studies of bottle structure

Polyethylene terephthalate (PET) bottles are commonly used for the packaging of carbonated beverages. Stress cracks on the underside of petaloid-shape filled bottles are expensive in the beverage industry (B. Demirel, F. Daver, 2009). For reference, the bottle base form has a big stake in the pressure of carbonated soft drinks. A rounded foot shape distributes liquid pressure. The study of Demirel on the bottle base design and optimization explained that there are three related elements that are part of the petaloid base: valley width, foot length, and clearance. This paper explains the valley width with no significant pressure change.

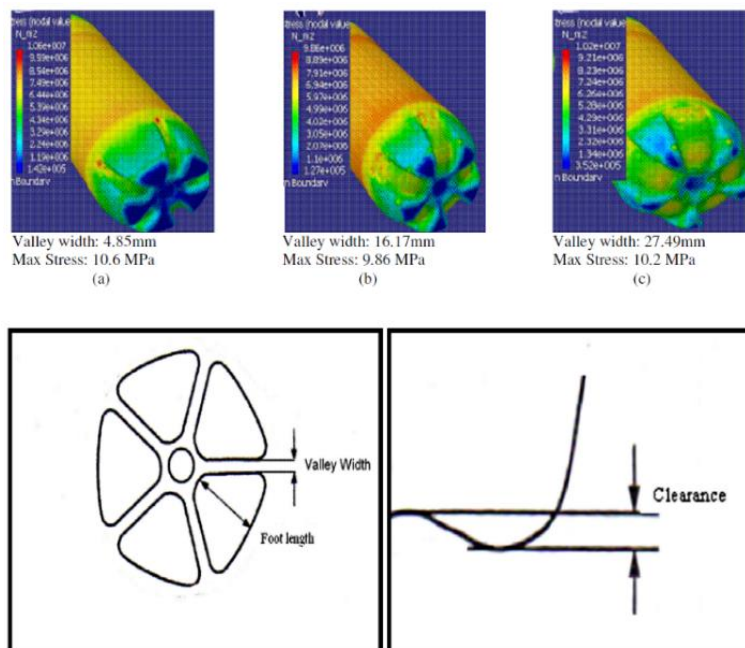


Figure 5 Bottle Base Design and Optimization (Bilal Demirel) 2008)

Technical functions

Boksoondoga's product is a carbonated beverage, so the shape of the bottle made of polyethylene terephthalate should not be angled, as the compressed carbonic acid and the carbon dioxide gas generated inside will continue to increase the pressure inside the bottle. In particular, the bottom should be in the form of a petaloid base so that the pressure can be evenly dispersed to prevent the bottle from exploding, and a foot can be raised. The lid part at the top of the bottle should be tightly connected to the end of the bottleneck so that carbonic acid does not leak out, and it must be prevented from being damaged during transportation or from being opened before the consumer can use it. The bottle lid is threaded so that it can be opened or closed spirally by engaging the top of the bottle made by the injection molding technique; it is designed to discharge carbon dioxide gas into space in the middle of the thread. It also has a thin plastic plate in the bottom of the lid to prevent a small amount of carbon dioxide from escaping if it is completely closed.

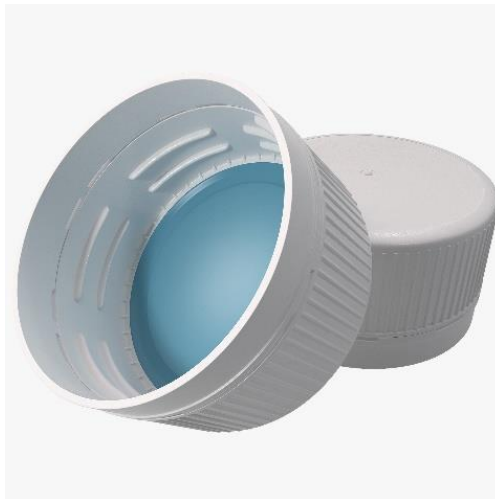


Figure 6 Screw of plastic bottle structure

Form requirements

Dimensions

In the design mentioned above, the shape and size of the company's existing products are part of the branding and marketing, contributing to the identity of the company. Therefore, the technology and ideas applied to the new concept were also considered to be the same family product that did not deviate from the existing product. The bottom part of the design, which is an important element, was determined by referring to the average value of the results measured in the study of B. Demirel et al., the survey value of thirty kinds of products introduced into the market, and the values of the existing products.

Volume

The capacity of new concept products was also one of the important considerations. It reflected the company's desire to provide access to high-volume distribution channels and to release less capacity than existing products that meet the needs of users who want to enjoy drinking lightly. It was a task of reducing the capacity, which was close to 1 liter, by nearly half, following the shape of curved conventional products. It is an essential attribute for a new target user group.

Structure

The part that I thought was hurting the brand image in the structure of the existing product is the standard plastic bottle lid. Contrary to the appearance of the products, which was vastly different from other competitors' products, I thought the structure of the bottle lid that followed the factory production method would not fit. Thus, I tried to solve this problem by putting another cylinder type cap on the bottle lid to which the new concept was applied. The end edge of this new cap just touches the outline of the bottle and induces an all-in-one natural appearance.

Expert Interview

I felt there was a limit to the analysis of the company's products and the analysis of the stakeholders, as well as to the materials that they had produced themselves. It is good to catch the tendency of consumers and to identify their wants and needs. It is not merely to develop new products but to raise the brand value, to embrace the company's ideals. For this purpose, I needed an expert opinion on alcohol products, kinds, related skills, history, and culture. There is a Korean traditional alcohol gallery in Seoul that is designed to provide educational programs on Korea's traditional alcoholic drinks. The topic of the programs presented at the gallery change each month. I interviewed a specialist sommelier who explained the origins, types, and reality of Korean traditional alcohol. In the case of traditional alcoholic beverages, it is often difficult for consumers to know about ordinary drinks. I focused on the topics and questions of the conversation, focusing on the current status of the traditional stock market. Also, I talked about the product design and package configuration, what characteristics of it are different from those of other product groups, and how the package design affects the product.



Figure 7 The sool gallery in Insa-dong, Jongno-gu, Seoul



Figure 8 Interviewee: Korean Traditional Sommelier, Ko moo-Jeoung

Moreover, also, there is a national liquor museum in Chung-ju that collects and studies cultural properties in the world related to liquor to provide a diverse program on global drinking culture. The expert who is an education officer is not limited to Korea's alcohol but rather knows well the kind of history and culture that alcohol has in the world. As with previous interviews, the questions were structured differently to fit the characteristics of the interviewer. Issues that considered the characteristics of the modern age without cultural boundaries were the main themes of the history of alcohol, the role of alcohol in the social context, and the features of traditional alcoholic beverages compared to the liquor of the world.



Figure 9. Liquorium in Chung-ju, Chung-buk



Figure 10. Interviewee: Museum Educator and commentator, Kim Yun Kyung

Interview study result

To summarize the interview results, the young lead the trend among consumers in terms of future trends and liquor markets. The younger generation, leading the trend, changed the liquor market by removing the prejudice against alcohol and helping it to expand to a wide range of consumers. In this culture, the trend is that everyone enjoys a product called alcohol, and the product's package and package design have great influence on people's drinking. Also, containers for alcohol and the packages that surround them have a big

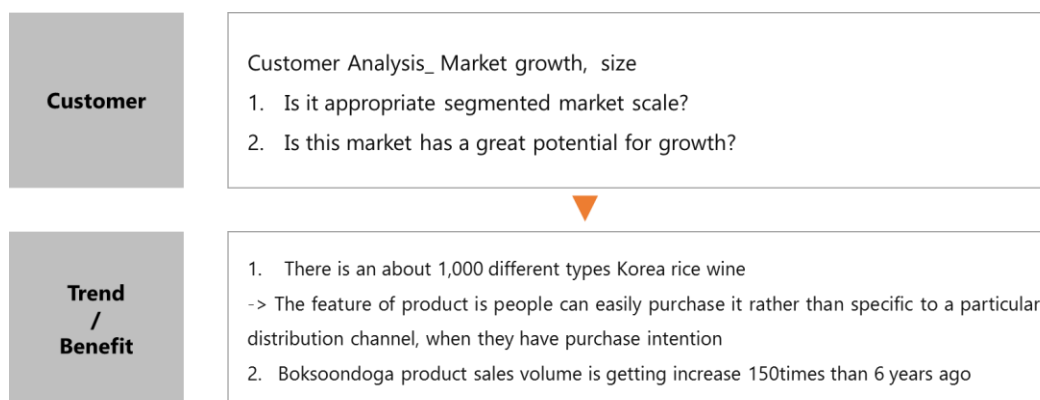
impact on consumers. Even if they have the same amounts of sake, two containers can feel very different depending on the change of the container. A good package includes an interesting brand theme in the product image. There is a liquor market in each region, and such drinks are popular in the regions. As the price is low and distribution is easy in the area, rice wine, which is highly accessible, is popular. Along with the tendency to pursue new cultures and types of alcohol, the market for traditional wine has expanded, and premium brands have emerged. It is also important that the direction of the future not be bound by the word “tradition” by simplifying and visualizing traditions as well as avoiding past forms. Korean traditional alcohol has the possibility of development beyond the limit of the language of “tradition.” From another point of view, the “national liquor museum” talks about alcohol itself, why products are shaped looks, and the role that alcohol plays in people’s lives. As such, alcohol has been an important factor that it has been used in both small and big events in the past, and now it is a product with high added value from an economic point of view. Also, there were some opinions that some factors affect the storage of alcohol. The purpose of packaging is to store alcohol for a long time and to reflect the characteristics of the contents. Among the elements that I would like to include in the package of the traditional liquor in the future are first, the design considering the characteristics of the contents, and second, a traditional feeling.

Market & Trend research

After the interviews with the experts, I conducted liquor market trend research. The company's existing products have already been released in the market, and future products feature the same kind of material, so it was a necessary reference. Because the products covered in this project are rice wine, a Korean traditional rice wine, the overseas market data are about as simple as those of the trends. Research has also been conducted on a larger category of rice wine. The scope of this research study was based on the company's future direction, interviews with the two experts, and current trends in the liquor market. Through this, four major results were obtained.

3C Analysis of the company Boksoondoga

3C analysis is one of the analysis methods for developing a market understanding from the customer, competition, and company perspectives. I can see what the company is selling as a flagship, what the characteristics of our clients in the marketplace are, the characteristics of the consumers in our market or the marketplace in which our store is located, and the marketing strategies our competitors are using. Through this, the company can lay the foundation for deciding whether to join the trend, to recognize concepts and strategies that are entirely different from those of our competitors, or to send someone a message to increase buying motivation.



Source: KATI(Korea Agriculture Trade Information)

Figure 11 3C Analysis regarding the customer

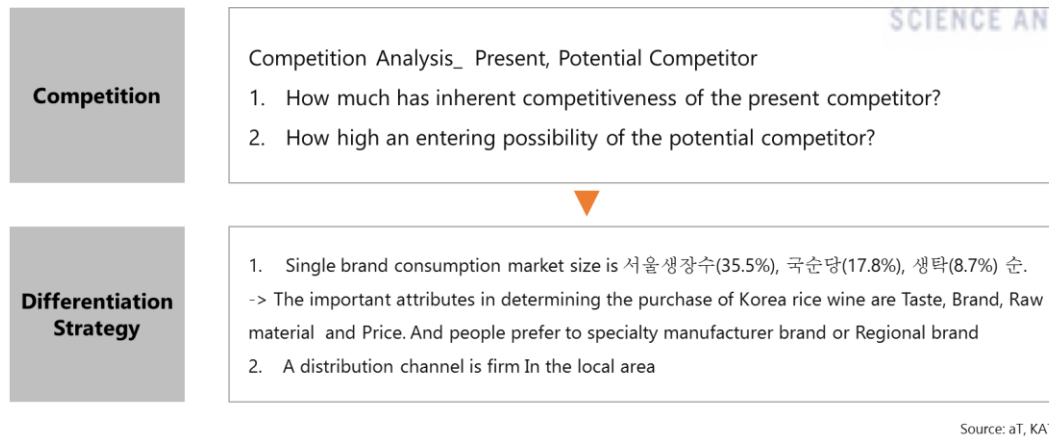


Figure 12 3C Analysis regarding the competition

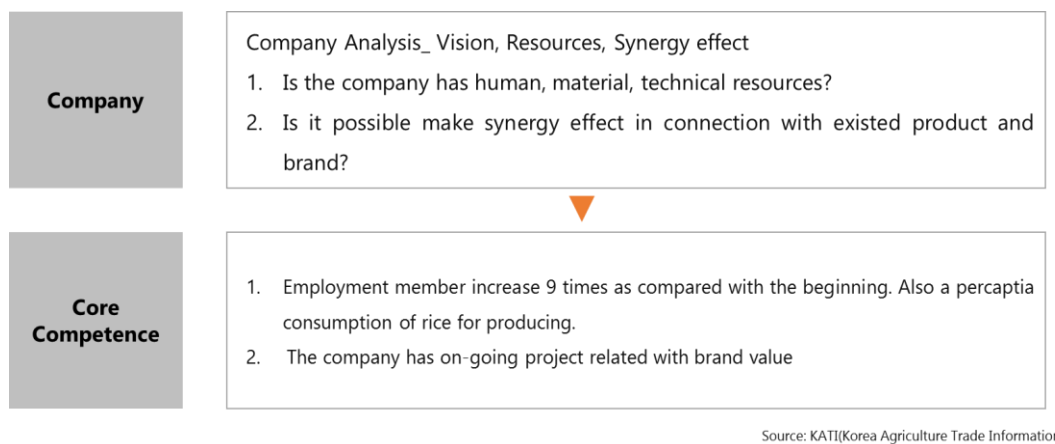


Figure 13 3C Analysis regarding the company

Moreover, I also researched the domestic market situation using the 3C analysis method. First, the customer analysis focused on the market growth and size. There are two main questions: 1) Is there an appropriately segmented market scale? 2) Does this market have great potential for growth? The answers on the trend and benefit aspects show that there are about 1,000 different types of Korean rice wine. It means the feature of the product is that people can easily purchase it rather than having to go to a particular distribution channel when they have purchase intention. Moreover, our company potential showed that Boksoondoga's product sales volume increased 150 times over six years ago even in this market situation. Second, a competition analysis was conducted based on present and potential competitors in this market. Also evaluated was: 1) How much is the inherent competitiveness of the present competitor? 2) How high is the entering possibility of the potential competitor? The present market includes three single brands with varying consumption sizes: Seoul Jangsoo (35.5%), Kooksoondang (17.8%), and Saengtak (8.7%). These three brands' market share is more than 60 percent of the overall domestic market. It shows that the important attributes of determining the purchase of Korea rice wine are: taste, brand, raw material, and price. Also, people prefer a specialty manufacturer brand or a regional brand because some huge brand is in their domain field. Lastly, company research includes vision, resources, and synergy effect. Finally, the company analysis focused on vision,

resources, and the synergy effect of the company. The questions were: 1) Does the company have human, material, and technical resources? 2) Is it possible to create a synergy effect in connection with an existing product and brand? Boksoondoga is growing in the aspects of human, material, and technical resources. Furthermore, it has potential in terms of the brand value. The company employment member increased nine times as compared with the beginning.

Liquor International Market Activity

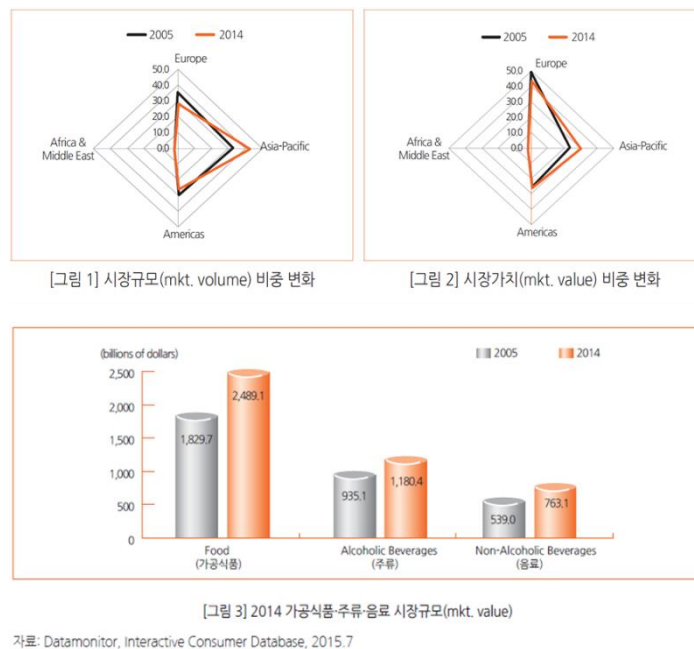


Figure 14 Global liquor market volume and value

The market volume and the market value of the international liquor market have shown exceptional growth during the past 10 years in the Asia-Pacific area. The market volume portion increased 9.5%, and the market value increased 6.5%. Moreover, the global liquor market value is about 1.18 trillion dollars; the market value is 47% food and 155% non-alcoholic beverages. By local group, for the average annual growth rate, the Asia-Pacific area shows the fastest growth at 5.1%. Meanwhile, in the Korean liquor market share, it shifted for two main products: beer (57.1%) and specialty spirits (40.5%).

Trend, Reach for a new culture and alcoholic drink



Figure 15 Soap opera deal with the alcohol culture

Drinking culture is changing to get more people to enjoy the natural taste of drinking. Moreover, there is an increase in the number of people who drink alone, and drinking-at-home trends have led alcoholic beverage manufacturing companies to release optimized product to the house channel. In this way, the act of drinking is becoming a culture that can be used as an air drama and broadcasting theme. In particular, it goes beyond the use of adult life and pleasure as a means of enjoying alone time in a social culture, and in the direction of individual leadership regardless of the place. This gives more choices to consumers, and the flow of the market changes accordingly. The goal is to help consumers to enjoy the culture by imposing diversity on products so that they can enjoy more comfort.

Accessibility is an important factors



Figure 16 The propensity to consume and RTD liquor

In the future, the consumption of ready-to-drink (RTD) liquor in the home is expected to increase, and the sales of products will be expanded to places where customers can easily access restaurants and convenience stores as well as bars. Whiskey, 80% of which was sold in entertainment establishments, is now being aimed at the home market.

Trendsetter are the young, with focus on establishing society where alcoholic drinks can be enjoyed by anyone



Figure 17 Statistics of drinking age composition

The reason why the liquor industry is lowering the advertising model age is that liquor consumers are lower in age. As the trend has lowered the barriers to entry for drinking alcohol and wine, the age of alcohol consumption is expected to decline further in the future. The liquor market is highly likely to grow, considering that the 20-year-old is the leading consumer in the 20-year-old or older population, and 28.5% are in their 20s and 30s.

Consider Minimalism, Visualization and Simplification



Figure 18 New release and package of traditional liquor

In the liquor industry, new products, such as fruit soju and carbonated liquor, are pouring out, and there is a limit to using only the fixed image of the top star for marketing new products. Moreover, the most important issue of alcohol is sensitivity to light, temperature, humidity, and shaking and the ability to keep for a long time. Liquor is sensitive to light, temperature, humidity, and movement. The main purpose of the package is to store the product for a long time. Mostly colored glass is used to prevent the deterioration of the product.

The result of market and trend research

The domestic and foreign liquor market trends have been growing globally for several years, especially in the Asia-Pacific market. It has a higher economic value than do non-alcoholic beverage items and has a value close to half that of whole foods (processed foods). As a result of the situation of Boksoondoga through the 3C analysis and its direction, first, the company has about 150 times the sales growth rate of nearly 1,000 rice wines on the market. Furthermore, the company needs to understand consumers' consumption channels and purchasing tendencies. Second, it will distribute products using local characteristics in a strategy that is different from that of the major brand, which accounts for 60% of the Korean rice wine market. Finally, there is a project to identify the core competence of the company, thereby guiding the future vision and synergy effect, and using the brand value. Issues to consider from the domestic market point of view are to create a new culture, to provide high access to consumers, and to minimize, simplify, and visualize the package for a product that young people can enjoy.

Summary and Reflections

To apply all of the research results to future designs, I have organized them into sentences and categorized how they reflect the direction of the company and the opinions of the experts that preceded the research. Boksoondoga preferred preferences for new products in the future. Compared to competing products, the company identity must be revealed, product characteristics should be expressed naturally, and products should be considered by consumers and should be presented with the Korean feeling of being representative of alcohol and of having a luxurious image. Also, after taking into consideration the important factors that shared in common with the expert interviews, I picked out five (not those that were too abstract and wide) to leverage the concept design intervention.

Table 1 Important factors to leverage concept design

#	Design NEEDs to:	CI
1	have highly accessibility	E1
2	contain new wave cultural aspect	E1
3	standout in terms of identity against competitors	E2
4	reflect characteristics of the young	C, E1
5	bring out the nature drink's taste	C, E1, E2
6	be affordable for a customer (price)	C
7	be strong enough to withstand domestic transportation.	C
8	pursue the traditional but avoid stereotypes	E1
9	make a society generalized	E1
10	preserves the contents characteristics by preventing external influence	E2
11	have Korean sentiment feeling, but not too much	C, E1, E2
12	be varied capacity based on the customer's demands	C
13	have an aspect of gentrification	C

*CI= Classification, E1= Expert Interviewee 1(Korean Traditional Gallery), E2= Expert Interviewee 2 (National Liquor Museum), C= Company

There are five main criteria. Each criterion is classified in terms of the perspective of the company and the expert opinion so that it can be easily grasped. The reflected characteristics of the young were the conditions that could be applied to the company's future products, and also the opinions of traditional alcohol experts and market trend research. Under this condition, we could clarify the target group and create the design accordingly. Bringing out the natural drink's taste was a factor that both the experts and the company had to apply and consider for the product. This is because it is a characteristic product. The company also wanted a design that could convey the feel of Korean traditional alcohol. The company's criteria were to portray a luxurious image with products of various capacities, considering consumers' needs.

3

Solution

- Easy-open bottle: slow & smooth release of gas and pressure
- New product line

Solution

In keeping with the company's desire for increased product range, we provide a product addition targeted at individualized consumption. Moreover, I address a further problem of excessive overspill spray on opening due to the carbonated nature of the beverage and its further fermentation during shipping. A patentable stop-ridge and discontinued bottle-top thread allows for a staggered opening and the venting of trapped gas through a specially designed vent space. Thus, we provide an engineered solution together with aesthetically sensitive interventions to support and progress Boksoondoga's unique identity and core values.

Process

We have followed the design form requirements, followed the concept, and looked for ways of addressing this problem, fully understanding the structure of the existing product, and finding out where the problem occurred. We searched for the possibility of solving the problem from various angles and sketched an idea to change the bottle lid itself instead of simply solving the problem based on the user's attention and carelessness. Because it was really about whether this idea worked, we used Solidworks three-dimensional (3D) modeling software to reduce the shape of existing bottles by 53%, and the bottle itself had to be a universal design. The curve of the bottleneck was modified to fit naturally. A few checks and numerical adjustments were carried out because the bottom part, which was also important, required adequate curvature.

New concept solutions

Concept 1: Easy-open bottle: slow & smooth release of gas and pressure

The explosion problem is caused by the bottle is being opened too much open. Thus, we designed a screw thread including a raised spot and an empty line. It stops the rotation in a particular range and prevents too much gas exhaust.



Figure 19 Meeting with boksoondoga's head researcher Kim

Concept 2: New product line

We had all of the different kinds of products on the market and then actually searched for a variety of different kinds of products' cap designs. A company wanted the new product for young people of different sizes, 500–750 ml. What we did for two weeks was research a variety of forms and petaloid base criteria as well as design the form fit to 500ml. We printed several samples of it and selected one; it gave off a familiar feeling with the old bottle. Then, we finished it. Compared to the old bottle, it seems to be in the same product family. Pressure-enduring criteria parameters were applied.



Figure 20 Investigate of existing bottles

Prototyping

3D model detail

-Bottle shape

Two conditions were necessary for designing the shape of the bottle. The first was to bring out the appearance of the existing product to represent the family product, and the second was to reduce the overall proportion and size to the capacity of 1/2 liter. First, for the similar appearance, three concepts were designed and evaluated in comparison with existing products. A, B, and C bottle designs with bottom shape, height, curvature, and foot width of each shape were applied. For the second issue of capacity, we used the “material property” measurement function in the Solidworks software program to calculate the volume inside the bottle.



Figure 21 Material property function



Figure 22 Applied concept bottle shape variations

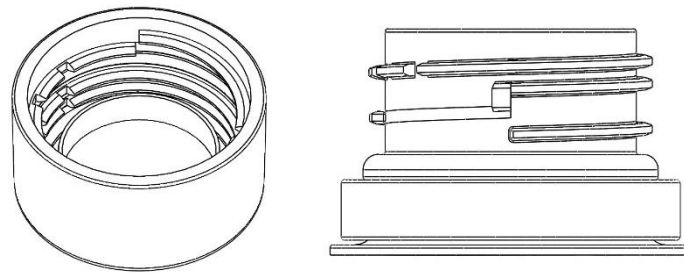


Figure 23 Concept lid

-Concept lid

I first modeled the bottle lid with the newly designed concept separately, and then, the system was combined. The bottom of the bottle lid had to be joined with the container, and the upper part had to be removable, so two solid models were made. In the idea sketch, I put a stop ridge (raised spot) in the middle to pause once and to help to prevent much gas from leaking at once. This is because the threads came into contact with one another and had to move spirally. To fully open the bottle lid, it stopped in the middle and had no end, so I had to reconnect it with the thread on the top of the stop ridge. To find this special function, I were inspired by a safety bottle for children. The safety pill bottle is designed so that the lid screw does not touch so that a baby cannot open it. To use the function, the user has to apply force to meet the two faces. Contrary to this structure, I had to make a “discontinued thread” by eliminating one-half of the threads in the middle. Moreover, it is designed to be able to move to a space where it is and to lift up the top part of the lid and meet with the next thread. The difficulty in designing the bottle cap is that, no matter how small the gap is, the carbon dioxide gas leaks out through it, so it adjusts the thread width, height, and distance between the bottle caps.

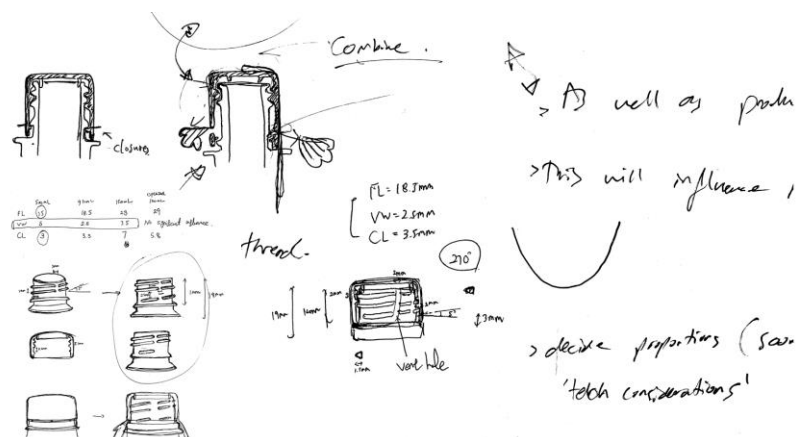


Figure 24 Initial lid idea sketch

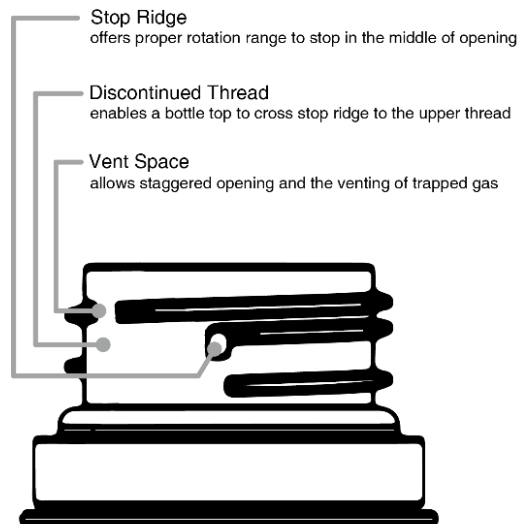


Figure 25 Detailed description

-3D printing

Modeling files created using 3D software were produced using a Zortrax m200 3D printer. The FDM (Fused Deposition Modeling) printer is suitable for this project because it has a 200mm * 200mm * 200mm width, height, and height limit, and it has a high quality. I wanted to use the output quality to show an error range of ± 0.1 and the wall thickness option of 0.09 mm for the later testing stage. The height of the bottles was divided into two parts over the limit height of the 3D printer, and it took an average of 14 hours per bottle. Also, when the bottle cap is put out at one time, the precision of the thread of 1 mm is ruined by the supporter, so the bottle cap was put out separately using the other printer. The bottle cap took an average of four hours.

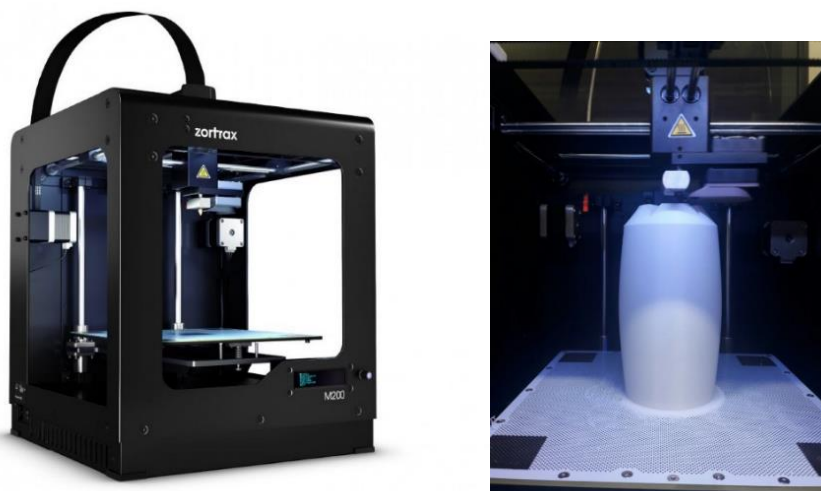


Figure 26 Zortrax m200 3D printer and its printing

-Testing and function

After the modeling was completely printed, the supporter was removed, and the sanding of the surface was finished. In the case of bottles, the divided interface was polished and attached with instant glue, and the angled surface formed during the printing process of the bottom was rounded. In the case of the bottle cap, it was determined that there be no part where the thread loosened engaging boundary; the focus was on confirming the main function, the stopping function, and the lifting function. The experiment was an essential process because the initial two-dimensional (2D) sketch ideas were not guaranteed to work in the 3D form. In the first experiment, it was not closed until the end; in the second experiment, there was no problem in opening and closing, but it did not stop because it did not catch the stop ridge. In the third attempt, it did not happen once again, and then again with the thread. In the fourth experiment, all of the functions of opening, closing, and stopping were implemented, but they were shaken so much that the value of the product dropped significantly. Before the fifth experiment, I could implement all of the functions of the initial idea by adjusting the thread spacing through numerical adjustment. After that, I modified and re-output dozens of times, such as the stop ridge's width, turning radius angle, thread spacing, and experiment.

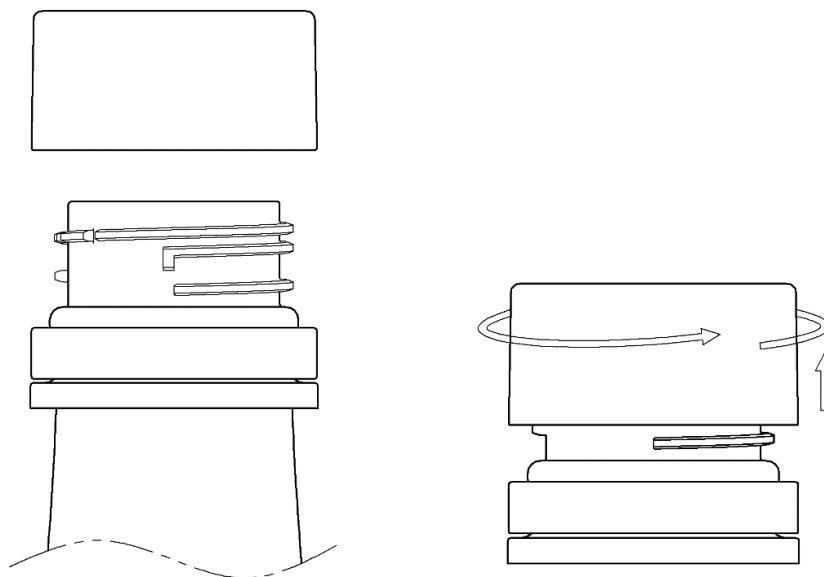


Figure 27 Main function of new concept lid

-Assemble

Two models were made and assembled into one. The bottom part of the bottle cap to be placed at the top of the bottle originally was pasted with glue, and I waited enough time for it to stick firmly. After that, I checked whether there was any discomfort as I opened the drink bottle first. In this process, the focus was on the difference between the size of the lid and the bottle and the comparison with the actual sales products. Even though there was a slight difference in size, the hands felt uncomfortable. It has been a great help in determining the size of the bottle so that it will not spoil the shape of the bottle without the user's having trouble using the product. After that, I filled the actual 1/2 liter of water and filled it up to a certain height. Then, the overall steps, such as sanding and color matching according to the identity of the existing product, were carried out.

Moreover, this top design will also fit onto the old product line. Also, it replaces the existing crapping plastic top. Match aligns with an outline curve in a bottle. A special tamper-proof rip label expresses the identity of its drink using Korean paper and provides exclusivity.



Figure 29 Assembly the parts and cover cap



Figure 28 Tamperproof rip label on the bottle

-New label design and usability testing

Simply presenting the concept of a new method is unlikely to be of great benefit to consumers who are new to the product. In fact, I had 20 expected users to use the new-concept bottle cap; nine people (about 18%) did not stop at the part where they had to stop. This problem differs from existing similar products in that new ways of stopping and opening are influenced by learned and remembered behaviors. Thus, I have seen how real users deal with new concept solutions and use existing labels to communicate them well. Furthermore, the label of the existing product contains the brand name, the capacity of the product, and the phrase to be careful with natural carbon dioxide in small letters at the top. It alone has not been able to convey the problem to the users fully. More than 70% of users were unable to read the warning text and opened it. I put the shape of the bottle and the shape of the hand on the existing label so that I could concentrate on behaving visually and naturally. Moreover, I wanted to intuitively communicate the method of the turning and lifting steps by a symbol instead of a letter. I also wrote down the new capacity of 1/2 liter and mentioned the definite purpose of stopping the gas and the stopping function, instead of the current low readability warning.



Figure 30 Usability testing on opening the cap



Figure 31 New label embedded concept solution

Final design

-Shape

As can be seen from Figure 32, it is a small-sized bottle with a rounded bottom and gradually becomes narrower as it goes up. There is a cylinder-shaped cap that fits snugly in the outer bend. Within this cap is the concept lid, which is designed to prevent carbon dioxide overflow, which is the core result of the project. It can be grabbed naturally with one hand, with the combined cap with the concept lid, which can be opened by turning it. The bottom goes down slightly and divides into five branches, forming the shape of five petals. These feet help to keep the bottle in good condition, rounded inward, and disperse high pressure from the carbon dioxide inside the bottle to prevent an explosion.

-Color

The ivory-colored cap is on a white body with a slight light. Existing Boksoondoga products are made of rice-based beverages, so they show a light yellow color. As mentioned above, we wanted to feel the feel of the current product line and the family product line, so we made the color scheme similar but different. It was not just a smaller size but a new product. Not only that but also we used a traditional Korean paper, “Hanji,” to create a tear-off label with the brand name to make it tamperproof to see if the product had been opened before purchase. Korean paper with a pattern of natural combinations that are not monochromatic will be better able to show that this beverage is traditional.



Figure 32 Final concept design

About the link with important factors

We confirmed the extent to which the five design criteria we selected were applied and whether we had developed a suitable development process. First of all, using a small-capacity bottle can give them a higher choice regarding the question of whether it reflects the characteristics of young people and product development based on the user's needs. Moreover, in the part that emphasizes the original taste and features of the product, we tried to design a lid that resists the inconvenience caused by frequent explosions by using the characteristics of rice wine containing carbonic acid. Finally, we applied another cap that fell into the natural bend of the bottle while covering the old lid of common and unspecified plastic to express a Korean feeling and luxury images at the same time. Here again, we are using Korean traditional paper and put the brand name together with the natural pattern. It adds a high image by adding a rip label that can be tamperproof.

4

Discussion

- Design implication
- A patent application

Discussion

The purpose of the project was to provide a small company, not a large company, with a proposal that could be helpful for the current business or future direction. At the initial meeting with the company, the company had taken into consideration the plans that the company had vaguely considered or planned. It was important to understand each other's capabilities in the process of collaborating with the industry, and during the first two months, the proposal was drafted to discuss what direction might be appropriate. Among the proposals, quantitative and qualitative analysis was provided for companies that could not concentrate on R & D (Research and Development) based on small-scale characteristics, and another suggestion was redesigning boxes for shipping and packaging. In the case of the company, it was unfamiliar with the collaboration with the school, and there was no concrete plan, which made it difficult to move in a direction. However, after understanding the company's products and conducting various researches, the process proceeded one by one.

As a result, first, we wanted to find a new way of solving the inconveniences that existing products had. Second, we also wanted to develop new products that could be released in the future, in addition to the products we currently have. Based on these two conditions, we believed that both the school and the company should be able to achieve a satisfactory result at the same time. We also wanted to find opportunities to follow the curriculum set by the graduate program and to use everything I could. Through several faculty-level inspections, feedback, and advice from the professor, we came up with a way of approaching the form and structure of the product. By using the knowledge we learned at school and the equipment that could be used, we were able to implement experiments that were conceived. We aimed for functions and results that could be applied to industry rather than the idea of pursuing only the appearance of the product.

The issue of carbon dioxide overflowing was solved by redesigning the bottle lid, which is a part of the product, and directly influences users. Plastic bottle caps have some elasticity, so a few threads are slightly twisted, and the more they open, the more they can open and close tightly. Because it has this structure, it can completely block carbon dioxide gas. Releasing appropriate and safe levels of pressure and gas involved a change of structure, and if something went wrong, it could damage the quality of the primary product. Therefore, we conducted a verification for satisfactory results several times. Moreover, considering the manufacturing process of the product, numerical values are considered to apply to other carbonated beverages. The company has pursued the launch of a new product from a single product with the concept of pursuing brand value while preserving its existing advantages. The engineering solution was the main solution to the first problem; this time, we needed a more design solution. Although it is a small-sized bottle with a small capacity, it follows the distinctive appearance of the existing product and tries to appeal to a new consumer by complementing its

shortcomings. Through the research results and modeling validation, we put on labels that are highly usable, are beautiful, and increase brand value.

Finally, all of the results were collected and exhibited at the KSDS(Korean Society of Design Science) International invitation exhibition, and it was recognized for the practicality of the technology and ideas. Furthermore, we also filed the application with the assistance of the intellectual property center of the school.

Recommendation for Further Study

In this study, we applied a lab-level test for product concept implementation and idea verification. To complete the usability test, we had to experiment with the product just before the actual launch. It was difficult to produce final prototypes due to the different conditions and environments of the actual products that were injected with carbonic acid through mass production processes. In addition, it is difficult to judge that the material used for the prototype has been verified enough to be applied to the industry. Especially, the prevention of overflow that I thought was a fundamental solution has a missed point when viewed from another point of view. The possible limitation of the concept lid; an example is the user experience. Champagne bottles have corks to prevent the leakage of high pressure inside the bottles made of carbon dioxide. On a special occasion, people release such a cork with a loud sound and enjoy the moment. For users who want this extraordinary emotional experience, the concept of explosion prevention will be more difficult to solve than troubleshooting. Of course, this experience is not common in the case of universal rice wine, but there is a need to mention this because it is a point that can be sufficiently appealing and advantageous in differentiated products, such as Boksoondoga's. Therefore, if we take this into account in future studies, we will be able to investigate and reflect on the experience and expectations of more diverse users.

Design implication

KSDS International invitation exhibition



Figure 33 KSDS International invitation exhibition entry poster

As an international invitation exhibition is held from 12 December 2016 – 16 December 2016 in “doosungpaper in the paper gallery” in Seocho-gu, Seoul. We exhibited the results of the project to leading creative design and opportunity to exchange between domestic and foreign designers.

A patent application

관인생략
출원번호통지서

출원일자 2016.12.12
 특기사항 심사청구(유) 공개신청(무) 참조번호(1061816)
 출원번호 10-2016-0168834 (접수번호 1-1-2016-1217294-18)
 출원인명칭 울산과학기술원(1-2015-081204-7)
 대리인성명 특허법인이룸리온(9-2016-100061-5)
 발명자성명 이성근 제임스 앤드류 셉프 김차중 욱기철
 발명의명칭 음료병 및 음료병 개방 방법

특 허 청 장

<< 안내 >>

1. 귀하의 출원은 위와 같이 정상적으로 접수되었으며, 이후의 심사 진행상황은 출원번호를 통해 확인하실 수 있습니다.
2. 출원에 따른 수수료는 접수일로부터 다음날까지 동봉된 납입영수증에 성명, 납부자번호 등을 기재하여 가까운 우체국 또는 은행에 납부하여야 합니다.
 ※ 납부자번호 : 0131(기관코드) + 접수번호
3. 귀하의 주소, 연락처 등의 변경사항이 있을 경우, 즉시 [특허고객번호 정보변경(경정), 정정신고서]를 제출하여야 출원 이후의 각종 통지서를 정상적으로 받을 수 있습니다.
 ※ 특허로(patent.go.kr) 접속 > 민원서식다운로드 > 특허법 시행규칙 별지 제5호 서식
4. 특허(실용신안등록)출원은 명세서 또는 도면의 보정이 필요한 경우, 등록결정 이전 또는 의견서 제출기간 이내에 출원서에 최초로 첨부된 명세서 또는 도면에 기재된 사항의 범위 안에서 보정할 수 있습니다.
5. 외국으로 출원하고자 하는 경우 PCT 제도(특허-실용신안)나 마드리드 제도(상표)를 이용할 수 있습니다. 국내출원일을 외국에서 인정받고자 하는 경우에는 국내출원일로부터 일정한 기간 내에 외국에 출원하여야 우선권을 인정받을 수 있습니다.
 ※ 제도 안내 : <http://www.kipo.go.kr>-특허마당-PCT/마드리드
 ※ 우선권 인정기간 : 특허-실용신안은 12개월, 상표-디자인은 6개월 이내
 ※ 미국특허상표청의 선출원을 기초로 우리나라에 우선권주장출원 시, 선출원이 미공개상태이면, 우선일로부터 16개월 이내에 미국특허상표청에 [전자적교환허가서(PTO/SB/39)]를 제출하거나 우리나라에 우선권 증명서류를 제출하여야 합니다.
6. 본 출원사실을 외부에 표시하고자 하는 경우에는 아래와 같이 하여야 하며, 이를 위반할 경우 관련법령에 따라 처벌을 받을 수 있습니다.
 ※ 특허출원 10-2010-0000000, 상표등록출원 40-2010-0000000
7. 종업원이 직무수행과정에서 개발한 발명을 사용자(기업)가 명확하게 승계하지 않은 경우, 특허법 제62조에 따라 심사단계에서 특허거절결정되거나 특허법 제133조에 따라 등록이후에 특허무효사유가 될 수 있습니다.
8. 기타 심사 절차에 관한 사항은 동봉된 안내서를 참조하시기 바랍니다.

Figure 34 Patent application document

The new concept solution has been applied for the patent application focusing on the technical features that use the technology and ideas in the industrial field. The content is prevented from overflowing with the carbonic acid of the carbonic acid-containing beverage container when it is opened, so it is possible to open the container and discharge the gas stably in a safe manner.

5

Conclusion

- Main Research Findings

- Expected Contribution

Conclusion

Main Research Findings

I describe what contribution we can make to the academic field and why I chose this company. One particular point of this project is it is not limited to paper but rather is a grounded study. In addition, fundamentally, the ideas in this project are rooted in research through design approaches. I have experience with several design projects related to market analysis, product development, and qualitative analysis and design experiments. Recently, I published a paper on the core topic of aesthetics and theory and personal acceptance. Leveraging these experiences and knowledge concerned with company capabilities can improve market shares and develop new packaging. Making prototypes by reflecting the researcher (company)'s intention is proper for controlling and specifying the manipulation, for instance. This project results' purpose is going to improve and suggest enhancing the direction of the company through using design research methodology, even though the company does not want to change its system. From a market share point of view, Boksoondoga's strategy can define high profits and small volume sales. That is premium. It could not produce large quantities around 100~150 bottles per day because of the following traditional brew method. The price is three times higher than others'. Then, how can it develop its own business? In the future, research should move in the direction of suggesting cooperation for efficiency's sake and pursuing a common goal. The company needs a different design that includes its identity. The package examples-related research conducted involved existing products in Korea. In the case of overseas export, this study also considered extending the market range to nearby nations, such as Japan and Russia. Likewise, the research process includes background research based on the company competitiveness and its strong point. Moreover, in this study, I conducted market research first as background research.

In this study, I used 3C business and macro market analysis method for solving some problems. The liquor market is diversifying and growing. However, the market for this fermented rice wine in domestic and overseas is decreasing. For this reason, if it has the mind to want to change following this result, it could instantly apply to the next business step. As I explained above, a common market and the store struggle to deal with this product due to limited production.

Research Question

How do we contribute to the industry area and company using integrated perspectives, creative problem-solving knowledge and skills, and a business mind?

In this project, the result contributes to both design research and industry area cooperation. We believe that the answers to the questions posed have the potential to provide new models and methods to assist in the pursuit of research-industry cooperation. I totally have poured into this research my engineering and design background knowledge and various research methods, processes, and even the fusion of the two fields. The evaluation contents include specific problems, such as how customers make the mistake of shaking a bottle before removing the lid. The carbonic bubble explosion of Boksoondoga rice wine occurs because of the overproduction of gas even if it does not need shaking. Also, the goal was to develop a new product line to emphasize the three keywords of “Quality, Gentrify, Expensive,” which is the company's brand concept.

Expected Contribution

The purpose of this study, which is a project of a master's degree project, is to suggest possibilities for using this core product in various aspects of this particular company. And we think it can help with deficiencies in the company's business expansion. Due to the characteristics of the small company, it would not be easy for the company to analyze quantitative data through numerical responses in various areas, and I wanted to give reliable results with adequate user intervention and systematic market analysis. These results were then reflected in the prototype of the type and used to verify its utility and potential through lab-scale experiments and results. In conclusion, the design outcome of this project presents a new product line based on the design and engineering knowledge centering on the brand value the company pursues, the product market trend, the possibility of the future, and problem solving. Along with a low-volume beverage bottle that more consumers can access, we have introduced a solution that opens up a new design of the lid part together with an overflow problem caused by carbonic acid leaks. In comparison with existing products, the patent application is underway to increase the possibility of expansion. I think this will be a result of contributing to the school, company, and industry.

References

- B. Demirel, F. Daver, 2009. The effects on the properties of PET bottles of changes to bottle-base geometry. *Applied Polymer*, Vol. 114 Iss:6, pp.3811 – 3818
- Bloch, P. H. 1995. Seeking the ideal form: Product design and consumer response. *Journal of Marketing* 59 (3): 16–29.
- Butter, R., and K. Krippendorff. 1984. Product semantics: Exploring the symbolic qualities of form. *Journal of the Industrial Designers Society of America* 3: 4–9.
- Creusen, E. H., and J. P. L. Schoormans. 2005. The different roles of product appearance in consumer choice. *Journal of Product Innovation and Management* 22 (1): 63–81.
- Holbrook, M. B. 1986. Aims, concepts, and methods for the representation of individual differences in esthetic responses to design features. *The Journal of Consumer Research* 13 (3): 337–347.
- Jane E. Clark. 1998. Taste and flavour: their importance in food choice and acceptance. *Proceedings of the Nutrition Society* 57, 04 (1998), 639–643.
- Kreuzbauer, R., and A. J. Malter. 2005. Embodied cognition and new product design: Changing product form to influence brand categorization. *Journal of Product Innovation Management* 22 (2): 165–176.
- L.E. Wells, H. Farley, G.A. Armstrong, (2007) "The importance of packaging design for own-label food brands", *International Journal of Retail & Distribution Management*, Vol. 35 Iss: 9, pp.677 – 690
- McCormack, J. P., and J. Cagan. 2004. Speaking the Buick language: Capturing, understanding, and exploring brand identity with shape grammars. *Design Studies* 25: 1–29.
- Monö, R. 1997. *Design for product understanding: The aesthetics of design from a semiotic approach*. (M. Knight, Trans). Stockholm: Liber AB.
- Paine, F. A. (1994). *Packaging design strategy*. Bill Stewart, Freelance Designer Pira International, Leatherhead, Surrey, (1994), ISBN 185020646 (hardback), 192 pp, *Packaging Technology and Science*, 7(6), 302-302.
- Radford, S. K., and P. H. Bloch. 2011. Linking innovation to design: Consumer responses to visual product newness. *Journal of Product Innovation Management* 28 (S1): 208–220.
- Reimann, M., J. Zaichkowsky, C. Neuhaus, T. Bender, and T. Weber. 2010. Aesthetic package design: A behavioral, neural, and psychological investigation. *Journal of Consumer Psychology* 20 (4): 431–441.

A patent application

【발명의 설명】

【발명의 명칭】

음료병 및 음료병 개방 방법 {A beverage bottle and method for opening the beverage bottle}

【기술분야】

본 발명은 탄산 또는 가스가 포함된 음료를 수용하는 음료병 및 음료병 개방 방법에 관한 것으로, 보다 구체적으로 음료병을 개방 시 음료가 외부로 흘러 나오는 것을 방지하기 위한 음료병 및 음료병 개방 방법에 관한 것이다.

【발명의 배경이 되는 기술】

일반적으로 콜라, 사이다와 같은 탄산음료 또는 탄산가스를 포함하는 주류(예로, 맥걸리)의 경우 내부압이 상압(대기압)보다 높아 병마개를 개봉할 때 가스와 함께 내용물이 밖으로 분출되는 경우가 있다.

이와 같은 현상의 발생 원인은 용기 내부의 압력과 대기압의 차이가 일정한 수준 이상으로 진행되어 용기 내의 가스가 외부로 빠른 속도로 유출되면서 내부의 액체내용물이 딸려 나오게 되는 것이다. 또한, 다른 원인은 용기를 운반 또는 이동시키는 과정에서 용기에 충격 또는 진동을 주는 것에서 기인할 수 있다.

또한, 전통적으로 전해 내려오는 발효주는 발효과정을 동반하게 되고, 발효과정에서는 발효가스를 발생하게 되므로 밀폐된 용기에 발효주를 넣고 보관하기 위해서는 발효가스의 배출이 필연적으로 요구되고 있다.

즉, 용기에 담긴 발효주는 발효가 진행되어 발효가스를 발생하게 되고, 마개를 통하여 발효가스를 원활히 배출시키지 못할 경우 용기 내의 발효가스가 팽창되어 용기를 파손시키거나, 내용물을 흘러나오게 하는 등의 문제가 발생하게 된다.

【발명의 내용】

【해결하고자 하는 과제】

본 발명은 상술한 문제점을 해결하고자 탄산 또는 가스가 포함된 음료를 가지는 음료병을 개봉 시 내부에 탄산 또는 가스가 안정적으로 배출하기 위한 음료병 및 음료병 개봉 방법을 제공하기 위한 것이다.

또한, 본 발명은 탄산 또는 가스가 포함된 음료병을 개봉 시 음료가 외부로 흘러나오는 것을 방지하기 위한 음료병 및 음료병 개봉 방법을 제공하기 위한 것이다.

본 발명은 여기에 제한되지 않으며, 언급되지 않은 또 다른 목적들은 아래의 기재로부터 당업자에게 명확하게 이해될 수 있을 것이다.

【과제의 해결 수단】

본 발명은 탄산 또는 가스가 포함된 음료를 수용하는 음료병을 제공한다.

본 발명의 일 실시 예에 따르면, 내부에 상기 음료가 수용되는 수용 공간을 가지며 상부가 개방된 용기와 상기 용기의 상부에 결합되어 상기 수용 공간을 밀폐하는 마개부를 포함하되, 상기 용기는 상기 마개부가 결합되며 외측면에 외측 나사산이 형성된 결합부와 상기 음료가 수용되는 공간을 가지는 몸체부를 포함하되 상기 외측 나사산에는 상기 용기의 상부 공간을 개봉 시 상기 마개부가 상기 외측 나사산을 따라서 일방향으로 회전하다가 멈추도록 형성되는 걸림 돌기를 포함할 수 있다.

일 실시 예에 따르면, 상기 외측 나사산은 상기 결합부의 상부에서 외주면을 따라 형성되는 제 1 외측 나사산과 상기 제 1 외측 나사산과 일정거리 이격되어 상기 결합부의 외주면을 따라 형성되는 제 2 외측 나사산을 포함하며 상기 걸림 돌기는 상기 제 1 외측 나사산의 양 끝단 중 상기 제 2 외측 나사산과 인접하는 끝단에 형성될 수 있다.

일 실시 예에 따르면, 상기 걸림 돌기는 상기 제 1 외측 나사산의 끝단에서 상기 제 2 외측 나사산을 향하는 방향으로 연장되어 형성될 수 있다.

일 실시 예에 따르면, 상기 마개부의 내측면에는 상기 외측 나사산과 결합될 수 있는 내측 나사산과 상기 마개부를 일방향으로 회전하여 상기 수용 공간을 외부와 연통 시 상기 몸체부의 내부에 위치한 상기 음료에서 발생된 탄산 또는 가스가 배출될 수 있도록 형성된 배출 유로를 포함할 수 있다.

일 실시 예에 따르면, 상기 배출 유로는 상기 용기와 상기 마개부가 순차적으로 위치하는 방향으로 형성되며, 상기 마개부의 내측으로 인입된 흐름으로 제공될 수 있다.

일 실시 예에 따르면, 상기 배출 유로는 복수개가 제공되며, 복수개의 상기 배출 유로는 상기 마개부의 내주면에 일정 간격 이격되어 형성될 수 있다.

일 실시 예에 의하면, 상기 제 1 외측 나사산 및 상기 제 2 외측 나사산에는 상기 음료병에서 배출되는 탄산 또는 가스가 배출될 수 있도록 복수개의 배출홈이 형성될 수 있다.

본 발명은 상술한 상기 음료병을 이용하여 상기 음료병을 개방하는 방법을 제공한다.

본 발명의 일 실시 예에 따르면, 상기 음료병 개방 단계는 상기 마개부를 일방향으로 회전하는 제 1 회전 단계와 상기 마개부가 상기 걸림 돌기에 걸려 멈추는 멈춤 단계와 상기 음료 내부에 가스가 상기 마개부와 상기 결합부의 사이로 배출되는 가스 배출 단계와 그리고 상기 마개부를 상부 방향으로 들어올려 개방하는 개방 단계를 포함할 수 있다.

일 실시 예에 따르면, 상기 음료병 개방 방법은 상기 마개부를 상기 일방향의 반대 방향으로 회전하여 상기 마개부를 상기 결합부의 상부로 이동시키는 제 2 회전 단계와 상기 제 2 회전 단계 이후에, 상기 제 1 회전 단계, 상기 멈춤 단계, 상기 가스 배출 단계 그리고 상기 제 2 회전 단계를 반복적으로 수행하는 반복 수행 단계를 더 포함하되, 상기 제 2 회전 단계 및 상기 반복 수행 단계는 상기 가스 배출 단계 이 후 상기 개방 단계 전에 수행될 수 있다.

【발명의 효과】

본 발명의 일 실시 예에 의하면, 걸림돌기와 배출 유로를 통해서 음료병 내부에 탄산 또는 가스를 안정적으로 외부로 배출할 수 있다.

또한, 본 발명의 일 실시 예에 의하면, 음료병 개방 시 마개부를 완전히 개방하지 않고 내부에 탄산 또는 가스를 배출 할 수 있어, 음료병을 완전히 개방 시 음료가 흘러 넘치는 것을 방지할 수 있다.

본 발명의 효과가 상술한 효과들로 한정되는 것은 아니며, 언급되지 아니한 효과들은 본 명세서 및 첨부된 도면으로부터 본 발명이 속하는 기술분야에서 통상의 지식을 가진 자에게 명확히 이해될 수 있을 것이다.

【도면의 간단한 설명】

도 1 은 본 발명의 일 실시 예에 따른 음료병을 보여주는 결합 사시도이다.

도 2 는 본 발명의 일 실시 예에 따른 음료병을 보여주는 분리 사시도이다.

도 3 은 도 1 의 용기의 결합부를 보여주는 사시도이다.

도 4 는 도 1 의 마개부를 보여주는 사시도이다.

도 5 는 본 발명의 일 실시 예에 따른 음료병 개방 방법을 순차적으로 보여주는 플로우 차트이다.

도 6 내지 도 11 은 도 5 의 음료병 개방 방법의 각 단계를 순차적으로 보여주는 도면이다.

【발명을 실시하기 위한 구체적인 내용】

이하, 본 발명의 실시 예를 첨부된 도면들을 참조하여 더욱 상세하게 설명한다. 본 발명의 실시 예는 여러 가지 형태로 변형할 수 있으며, 본 발명의 범위가 아래의

실시 예들로 한정되는 것으로 해석되어서는 안 된다. 본 실시 예는 당업계에서 평균적인 지식을 가진 자에게 본 발명을 더욱 완전하게 설명하기 위해 제공되는 것이다. 따라서 도면에서의 요소의 형상은 보다 명확한 설명을 강조하기 위해 과장되게 도시된 부분도 있다. 또한, 본 명세서 및 청구범위에 사용된 용어나 단어는 통상적이거나 사전적인 의미로 한정해서 해석되어서는 안 되며, 발명자는 그 자신의 발명을 가장 최선의 방법으로 설명하기 위해 용어의 개념을 적절하게 정의할 수 있다는 원칙에 입각하여 본 발명의 기술적 사상에 부합하는 의미와 개념으로 해석되어야만 한다.

본 발명은 음료를 수용하는 음료병(10)에 관한 것이다. 일 예로 음료는 콜라, 사이다와 같은 탄산이 포함된 음료일 수 있다. 이와는 달리, 음료는 맥걸리와 같이 내부에 가스가 포함된 발효주일 수 있다. 선택적으로 음료는 스파클링 와인과 같이 탄산 또는 가스가 포함된 음료일 수 있다. 상술한 예와는 달리, 음료는 내부에 탄산 또는 가스가 포함된 탄산음료, 주류 등 제한없이 적용가능하다.

본 발명의 바람직한 실시 예로 음료는 맥걸리와 같은 전통 발효주일 수 있다.

도 1 은 본 발명의 일 실시 예에 따른 음료병을 보여주는 결합 사시도이고, 도 2는 본 발명의 일 실시 예에 따른 음료병을 보여주는 분리 사시도이고, 도 3은 도 1의 용기의 결합부를 보여주는 사시도이고, 도 4는 도 1의 마개부를 보여주는 사시도이다.

도 1 내지 도 4를 참고하면, 음료병(10)은 용기(100)와 마개부(200)를 포함한다.

용기(100)는 내부에 빈 공간을 가진다. 용기(100) 내부에 빈 공간은 음료가 수용되는 수용 공간(101)일 수 있다. 수용 공간(101)에는 상술한 음료가 수용될 수 있다. 용기(100)는 전체적으로 하부의 단면적이 크고, 상부에 단면적이 작은 형태로 제공될 수 있다. 그러나, 용기(100)의 형상은 상술한 예로 한정되지 않고, 내부에 수용 공간(101)을 가지는 용기(100)라면 제한없이 적용가능하다.

용기(100)는 결합부(110) 및 몸체부(150)를 포함한다.

결합부(110)는 몸체부(150)의 상부에 위치할 수 있다. 결합부(110)는 상부가 개방된 공간을 가질 수 있다. 결합부(110)는 상부에서 바라 볼 때, 원형의 단면을 가질 수 있다. 결합부(110)의 외주면에는 외측 나사산(120)이 형성될 수 있다.

외측 나사산(120)은 음료병(10)의 수용 공간(101)을 밀폐하도록 후술하는 마개부(200)가 결합될 수 있다. 외측 나사산(120)은 결합부(110)의 외주면을 따라서 원주방향을 따라서 형성될 수 있다. 외측 나사산(120)은 외주면을 따라서 형성되되, 그 중 일부가 끊어진 형태로 제공될 수 있다.

외측 나사산(120)은 제 1 외측 나사산(121) 및 제 2 외측 나사산(122)을 포함한다.

제 1 외측 나사산(121)은 결합부(110)의 상부에서 외주면을 따라 형성될 수 있다. 제 1 외측 나사산(121)은 결합부(110)의 상부의 외주면에서 결합부(110)의 외주면의 중앙 영역까지 형성될 수 있다. 제 1 외측 나사산(121)은 결합부(110)의 원주방향을 따라서 형성될 수 있다.

제 1 외측 나사산(121)에는 배출홈(140)이 형성될 수 있다. 배출홈(140)은 마개부(200)을 일방향으로 회전하여 수용 공간(101)이 외부와 연통 시 탄산 또는 가스가 배출되는 통로로서 역할을 할 수 있다. 배출홈(140)은 복수개가 제공될 수 있다.

제 2 외측 나사산(122)은 제 1 외측 나사산(121)과 일정거리 이격되어 위치할 수 있다. 제 2 외측 나사산(122)은 결합부(110)의 외주면의 중간 영역에서 시작하여 하부 방향으로 연속적으로 형성될 수 있다. 제 2 외측 나사산(122)은 결합부(110)의 외주면을 따라서 연속적으로 형성될 수 있다. 제 2 외측 나사산(122)은 결합부(110)의 원주방향을 따라서 형성될 수 있다.

제 2 외측 나사산(122)에는 배출홈(140)이 형성될 수 있다. 배출홈(140)은 마개부(200)을 일방향으로 회전하여 수용 공간(101)이 외부와 연통 시 탄산 또는 가스가 배출되는 통로로서 역할을 할 수 있다. 배출홈(140)은 복수개가 제공될 수 있다.

제 1 외측 나사산(121) 및 제 2 외측 나사산(122)은 후술하는 마개부(200)의 내측 나사산(210)과 결합될 수 있다.

걸림 돌기(130)는 용기(100)의 상부를 개방 할 때, 마개부(200)가 외측 나사산(120)을 따라서 일방향으로 회전하다가 멈추도록 할 수 있다. 걸림 돌기(130)는 외측 나사산(120)에 형성될 수 있다. 일 예로 걸림 돌기(130)는 제 1 외측 나사산(121)의 끝단에 형성될 수 있다. 걸림 돌기(130)는 제 1 외측 나사산(121)의 양 끝단 중 제 2 외측 나사산(122)과 인접하는 끝단에 형성될 수 있다. 걸림 돌기(130)는 제 1 외측

나사산(121)의 끝단에서 제 2 외측 나사산(122)을 향하는 방향으로 연장되어 형성 될 수 있다. 걸림 돌기(131)는 제 2 외측 나사산(122)과 일정거리 이격되어 위치할 수 있다.

마개부(200)는 용기(100)의 상부에 결합될 수 있다. 마개부(200)는 용기(100)의 수용 공간(101)을 밀폐할 수 있다. 마개부(200)는 수용 공간(101)을 개방하거나 밀폐 할 수 있다. 마개부(200)는 전체적으로 원통 형상으로 제공될 수 있다. 마개부(200)는 내부에 빈 공간을 가질 수 있다.

마개부(200)는 결합부(110)와 결합될 수 있다. 마개부(200)는 결합부(110)와 결합되어 일방향으로 회전할 수 있다. 여기서 일방향은 용기(100)의 상부를 개방하기 위해 마개부(200)가 결합부(110)에 결합된 상태에서 상부로 이동하기 위해 회전되는 방향으로 정의한다.

마개부(200)의 내측면에는 내측 나사산(210)과 결합될 수 있다. 마개부(200)의 형성된 내측 나사산(210)을 통하여 결합부(110)에 결합될 수 있다.

마개부(200)에는 배출 유로(230)가 형성될 수 있다. 배출 유로(230)는 마개부(200)를 일방향으로 회전하여 수용 공간(101)을 외부와 연통 시 몸체부(150)의 내부에 위치한 음료에서 발생된 탄산 또는 가스가 배출되는 유로이다. 배출 유로(230)는 마개부(200)의 내측면에 형성될 수 있다.

배출 유로(230)는 마개부(200)가 용기(100)와 순차적으로 위치하는 방향으로 형성될 수 있다. 배출 유로(230)는 마개부(200)의 내측면으로 인입된 홈의 형태로 제공될 수 있다. 배출 유로(230)는 복수개가 제공될 수 있다. 복수개의 배출 유로(230)는 마개부(200)의 내주면에 일정 간격 이격되어 형성될 수 있다.

배출 유로(230)는 음료병(10)을 개방 시 마개부(200)를 회전하다가 걸림 돌기(130)에 멈춰진 상태에서 내부에 탄산 또는 가스가 외부로 배출하도록 형성될 수 있다. 이를 통해서 음료병(10)을 완전히 개방 시 음료가 넘치는 것을 방지할 수 있다. 또한, 걸림돌기와 배출 유로(230)는 통해서 내부에 탄산 또는 가스를 안정적으로 배출 할 수 있다.

도 5 는 본 발명의 일 실시 예에 따른 음료병 개방 방법을 순차적으로 보여주는 플로우 차트이고, 도 6 내지 도 11 은 도 5 의 음료병 개방 방법의 각 단계를 순차적으로 보여주는 도면이다.

도 5 내지 도 11 을 참고하면, 음료병(10) 개방 방법은 제 1 회전 단계(S10), 멈춤 단계(S20), 가스 배출 단계(S30), 제 2 회전 단계(S40), 반복 수행 단계(S50) 그리고 개방 단계(S60)를 포함한다.

제 1 회전 단계(S10), 멈춤 단계(S20), 가스 배출 단계(S30), 제 2 회전 단계(S40), 반복 수행 단계(S50) 그리고 개방 단계(S60)는 순차적으로 수행될 수 있다.

제 1 회전 단계(S10)는 마개부(200)를 일방향을 회전하는 단계이다. 제 1 회전 단계(S10)는 마개부(200)를 일방향으로 회전하여 마개부(200)를 결합부(110)의 상부로 이동하는 단계이다.

멈춤 단계(S20)는 제 1 회전 단계(S10)를 통해서 회전하는 마개부(200)가 걸림 돌기(130)에 걸려 멈추는 단계이다. 마개부(200)는 외측 나사산(120)을 통하여 회전하다가 걸림 돌기(130)가 형성된 부근에서 회전을 멈춘다. 이를 통해서 마개부(200)의 내측과 결합(110)부의 외측면에 일정한 공간이 형성될 수 있다. 또한, 결합부(110)의 상부가 마개부(200)와 떨어져 내부 수용 공간(101)이 외부 공간과 연통할 수 있다.

가스 배출 단계(S30)는 음료 내부에 탄산 또는 가스가 마개부(200)의 내면과 결합부(110)의 외측면 사이로 가스를 배출하는 단계이다. 일 예로 탄산 또는 가스는 마개부(200)의 배출 유로(230)를 통해서 외부로 배출될 수 있다.

제 2 회전 단계(S40)는 마개부(200)를 일방향의 반대 방향으로 회전하여 마개부(200)를 결합부(110)의 하부로 이동시키는 단계이다. 제 2 회전 단계(S40)에서는 음료 내부의 가스가 일부 배출된 후 다시 마개부(200)를 결합부(110)와 결합 시켜 내부 수용 공간(101)을 밀폐 시키는 단계이다.

반복 수행 단계(S50)는 상술한 제 1 회전 단계(S10), 멈춤 단계(S20), 가스 배출 단계(S30), 그리고 제 2 회전 단계(S40)를 반복적으로 수행하여 수용 공간(101) 내부에서 발생된 탄산 또는 가스를 반복적으로 배출 할 수 있다.

개방 단계(S60)는 마개부(200)를 상부 방향으로 들어 올려 용기(100) 상부 공간을 개방하는 단계이다. 개방 단계(S60)를 통해서 용기(100)를 완전히 개방할 수 있다.

상술한 본 발명은 걸림 돌기(130)와 배출 유로(230)를 통해서 음료병(10)을 개방 시 내부에 탄산 또는 가스를 안정적으로 배출 할 수 있다. 또한, 마개부(200)를 통해서 개방 시 탄산 또는 가스를 복수회 배출하는 과정을 통해서 내부에 탄산 또는 가스를 안정적으로 배출 할 수 있다. 또한, 본 발명은 음료병(10)을 개방 시 내부에 음료가 외부로 흘러 넘치는 것을 방지할 수 있다.

이상의 상세한 설명은 본 발명을 예시하는 것이다. 또한 전술한 내용은 본 발명의 바람직한 실시 형태를 나타내어 설명하는 것이며, 본 발명은 다양한 다른 조합, 변경 및 환경에서 사용할 수 있다. 즉 본 명세서에 개시된 발명의 개념의 범위, 저술한 개시 내용과 균등한 범위 및/또는 당업계의 기술 또는 지식의 범위내에서 변경 또는 수정이 가능하다. 전술한 실시예는 본 발명의 기술적 사상을 구현하기 위한 최선의 상태를 설명하는 것이며, 본 발명의 구체적인 적용 분야 및 용도에서 요구되는 다양한 변경도 가능하다. 따라서 이상의 발명의 상세한 설명은 개시된 실시 상태로 본 발명을 제한하려는 의도가 아니다. 또한 첨부된 청구범위는 다른 실시 상태도 포함하는 것으로 해석되어야 한다.

【부호의 설명】

10: 음료병 100: 용기

110: 결합부 150: 몸체부

120: 외측 나사산 130: 걸림돌기

200: 마개부 230: 배출 유로

【청구범위】

【청구항 1】

탄산 또는 가스가 포함된 음료를 수용하는 음료병에 있어서,

내부에 상기 음료가 수용되는 수용 공간을 가지며 상부가 개방된 용기와;

상기 용기의 상부에 결합되어 상기 수용 공간을 밀폐하는 마개부를; 포함하되,

상기 용기는,

상기 마개부가 결합되며 외측면에 외측 나사산이 형성된 결합부와;

상기 음료가 수용되는 공간을 가지는 몸체부를 포함하되,

상기 외측 나사산에는 상기 용기의 상부 공간을 개방 시 상기 마개부가 상기 외측 나사산을 따라서 일방향으로 회전하다가 멈추도록 형성되는 걸림 돌기를 포함하는 음료병.

【청구항 2】

제 1 항에 있어서,

상기 외측 나사산은,

상기 결합부의 상부에서 외주면을 따라 형성되는 제 1 외측 나사산과;

상기 제 1 외측 나사산과 일정거리 이격되어 상기 결합부의 외주면을 따라 연속적으로 형성되는 제 2 외측 나사산을 포함하며,

상기 걸림 돌기는 상기 제 1 외측 나사산의 양 끝단 중 상기 제 2 외측 나사산과 인접하는 끝단에 형성되는 음료병.

【청구항 3】

제 2 항에 있어서,

상기 걸림 돌기는 상기 제 1 외측 나사산의 끝단에서 상기 제 2 외측 나사산을 향하는 방향으로 연장되어 형성되는 음료병.

【청구항 4】

제 2 항에 있어서,

상기 마개부의 내측면에는 상기 외측 나사산과 결합될 수 있는 내측 나사산과 상기 마개부를 일방향으로 회전하여 상기 수용 공간을 외부와 연통 시 상기 몸체부의 내부에 위치한 상기 음료에서 발생된 탄산 또는 가스가 배출될 수 있도록 형성된 배출 유로를 포함하는 음료병.

【청구항 5】

제 4 항에 있어서,

상기 배출 유로는 상기 용기와 상기 마개부가 순차적으로 위치하는 방향으로 형성되며, 상기 마개부의 내측으로 인입된 홈으로 제공되는 음료병.

【청구항 6】

제 5 항에 있어서,

상기 배출 유로는 복수개가 제공되며, 복수개의 상기 배출 유로는 상기 마개부의 내주면에 일정 간격 이격되어 형성되는 음료병.

【청구항 7】

제 5 항에 있어서,

상기 제 1 외측 나사산 및 상기 제 2 외측 나사산에는 상기 음료병에서 배출되는 탄산 또는 가스가 배출될 수 있도록 복수개의 배출홈이 형성되는 음료병.

【청구항 8】

제 2 항 내지 제 7 항 중 어느 하나의 상기 음료병을 이용하여 상기 음료병을 개방하는 방법에 있어서,

상기 마개부를 일방향으로 회전하는 제 1 회전 단계와;

상기 마개부가 상기 걸림 돌기에 걸려 멈추는 멈춤 단계와;

상기 용기 내부의 가스가 상기 마개부와 상기 결합부의 사이로 배출되는 가스 배출 단계와; 그리고

상기 마개부를 상부 방향으로 들어올려 개방하는 개방 단계를; 포함하는 음료병 개방 방법.

【청구항 9】

제 8 항에 있어서,

상기 음료병 개방 방법은,

상기 상기 마개부를 상기 일방향의 반대 방향으로 회전하여 상기 마개부를 상기 결합부의 상부로 이동시키는 제 2 회전 단계와;

상기 제 2 회전 단계 이후에, 상기 제 1 회전 단계, 상기 멈춤 단계, 상기 가스 배출 단계 그리고 상기 제 2 회전 단계를 반복적으로 수행하는 반복 수행 단계를; 더 포함하되,

상기 제 2 회전 단계 및 상기 반복 수행 단계는 상기 가스 배출 단계 이 후 상기 개방 단계 전에 수행되는 음료병 개방 단계.

【요약서】

【요약】

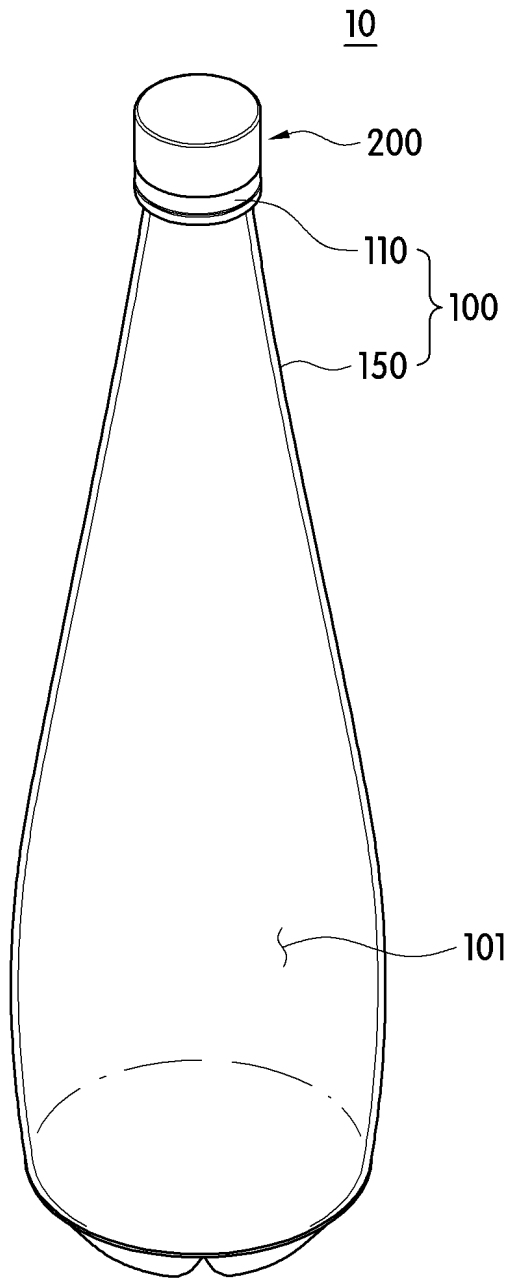
본 발명은 음료병 또는 음료병 개방 방법에 관한 것이다. 본 발명의 일 실시예에 따르면, 내부에 상기 음료가 수용되는 수용 공간을 가지며 상부가 개방된 용기와 상기 용기의 상부에 결합되어 상기 수용 공간을 밀폐하는 마개부를 포함하되 상기 용기는 상기 마개부가 결합되며 외측면에 외측 나사산이 형성된 결합부와 상기 음료가 수용되는 공간을 가지는 몸체부를 포함하되 상기 외측 나사산에는 상기 용기의 상부 공간을 개방 시 상기 마개부가 상기 외측 나사산을 따라서 일방향으로 회전하다가 멈추도록 형성되는 걸림 돌기를 포함하는 음료병을 포함한다.

【대표도】

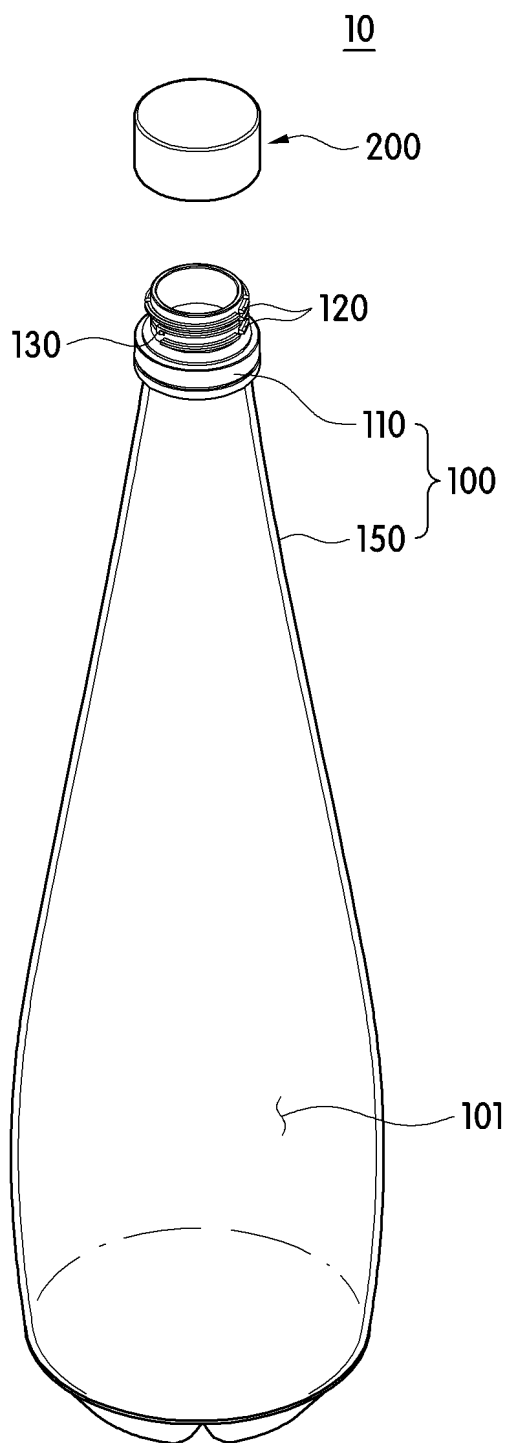
도 2

【도면】

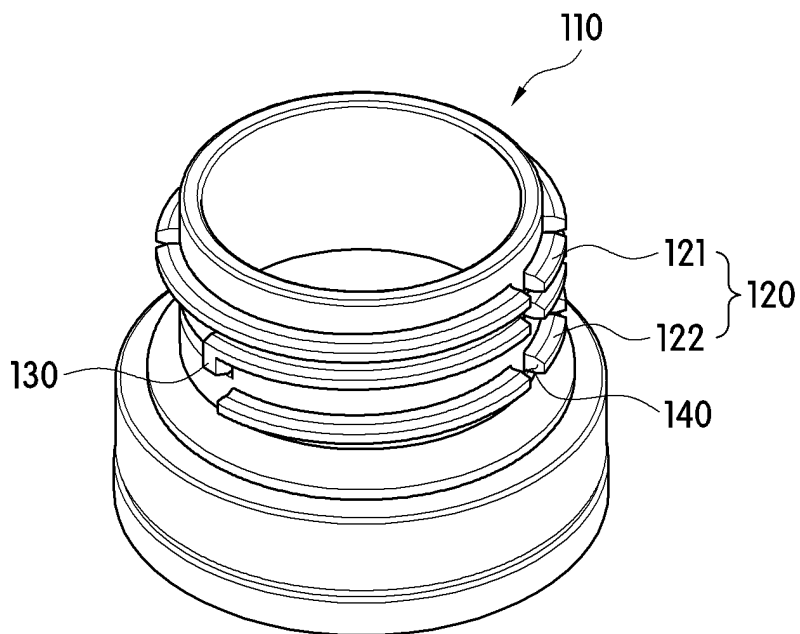
【도 1】



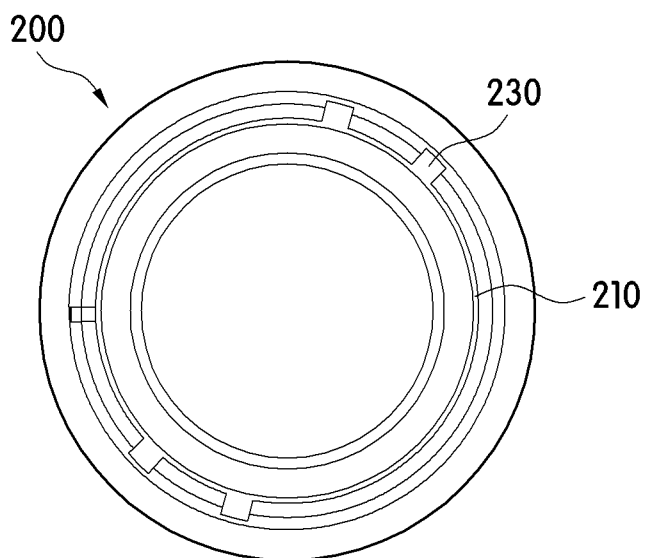
【도 2】



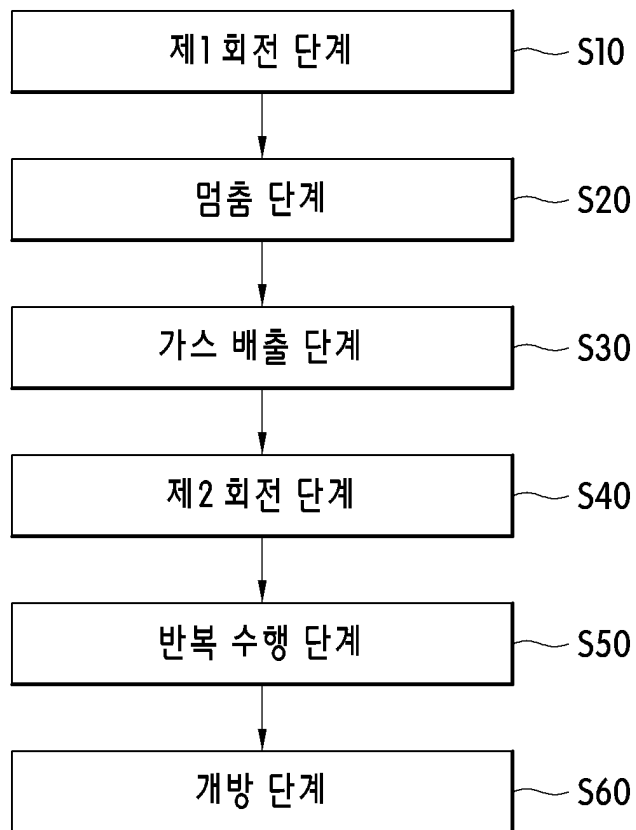
【도 3】



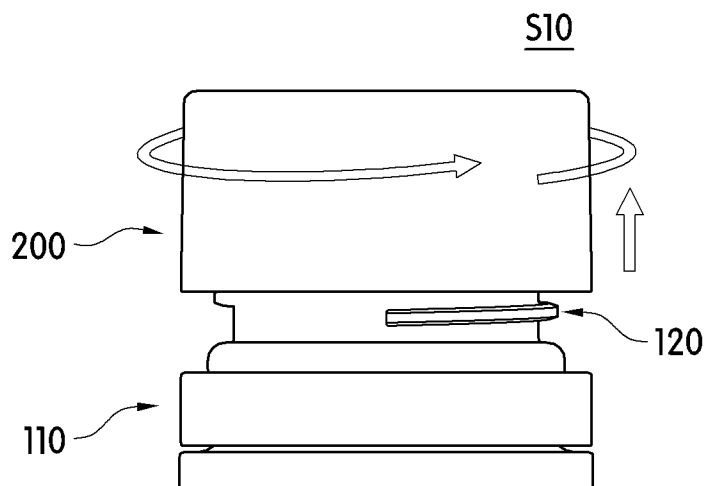
【도 4】



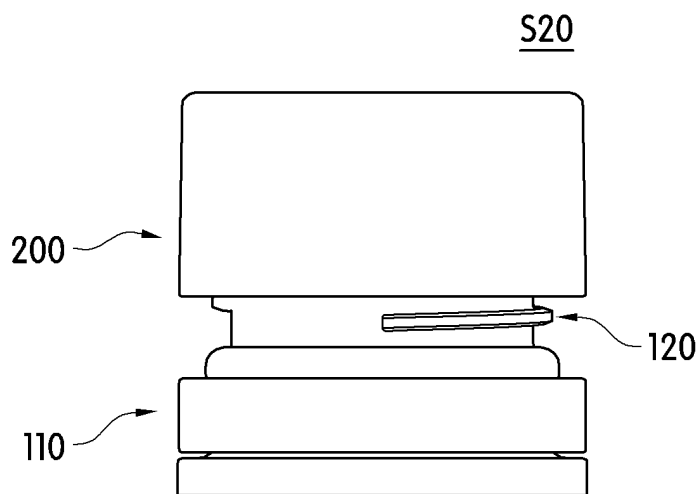
【도 5】



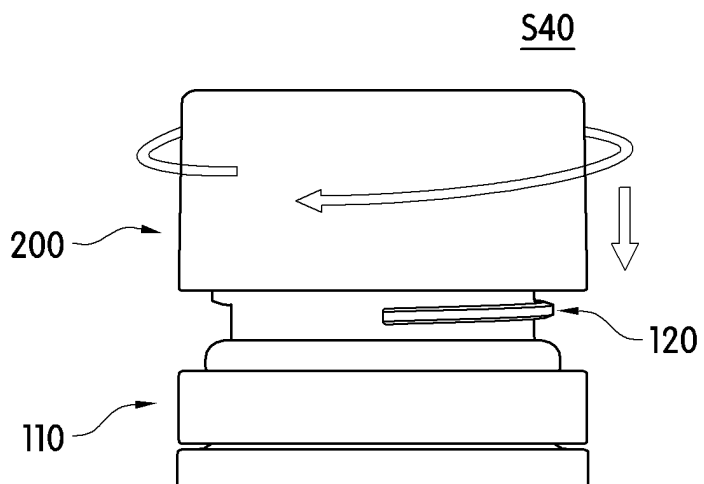
【도 6】



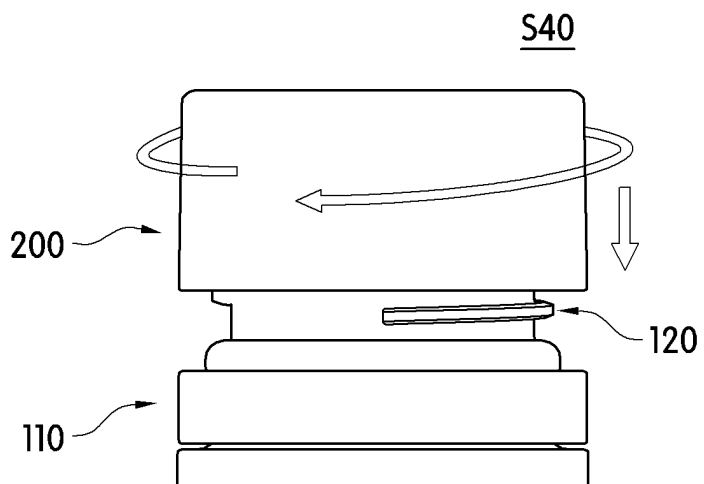
【도 7】



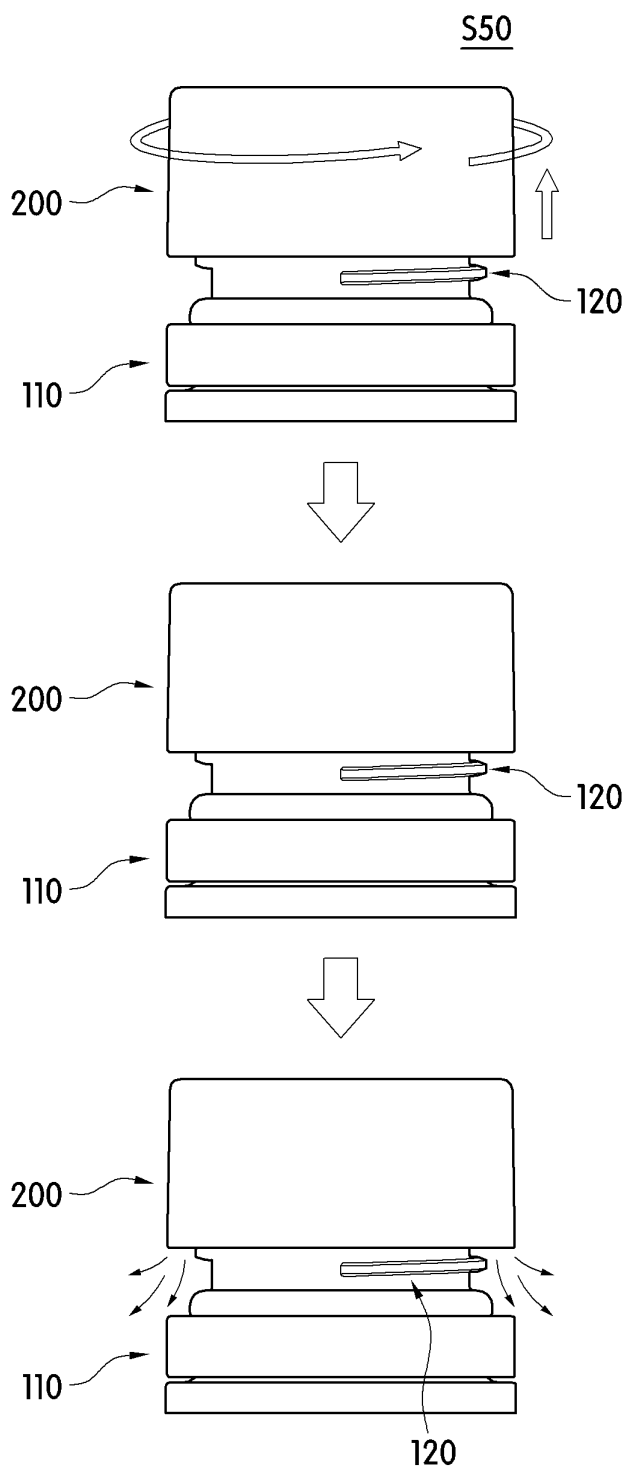
【도 8】



【도 9】

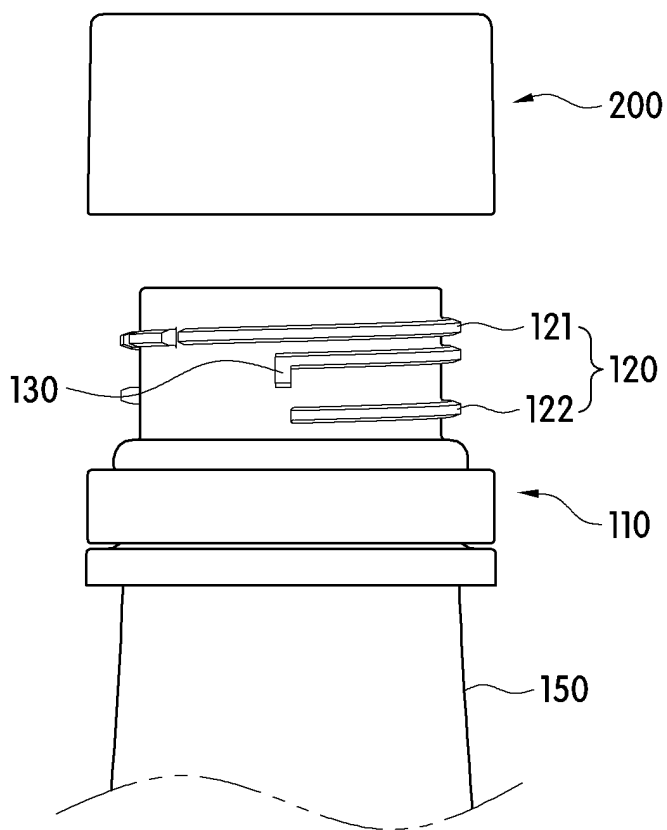


【도 10】



【도 11】

S60



Executive Summary in Korean

Adding Value to 'Boksoondoga' through product (re)design.

지역 특산품을 개발하고 찾아내는 것은 지역 발전에 효과적이고 적절한 전략이다. 한국정부는 지역 산업을 지원하고 홍보하는 과제들이 많으며, 지역 특산품 개발은 그 일환이라고 할 수 있다. 이런 특산품들은 경제적인 측면에서 지역산업을 향상시킬 뿐만 아니라 문화적인 콘텐츠 디자인에도 한 몫을 한다. 울산광역시 울주군에는 이런 보증된 특산품 중 주류 브랜드인 '복순도가'가 있다. 복순도가는 대표적인 제품으로 쌀로 만든 누룩으로 빚는 술인 전통주의 하나, 막걸리를 생산한다. 이 제품은 2010년 한국 농림축산식품부로부터 지역 특산주로 승인 받았다. 복순도가의 막걸리는 전통적인 방법으로 술을 빚어 하루에 많은 양을 생산하지 않고, 지역의 햅쌀을 이용해 인공적이고 화학적인 재료로 만든 누룩이 아닌 천연 누룩으로 생성된 자연 발효된 탄산가스를 함유하고 있다. 다른 회사의 같은 제품들과의 큰 차이점이라면 제품 공정 중에 탄산이 주입되어 밀봉된 것이 아닌, 시간이 지나면서 병 아래쪽에 가라앉은 누룩이 천연 탄산을 생성한다는 점이다. 이렇게 만들어진 청량한 느낌의 탄산 가스는 샴페인처럼 부드럽고 깊은 맛을 만든다. 게다가 이 탄산 가스는 천천히 음료 속에 함유되어 타 제품들과 같이 음용 전 흔들지 않아도 자연스럽게 올라오면서 섞이게 한다. 복순도가는 현재 여러가지 국가과제를 진행하고 있으며, 대표제품에만 집중하는 것이 아닌 그들이 가지고 있는 브랜드 가치를 개발하고 사회에 공헌하는 것에 힘쓰고 있다. 이렇듯 특징적인 제품을 가진 회사는 같은 제품라인 경쟁사들과 달리 대량생산, 대규모의 마케팅 방법을 사용하기 어렵다는 단점을 가지고 있다. 하지만 달리 생각하면 사업의 확장과 도전, 리스크적인 면에서는 자유도가 높다는 장점이 있다. 복순도가는 전통주의 하나이면서 대중적인 막걸리를 일본의 사케와 같이 한국의 대표적인 술로 만들고 싶다는 목표와 함께, 고급적인 면을 담아내고 싶어한다. 다른 회사들의 제품과 확연하게 다른 병의 외양 또한 이 같은 목표의 일환이라고 할 수 있다. 6년 전에 시작했던 이 시도는 보기 좋게 성공했으며, 경쟁사들에 비해 많은 용량을 담고, 상대적으로 높은 가격의 판매방식 또한 소비자들에게 긍정적인 반응을 불러일으켰다. 현재 국내 술 소비시장의 트렌드는 소비자의 연령층이 낮아지고, 술의 유통채널이 넓어지면서 접근성이 높아졌다. 대대로 내려오는 전통주들은 매니아들만이 즐기는 음료가 아닌 대중들에게 가까워지려는 시도를 하고 있다. 이에 복순도가는 마찬가지로 더 질 좋은, 고급스러운, 소비자에게 어필할 수 있는 방법을 찾고 있다. 이것을 위해서는 마케팅, 연구 및 개발, 기존 제품의 향상 등 여러가지 방법이 있다. 석사 졸업과제의 프로젝트로 진행하는 이 연구의 목적은 이 특별한 회사에게 다양한 측면에서의 핵심 제품을 활용한 가능성들을 제안해주는 것이다. 그리고 이것은 회사의 사업 확장에서의 부족한 면들을 보조해줄 수 있을 거라 생각한다. 회사는 작은 규모 회사의 특성상 여러 영역의 수적인 응답을 통한 정량적인 데이터를 분석하는 것이 쉽지 않았을 것이며, 이에 나는 충분한 양의 사용자 응답과 체계적인 시장 분석으로 신뢰성 있는 결과를 주고자 했다. 그리고 이

결과들은 유형의 프로토타입에 반영되어 연구실 규모의 실험 과정 및 결과를 거쳐 효용성과 가능성을 검증하는데 쓰였다. 결론적으로는 이 프로젝트의 디자인 아웃컴은 회사가 추구하는 브랜드 가치와, 제품 시장 트렌드, 앞으로의 가능성, 현재 가진 문제점 해결 등을 중심으로 디자인과 공학적 지식을 바탕으로 새로운 제품라인을 제시한다. 더 많은 소비자들이 접할 수 있는 낮은 용량의 음료병과 함께 탄산 과다누출로 인한 넘치는 문제를 lid 부분의 새로운 설계와 함께 개방 방법을 제공해주는 솔루션을 도입하였다. 실제 기존 제품과의 비교를 통해 확장 가능성을 높이 사 특허출원을 진행 중이며, 이는 학교와 회사 그리고 산업 영역에 공헌하는 결과물이 될 것이라 생각한다.

핵심어: 제품 개발, 병뚜껑 디자인, 산업디자인, 브랜드 정체성, 패키지 디자인, 컨셉 도출

Acknowledgement

First of all, I would like to special thanks to my instructors Prof. James A. Self for his invaluable assistance and insights leading to the period of my UNIST life and the finishing of this project. He is the best mentor in my life. And I also really thanks Prof. Chajoong Kim and Prof. KwanMyung Kim and technician Kicheol Youk for their encouragement, thoughtful guidance, and critical comments. I also appreciate the support of the company 'Boksoondoga'.

I want to express my deep thanks to CDE staffs and graduate schoolfellows. And also I would like to thank the members of DPR laboratory. Finally, I greatly appreciate to Imkyung for her excellent assistance and spiritual supports for me during my study.

This work was supported by the 'Promotion of Special Design-Technology Convergence Graduate School' of the Korea Institute of Design Promotion with a grant from the Ministry of the Trade, Industry & Energy, Republic of Korea. (N0001436)

Adding Value to ‘Boksoondoga’ through product (re)design

Copyright © 2017 by Sung Keun Lee

If you want to cite parts of the contents in this book, please contact UNIST Library for an electronic copy of the approved dissertation.