

# Design of Chinese Wind Induction Cooker

Shi Xudong <sup>1,a</sup>, Lee Yopiao<sup>1</sup>

<sup>1</sup>College of Mechanical and Electrical Engineering, Lingnan Normal University, Zhanjiang, China  
<sup>a</sup>47969688@qq.com

**Abstract:** With the continuous progress of society and technology, people not only pay attention to the functionality of small household appliances, but also pay more attention to the spiritual and cultural enjoyment brought by design. Products designed with Chinese style elements can give people spiritual relaxation, let people recall the heritage left by the ancients, and slowly taste the antique China culture. This design uses China traditional cultural elements to coat the induction cooker with traditional cultural characteristics, so that the appearance design is still ancient and full of cultural heritage, making consumers feel that small household appliances are more cordial and humanized, and it will also be the first choice for Chinese style lovers.

**Keywords:** Chinese style; Design; Ancient rhyme; Kindness; humanize

## 1. Introduction

In the present world, product design has evolved beyond mere functionality and has become an integral part of popular culture, catering to the needs and preferences of the masses. The renowned automobile designer, George Yarrow, emphasizes the fact that the essence of design lies in culture, highlighting the multidisciplinary nature of design as a cultural discipline. National and regional cultures play a significant role in determining the concept of product design, as German products are associated with delicacy and stability, while American products are known for their generosity and openness. The more national a product design is, the more it becomes cosmopolitan. When it comes to Chinese product design, it goes beyond being a mere collection of Chinese culture; instead, it is an analysis of China's ideology and ethical habits through semiotics, leading to a design style that naturally originates from China's national characteristics. Chinese culture and design elements have become increasingly prominent in the global market. In recent years, Chinese culture and design have gained popularity worldwide, with Chinese products such as smartphones, home appliances, and automobiles gaining global recognition. As China emerges as a more significant player in the global market, the importance of incorporating Chinese culture and design elements into product design will only increase. This will enable companies to cater to the needs and preferences of Chinese consumers while also appealing to global consumers who appreciate the unique cultural elements of Chinese products. Understanding the impact of national and regional culture on product design is crucial to create successful designs that cater to the needs of consumers worldwide. With the increasing globalization and intercultural exchange, companies need to consider the cultural context while designing products. It is essential to recognize that cultural differences exist in the interpretation of products and services, and ignoring these differences can lead to cultural misunderstandings and a negative impact on brand image. In conclusion, product design has evolved to become an integral part of popular culture, catering to the needs and preferences of the masses. National and regional cultures play a crucial role in determining the concept of product design, and incorporating cultural elements can lead to successful designs that cater to the needs of consumers worldwide. As Chinese culture and design elements gain more prominence in the global market, understanding the impact of national and regional culture on product design becomes essential for companies to succeed in the global market. As we all know, the more national it is, the more cosmopolitan it is. In product design, China element is not only a simple accumulation of China culture, but also an analysis of China through semiotics, starting from the Chinese people's ideology and ethical habits, so that the style naturally originates from the national characteristics of China<sup>[1]</sup>.

## 2. China style of some discussion

Chinese style is a unique design style that is deeply rooted in China's rich cultural heritage and traditional way of living. It aims to showcase the essence of China's culture while incorporating modern

design trends. Chinese style is not just a replication of the retro styles of the Ming and Qing dynasties, but an expression of the elegant, implicit, dignified, and rich spiritual realm of the East.

Achieving a successful Chinese-style design requires a careful analysis and understanding of Chinese culture, including its ideology, philosophy, and aesthetics. Traditional Chinese elements such as calligraphy, painting, architecture, and sculpture are essential in achieving the desired effect. However, it is equally important to balance tradition and innovation, so that Chinese style can adapt to the changing needs of contemporary society while still retaining its cultural authenticity.

However, Chinese style is not just about incorporating traditional elements. It is equally important to balance tradition and innovation to create a design that is both culturally authentic and contemporary. Therefore, Chinese style designers are encouraged to embrace new design concepts, materials, and techniques while still adhering to the core values of Chinese culture. This approach enables Chinese style to continue evolving, adapting to the changing needs of contemporary society while retaining its unique cultural identity.

In conclusion, Chinese style is a distinct design style that draws from China's rich cultural heritage and traditional living habits. It aims to showcase the essence of China's culture while incorporating modern design trends. Achieving a successful Chinese-style design requires a careful analysis and understanding of Chinese culture, including its ideology, philosophy, and aesthetics. By balancing tradition and innovation, Chinese style designers can create designs that are both culturally authentic and contemporary, allowing Chinese style to continue to evolve and adapt to the changing needs of contemporary society.

In recent years, Chinese-style design has become increasingly popular both domestically and internationally. The design industry has recognized its potential to appeal to a broad range of consumers, including those who are interested in traditional culture, as well as those who simply appreciate its aesthetic qualities. Chinese-style products have been widely applied in interior design, fashion, industrial design, and other areas. In particular, many luxury brands have incorporated Chinese elements into their products to create a unique identity and appeal to Chinese consumers.

Despite its popularity, Chinese-style design also faces challenges. One of the main challenges is how to balance the use of traditional Chinese elements with modern design trends. Designers must carefully consider how to adapt traditional elements to suit the needs and preferences of contemporary consumers, while still maintaining the authenticity of Chinese culture. Another challenge is the need to promote Chinese-style design on a global scale. In order to achieve this, designers must not only have a deep understanding of Chinese culture, but also possess the skills and knowledge needed to compete in the international design market.

Overall, Chinese-style design is a unique and dynamic field that combines traditional Chinese culture with modern design trends. It has the potential to appeal to a broad range of consumers and can be applied in a wide variety of design fields. As the design industry continues to evolve and develop, Chinese-style design will undoubtedly play an important role in shaping the future of global design trends<sup>[2]</sup>.

Chinese civilization has developed a long history of cultural knowledge for five thousand years, and the material elements of traditional culture naturally cover a wide range. The following are some material elements: China's calligraphy, seal cutting, China Red, Peking Opera facial makeup, shadow play, paper-cutting, auspicious clouds, Chinese knots and so on. They are all concrete material elements, which contain China people's artistic creativity and understanding of beauty.

China style is an indulgent fantasy, which imagines China as a dream-like country. Everything is so novel, so different, extremely luxurious and thrilling. Dr Sarah Cheang said that China style. Eleanor Robinson also said: China is a trend always hidden in the fashion background, and creative designers will always draw inspiration from China elements.

In recent years, the development of small household appliances is very rapid. Compared with household appliances, its popularity has increased rapidly, and its designs are diverse and colorful. At the same time, Chinese style elements have been constantly applied to various products, making consumers feel that small household appliances are more cordial and humanized.

### **3. Induction Cooker Case design**

#### ***3.1. Investigation on the current situation of induction cooker***

With the gradual development of science and technology, the traditional liquefaction stove has been gradually eliminated by the market due to the defects such as excessive oil smoke, large volume and inconvenient control. The electromagnetic oven with avant-garde atmosphere and green environmental protection caters to the concept of convenient, green, smokeless and tasteless green kitchen, and has increasingly become the new favorite of the kitchen.

Compared with gas stoves, the biggest advantages of induction cookers are cleanliness, safety and high thermal efficiency; Compared with the microwave oven, the induction cooker has the advantages of high thermal efficiency, environmental protection and energy saving, and integrates the functions of frying, frying, steaming, boiling, frying, stewing, stewing, chafing dish and barbecue, which can meet various needs of family cooking. Therefore, in some countries where induction cookers are more popular, induction cookers are praised as "the God of Cooking" and "green stoves".

#### ***3.2. Working principle of induction cooker***

Induction cooker is a new type of cooker in kitchenware market. It breaks the heating principle that the traditional open fire cooking method adopts field-induced current (also called eddy current). The electromagnetic oven generates an alternating magnetic field through the electronic circuit board. When the bottom of the iron-containing pot is placed on the furnace surface, the pot cuts the alternating magnetic field lines and generates an alternating current (namely eddy current) at the metal part at the bottom of the pot. The eddy current makes the iron atoms of the pot move irregularly at high speed. Atoms collide and rub with each other to generate heat energy (therefore, the heat source for cooking in the induction cooker comes from the bottom of the cooker instead of the induction cooker itself, so the thermal efficiency is nearly twice as high as that of all cookers), so that the cooker itself can generate heat at high speed to heat and cook food, thus achieving the purpose of cooking. It has the advantages of rapid temperature rise, high thermal efficiency, no open flame, no smoke, no harmful gas, no thermal radiation to the surrounding environment, small size, good safety and beautiful appearance, and can complete most cooking tasks in the family<sup>[3]</sup>.

#### ***3.3. Analysis of electromagnetic furnace in the Market***

At present, there are many kinds of electromagnetic furnace in the market, which are divided according to the number of roofs, including single-headed and double-headed ones; According to the installation methods, there are desktop and embedded; According to the control panel, there are horizontal touch, inclined button, circular surround, horizontal knob and remote control.

From the market research and analysis, it is found that the induction cookers on the market now pay more attention to the functional changes. Most induction cookers only stay in simple geometric modeling, lacking in-depth research on the psychology of mass consumers. With the improvement of social living standards, people are now pursuing individual environmental life, the harmony between using products and the surrounding environment, and the enjoyment of spiritual culture. However, for some consumers who like personalized home, the modeling style and use environment of induction cookers on the market are not well coordinated, which cannot meet the visual and psychological needs of users.

### **4. Design of Chinese Wind Induction Cooker**

#### ***4.1. Design proposal of Chinese wind induction cooker***

With the gradual improvement of people's taste in life, personalized small household appliances have become an indispensable part of people's lives. The single function of all kinds of products can't fully meet people's needs. What they pursue is not only a tool for life, but also an ornament for spiritual and cultural enjoyment. Therefore, we should constantly create new products to meet new demands and drive new industries.

The application of Chinese style elements is the development trend of small household appliances, which combines Chinese culture with modern science to create humanized products to meet the individual needs of modern people. Therefore, designing a Chinese style induction cooker will be sought

after by more and more tasteful consumers.

#### 4.2. Design orientation of Chinese wind induction cooker

Product positioning cannot be ignored in the process of product design. The key to the success of a new product lies in whether the product positioning is accurate. For product design, who are you designing for? Who do you want to meet? This is the first question to be answered, and it is the starting point and ultimate goal of all design. The ultimate battlefield of products is the hearts of consumers. The closer you design products to the hearts of consumers, the greater your chances of success<sup>[4]</sup>.

Through investigation and study, the age group of using induction cookers in China is mainly divided into three age groups, with 22-32 years old as the most important age group. This user group has an open mind, strong ability to accept new things, and pursues the fashion trend. Some young people pursue the classical style with China charm. The use environment is mainly based on elegant kitchen style, emphasizing the harmony and unity of products and surrounding environment. Through the above investigation and analysis, the Chinese wind induction cooker is now positioned.

#### 4.3. Appearance Design of Chinese Wind Induction Cooker

The appearance of a successful product must be never tired of being seen, and people feel easy to operate when using the product. The purpose of product modeling is, on the one hand, to make the product more convenient for people to use, and on the other hand, to better meet the aesthetic feeling of users and meet people's psychological needs. Excellent shape design can make the product useful and give people a strong visual impression<sup>[5]</sup>.

As shown in Figure 1, the design of this Chinese wind induction cooker is mainly designed around simplicity, stability, generosity, ancient rhyme, elegance and humanization. Therefore, the concept of the scheme is mainly based on the simple geometric basic shape, and with the detailed design of China elements, the product is simple but not simple.



Figure 1: Front Effect Diagram



Figure 2: Fuzi (paper-cut).



Figure 3: Roof Pattern (Detail).

As shown in Figure 2-3, the pattern on the top plate of the induction cooker is inspired by the ancient traditional folk paper-cutting culture in China, which evolved from the word "Fu". Its unique style is deeply loved by people at home and abroad. This pattern has the characteristics of symmetrical composition, balanced picture, beautiful and subtle, and it is applied to electromagnetism, which further embodies the characteristics of China style. It reminds people of happiness and auspiciousness, and

implies a happy life.



Figure 4: Bronze.



Figure 5: Foot Modeling (Details).

And figure 4-5 the foot modeling, evolved from the geometric ornamentation of bronzes. Geometric patterns are regular patterns composed of geometric patterns. In the Spring and Autumn Period and the Warring States Period, geometric patterns are common on bronzes, giving people a sacred and inviolable spiritual threat in modeling. Applying it to the induction cooker gives people solemn, steady and atmospheric cultural characteristics, and further explains the application of China traditional cultural elements in product design.

Generally speaking, the induction cooker in this design not only breaks the conventional modeling, but also uses the method of "semiotics" to refine and simplify the traditional elements of China and combine them with the products. It brings new enjoyment to modern consumers in psychological and spiritual aspects, can better meet the needs of modern people's individual life theme and aesthetic taste, and adds a landscape to modern elegant home environment, thus bringing people closer to the harmonious coexistence and symbiosis with home environment and embodying the humanization of products.

#### 4.4. Product function and color analysis

As shown in Figure 6, this product has a wide glass-ceramic top plate, which makes the screen look more concise and generous, and all controls are concentrated on the touch screen. Touch screen has become the mainstream of consumption in small household appliances, and touch screen technology brings us not only touch-and-get operation, but also more humanization.

This design combines modern science and technology with the traditional culture of China, giving consumers not only a taste of retro, but also the progress of modern science and technology, bringing a brand-new life experience.

As a cognitive schema with special meaning, the traditional concept of color affects people's aesthetic creation. This leads to the subjective solipsism tendency of auspicious graphic coloring, and the subjectivity of this color is ultimately the result of the influence of China traditional culture<sup>[6]</sup>.

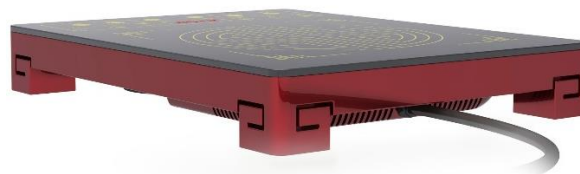


Figure 6: Chinese wind induction cooker.

In China folk culture, the natural attribute of red makes it a medium for people to express their happiness and passion, and "China Red" stands for happiness and auspiciousness. People use red to express joy and blessing, and use red to protect themselves, eliminate disasters and exorcise evil spirits. From the child's red belly pocket to the wedding with the theme of China Red; From the red belt of the animal year, the red tassel of Peiyu to the birthday suit and peach of the birthday girl; From the red cloth hanging on the lintel when Tim Ding was imported to the "full moon" made by the child at the full moon; From the boudoir's daughter's red rope to the dancing silk of yangko; From lanterns hung during the Chinese New Year to Spring Festival couplets and window grilles posted by every household, from red envelopes to firecrackers to remove the old and welcome the new; From the famous "red, green and yellow" tri-colored Tang Dynasty, the most famous "red-offering" porcelain in Jingdezhen to the world-famous "red porcelain" in the Olympic Games, China Red always represents the embodiment of

happiness and auspiciousness in life.

Because the induction cooker will generate a lot of heat when it works, the top plate material of the induction cooker must be made of heat-resistant and high-temperature resistant ceramic materials. Although ordinary ceramic materials are resistant to high temperature, they are brittle, fragile and prone to yellowing. Generally, black crystal panels are used in the market, which has strong impact resistance. As for the internal magnetic components such as thermal inductor, mutual inductor, switching power supply transformer, power frequency transformer, main transformer, input common mode filter, output inductor, choke coil and anti-interference inductor, the corresponding magnetic materials are selected.

The base of the induction cooker is made of polypropylene plastic (PP) by injection molding and surface painting. Polypropylene plastic is milky white and translucent in appearance, non-toxic and tasteless, and light in weight. Excellent bending fatigue resistance, good chemical stability and electrical insulation, stable molding scale, small thermal expansion, higher mechanical strength, rigidity, transparency and heat resistance than polyethylene. It can be formed by blow molding, extrusion, injection thermoforming and other methods. Polypropylene surface can be electroplated after treatment, and its electroplated products have better heat resistance than ABS resin<sup>[7]</sup>.

## 5. Conclusions

Design is a kind of product with powerful functions and aesthetic characteristics by considering both science and aesthetics. It requires designers not only to have scientific and artistic talents, but also to fully consider the user's feelings and use environment to design pleasant products. However, it is a reflection of regional culture and humanistic spirit to give Chinese traditional cultural symbols to product design, which gives people a spiritual demand. Therefore, the design of this Chinese style induction cooker combines China traditional culture with modeling, giving people a brand-new modeling concept. We believe that Chinese style will occupy an important position in the future design.

## Acknowledgements

Liberal Arts Project of Lingnan Normal University in 2019: Research on Design of Creative Tourist Souvenirs Based on Digital Leizhou Culture (1170919458).

## References

- [1] Yu Dong, Xie Qinglin. Discussion on the application of China style in industrial design in China today [J]. *China Academic Journal*, 2007-S1-054.
- [2] Zhang Lin. Developing China Style in Design [J]. *China Academic Journal*, 2007-03-008.
- [3] Baidu Encyclopedia [EB/OL]. <http://baike.baidu.com/view/3355.htm>.
- [4] Wu Rong. Research on product design orientation [J]. *Art Grand View*, 2007, (11).
- [5] He Xiaoyou. *Product design procedures and methods-product design (1)* [M]. Beijing: China Light Industry Press, 2008.1.
- [6] Tang Jialu, Sun Lei. *Auspicious Decoration in China* [M]. Nanning: Guangxi Fine Arts Publishing House, August 2000.
- [7] Jiang Xiangyun. *Design materials and processing technology* [M]. Beijing: Beijing Institute of Technology Press, 2008.