

Study on the Design of Panzhihua Vanadium-Titanium Souvenirs

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Abstract—Panzhihua is rich in vanadium-titanium magnetite. Panzhihua - Xichang is the main vanadium-titanium magnetite belt with the largest storage volume. As a result, vanadium-titanium has become the mainstay industry of Panzhihua. Nowadays, Panzhihua is building itself into a tourism-oriented city. In order to improve the overall tourism image of Panzhihua City, and to create the business card of Panzhihua City, Panzhihua City tries to design the souvenirs that can represent it with vanadium-titanium as the material. This paper introduces the characteristics of vanadium-titanium material, current situation of the development of souvenirs in Panzhihua City as well as the importance and influence of vanadium-titanium in souvenirs of Panzhihua City. Drive the development of tourism industry in Panzhihua, promote vanadium-titanium products into daily life, and enhance people's quality of life through development and research of vanadium-titanium souvenirs.

Keywords—Panzhihua; vanadium-titanium; souvenirs

I. INTRODUCTION

The vanadium-titanium resources are distributed less widely around the world, so it is rare, and China has the largest reserves, of which Panzhihua City is the main storage site. Vanadium-titanium is less widely used in people's daily lives, and even many people do not know it. Vanadium-titanium is mainly used in heavy industry, such as aerospace, ocean engineering and biomedicine fields. In light industry, it is mainly used in the production of sports and leisure goods, computer housings, glasses, and kitchen supplies. Vanadium-titanium industry and related industries account a large proportion of Panzhihua City's major economic sources. Therefore, applying vanadium-titanium widely into daily life is an important way to enhance local economy of Panzhihua. At present, relevant products in the markets of vanadium-titanium souvenirs in Panzhihua have single type, simple design, lack of innovation (as shown in "Fig. 1" and "Fig. 2"), and the product packaging is out-fashioned and lack of novelty, which cannot attract the consumers' attention, and unable to meet the current growing market demand for souvenirs.



Fig. 1. Vanadium-titanium Vacuum Cup



Fig. 2. Vanadium-titanium Tableware

II. VANADIUM-TITANIUM MATERIAL CHARACTERISTICS AND ITS IMPACT ON SOUVENIRS DESIGN

A. Characteristics and Use of Vanadium

Vanadium is a refractory and rare metal with high melting point, and its main product forms include: vanadium pentoxide, vanadium trioxide, vanadium iron, vanadium nitride and so on.

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Among them, vanadium pentoxide and vanadium trioxide are the most important vanadium oxides in the actual production. They are the main raw materials for producing follow-up vanadium products such as vanadium iron, vanadium nitride and vanadium carbide, mainly having the following characteristics:

- Vanadium has good gloss and toughness.
- Vanadium can be integrated with other metals very well to form alloy.
- Vanadium has strong resistance to corrosion.

Vanadium can be combined with ceramics, stained glass (see “Fig. 3”, “Fig. 4”). If apply vanadium to souvenirs, then its characteristics such as high hardness and high melting point can increase the beauty, and extend the service life, of souvenirs.



Fig. 3. Ceramic Tableware with Vanadium Added

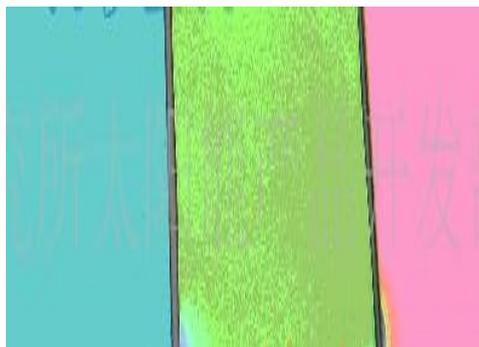


Fig. 4. Stained Glass

B. Characteristics and Use of Titanium

Titanium is a gray transition metal, which is characterized by light weight, high strength, and good resistance to corrosion. It is honored as “space metal” due to its stable chemical properties, good resistance to high temperature, low temperature, strong acid and strong alkali, as well as high strength and low density. The most two prominent advantages of titanium are high strength and strong resistance to corrosion, which inevitably determine the broad application prospects of titanium in the fields such as aerospace, weapons and equipment, energy, chemical, metallurgy, construction and

transportation. The abundant reserves provide resource base for the extensive application of titanium.

The titanium is a very suitable material for making souvenirs. In addition, titanium is also a good decorative material, as it has bright appearance, for example paper packing, oil paint, art pigments, metal seal, porcelain seal “Fig. 5”, “Fig. 6”. This method proposes new types for the production and innovation of souvenirs, which is not only beautiful, but also can leave a profound impact on tourists.



Fig. 5. Porcelain Seal

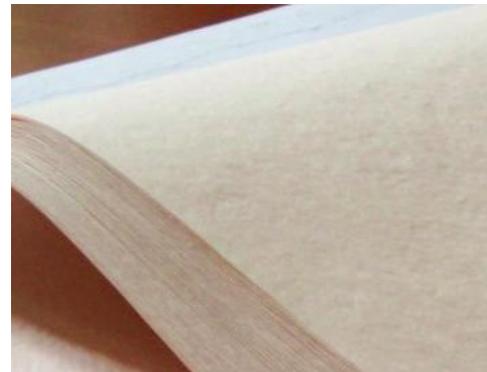


Fig. 6. Paper

III. PRINCIPLE AND POSITIONING OF DESIGN OF PANZHIHUA VANADIUM-TITANIUM SOUVENIRS

Based on the characteristics and manufacturing process of vanadium-titanium materials, apply vanadium-titanium into the design of Panzhihua vanadium-titanium souvenirs, to enhance the diversified development of Panzhihua tourism industry and to make Panzhihua vanadium-titanium be more widely used, thus to enhance comprehensive development of relevant industry in Panzhihua.

A. Design Principle of Panzhihua Souvenirs

Based on the current market situation of Panzhihua souvenirs, the following principles shall be followed in the design of Panzhihua souvenirs:

1) “Connotation”: It refers to that the souvenirs shall fully express the unique features of tourist destination in terms

of tourism, city, culture and other aspects, namely the expression of local cultural characteristics of Panzhihua.

2) *“Novel”*: Souvenirs are also fashion goods, reflecting the differences between local souvenirs and the souvenirs of other places on the premise of meeting basic use functions. Only the originality of design is fully expressed can the tourists’ consuming desires be stimulated better, so as to achieve the design purpose.

3) *“Simple”*: Because the souvenirs are bought by the tourists during their journey, so while designing souvenirs, the factors such as form, material, size, and weight need to be considered. In the process of designing souvenirs, the principle that souvenirs shall be small, possible, light and portable as much as possible shall be considered.

4) *“Decorative”*: This is mainly to conduct packaging design against the characteristics of souvenirs. The use of flat wrapping paper or bags for packaging of products is in line with current environmental protection concept, thus to attract tourism consumers with beautiful and environment-friendly packaging.

Beer bottle opener is designed using simple lines, which is different from the existing beer bottle opener design in terms of modeling. At the same time, vanadium-titanium alloy is selected as the material, making it more exquisite and resistant to wear. “Fig. 7”

The design attempt of souvenir with small furniture shape (“Fig. 7”) is to make innovation in the matching of wood and metal, to combine the local cultural characteristics of Panzhihua and modern modeling with respect to shape, so that it is more in line with modern aesthetic requirements.



Fig. 7. Bottle Opener Design



Fig. 8. Furniture Design

The design of sunshade (“Fig. 9”) selects titanium alloy in terms of sunshade skeleton to enhance its toughness, and it is very hot in Panzhihua area, sunshades are indispensable as the essential necessities of life. The design of creative lighter (“Fig. 10”) uses titanium alloy shell, to increase its service life, and the appearance design is brief and elegant, with high quality, which is easy to carry.



Fig. 9. Sunshade Design



Fig. 10. Lighter Design

B. Design Positioning of Souvenirs in Panzhihua City

In the design positioning of Panzhihua vanadium-titanium souvenirs, it shall be divided into different levels from middle

to high grades due to the cost of vanadium-titanium materials and processing technology requirements. Conduct targeted design according to the regional cultural characteristics. There are diversified regional cultural elements in Panzhihua area, including both the passionate characteristics of ethnic minorities and the rough steel city culture, and beautiful natural scenery characteristics. In terms of souvenirs design, in addition to the novel and decent modeling, there is a certain expression of practical value. Its production process technology shall also be excellent to offer quality assurance, thus to arouse tourists' interest and desire to purchase, to promote the development of Panzhihua souvenirs.

IV. CONCLUSION

With the rise of tourism, tourist spots and cities throughout the country develop vigorously the tourism lines and souvenirs with local characteristics. Innovation is the life of design. In order to overcome the problem of homogenization to innovate continuously, Panzhihua souvenirs need to fully reflect its product features and design features in design. As an industrial city with vanadium-titanium products as economic source, Panzhihua is gradually building Panzhihua City souvenirs as its tourism business card with vanadium-titanium as the material. It is an industry with the most distinctive features in Panzhihua tourism industry, and at the same time, it is the most locally featured souvenir of Panzhihua. Combine its unique characteristics and geographical characteristics of Panzhihua, to design the souvenirs with local characteristics of Panzhihua, which is a wisdom product of the combination of technology and life.

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