

1.Villa Catamaran 2050

Mai Chen

6000AAD Concept creation

6677462

My project is about the marine holiday transportation system in 2050, which provides a new way for people to take a vacation on the island. It is a villa catamaran with a combination of hotel and yacht, mainly used in Sanya, China. This yacht can let tourists have close contact with the sea, at the same time, it provides a more convenient transportation mode for tourists to travel scenic spots.

-Why is it need

-Is a way to bring profits to Sanya's economic industry. It is a new investment project in hotel industry, which can bring economic benefits to the regions with tourism economic industry as the pillar, and also provide new investment projects for middle- and high-class tourists.

-A new way of vacation

Tourists don't have to buy expensive yachts, but they can also enjoy yacht life and avoid traffic congestion.

-Eco-Friendly

Because the yacht uses the fully electric engine, it has zero emission and low noise. It uses solar energy and charging power supply at the same time, so it can save energy and reduce emissions.

-Where

-Geography

Hainan is an island province in the southernmost part of China. Sanya is located in the southeast coastal area of Hainan. The main tourist attractions and hotels are concentrated in this area. Sanya is an international tourism city.

Sanya, known as "Dongfeng Hawaii", is the third liveable city in China, and is also a pilot project of low-carbon cities in China.

The climate is dominated by tropical monsoon, which has the title of "natural greenhouse", with four seasons like summer. It's a great place for people to spend their winter holidays. Hainan is a city with tourism industry as its pillar. The island mainly makes profits from hotels, scenic spots and agriculture. (Sanya, 2020)

-Who

The middle class is the main investor and consumer of this project.

-How

When tourists come to the hotel to check in, the hotel rents yachts to tourists, and provides one or two pilots according to the situation of tourists. Visitors can go to the hotel's service station to officially check in and start their journey. Yachts positioning can slow down or stop in scenic spots. At the end of the journey, the yacht will return to station for charging when checking out.

-Aims and Objectives

- Project Aim: my project the catamaran can use solar energy for power supply and charging. It is an apartment hotel for a family, which can accommodate up to four adults and two children and two crew members. It can achieve "zero emission" and no noise. This catamaran is use in Sanya and focus on the hotel industry and travel attractions.

The yacht has three floors. The main deck is mainly the living room and kitchen. The second deck includes the cab and crew room as well as the living room and bedroom. The third floor is a bedroom.

In the morning, tourists can take yachts to different scenic spots, or water entertainment activities. In the evening, they can have a rest on the yacht, have a party or enjoy the night view of the sea.

- Exterior design: I drew on the existing catamaran structure, combined with houseboat and ocean elements as a source of inspiration to design the shape of the yacht.

- Interior design: I will learn from the interior design of the middle class in China and high-star hotels to design yachts, as well as the layout of the current houseboat to reasonably arrange the hotel room size.

- Maintain yacht operation: understand the water supply and power supply system and daily wastewater treatment of the houseboat.

- 3D model: I will use speed form to model, use key shot to render the model, and finally use blender to make animation.

- Physical model: I will show interior design of yacht in the way of interior design.

Area of research

How to attract more middle class as investors in Sanya hotel industry to help the local tourism development. Next, I'll explain how my design helps local developers attract more investors.

Users

-Target audience/marketing

China's middle class will be the main consumers of this vehicle. Since 2000, the proportion of the middle class in China has increased year by year, and the proportion of the middle class has been more than 50% in 2018 (How well-off is China's middle class? 2020).

-Demographic

-Age: people aged 25-45 have become the new main force of the middle class, 68% of them are middle and low class, and 11% are middle and high class.

-Their income ranges from \$7250 to \$62500, and their household savings account for about 36.1% of their income.

-40% of the region's middle class was released in Beijing, Shanghai, and Guangdong

-Most of them are educated in higher education

-Professional private enterprises and self-employed enterprises, contracting or leasing operators of state-owned enterprises and senior employees of foreign-funded enterprises, patentees of technological inventions, film and television sports stars, CEOs of some new economy, overseas lawyers and brokers (中产阶级 (占有一定生产资料的阶级) _百度百科, 2020)

-Psychographic

-They are willing to spend money on education, cars, real estate investment, tourism, e-commerce, health care. (How well-off is China's middle class?, 2020)

-The consumption concept of the new generation of middle class is gradually westernized. They will think that the quality of expensive products will be cheaper. They dare to try new things, especially digital products. (Mapping china's middle class)

-Behavioural

According to (How well-off is China's middle class? 2020) the new generation of middle class, their consumption will be more pursuit of taste and quality, they are very loyal to the brands they trust, and their ideas gradually change from the pursuit of mass brands to niche brands.

-Lifestyle

I investigated a 40-60-year-old private enterprise boss of the middle and high-middle class. He lives with his wife. He pays great attention on the quality of life and healthy life. He also goes out to practice Taiji every day. His house decoration style is partial Chinese style, usually he likes to collect all kinds of tea, antiques, jade. He uses the car Maserati Ghibli and Benz C class.

At the same time, I also research 25-35 middle class. He lives in the suburbs of Shanghai, is a winery manager, and usually does some wine business. Usually like to play mountain bike basketball and board games with friends. His house is decorated in a minimalist style and his car is Ferrari SUV.

Product Integration

-Tourist

Hainan is an international tourist city with rich cultural and natural landscapes. It is a perfect place for middle-class families to take vacations. In China, the vast majority of the middle class actually belong to the middle and low middle class. They may not have enough money to buy a high-quality yacht, but they still want to enjoy yachting life. Hotels can rent yachts to tourists, which not only provides a more interesting way of vacation, but also gives them more convenient transportation.

- User experience (UX)

According to the users I survey, they want to have a close contact with the ocean, and they want the whole journey to be easy and comfortable. They put forward their requirements for yachts. They want the products to look clean, bright and comfortable.

Technology

- Powertrain

After analysing my design project and considering the local situation and application, I decided to use fully electric engine. The buyer of my yacht is the hotel developer who buys it in bulk and is maintained by the hotel. So, we should choose the engine with low maintenance cost. Yachts are mainly used for sightseeing and vacation, so most of the time the yacht is slow, and the driving distance is short, so the yacht does not need too much horsepower and only runs between islands. At the same time, Sanya is a low-carbon pilot city in China. However, fully electric engine has good performance on slow speed, with the characteristics of low noise, zero emission and low maintenance. (All Electric and Hybrid Electric Drive - Electric Yacht, 2020)

I choose to use 2 * 100kW electric engine to add 2*150KW battery. Considering the size of motors and batteries, I investigated the motors of several 17 meter all electric and diesel yachts. (Böse, 2020) At the same time, the distance from the first scenic spot to the last scenic spot is about 80 nautical miles. The check-out time of the hotel is 2:00 p.m., and I will return to the hotel from 7:00 a.m., and the fastest speed is 12 knots. Therefore, I refer to silent yacht's electric motor and battery which are similar to my design requirements.

– Propulsion systems

I use the electrical propulsion system. Although I know that its price is higher than other propulsion systems, in the long run, it can work well with the solar panel, battery. According to (Sale et al., 2020)

At the same time, it can generate electricity through regenerative braking, which is similar to some advanced vehicles on land. When it stops or moves slowly, the energy generated can be converted into driving power and stored in the battery. Other, it can work well with solar wind and water power. According to (Sale et al., 2020), 10-12 battery panels in series are used to charge the house bank, and then the house bank is used to provide power to the yacht. So, it can be beneficial to the local environment sustainable

– Primary and secondary controls and interfaces

Steering wheel

The yacht continues to use the steering wheel to drive in order to keep driving happy.

Wireless remote control

It can control the yacht remotely in a certain range. Its working principle is that the pilot holds a buoyant waterproof transmitter, and the receiver is installed on the helm. (Wireless boat controls: what are they for?, 2020) On the other side, When your mobile phone tell the driver what the current situation on sea, you can still control the yacht in time even if you are not in the cab. And it's very easy to install. It can be reused. Hotels can install damaged or old ship receivers on new yachts. (Wireless boat controls: what are they for?, 2020) This not only saves installation costs, but also does not have to buy again.

HMI

-Augmented Reality

Choosing my interaction for human. Raymarine's ar navigation technology's existing axiom multi-function display is compatible, connecting multiple cam 0 HD marine cameras together to provide an AR coverage layer for a set of customizable navigation data including the distance to various objects related to the user. It also has an automatic recognition system, which can accurately identify various marine objects, which allows the pilot to react based on the information. (AR Technology Is Changing the World of Professional Yachting - VRScout, 2020) The operation easier, so that ordinary people can understand and react. Because in addition to the pilot will use the yacht, tourists are also users. In order to let them understand the situation. If there is danger, they can also have time to respond.

-Artificial Intelligence

In order to monitor the yacht in real time, AI technology can monitor the yacht remotely, other automatically identify accidents such as grounding when sailing, and remind people when to maintain the yacht. This provides great convenience for the hotel to manage yachts. Sail sense responds by collecting information from different devices, and then calculating and analysing yacht conditions by artificial intelligence. (World, 2020) This makes it easier for the pilot to drive the yacht and reduce the risk.

Materials

–Construction

-GRP yacht construction

Glass fibre reinforced place is a kind of composite material. It is a kind of inorganic non-metal artificial inorganic fibre, which is based on resin and plays the role of bonding. It is lighter, cheap and wear-resistant material. (Boat Building: Basic Construction of Resin, Fiberglass, and Cores - boats.com, 2020) This is suitable with my design, easy to maintain and reduce costs. At the same time, it is easy to form, so the use of this material can reduce labour, which can indirectly reduce costs.

-Heat-reflecting glass

Because I use a semi open design for a better viewing experience, the yacht needs a lot of glass. Due to the fact that Hainan has four seasons like summer, most of the time indoor air conditioning is required, and the ultraviolet radiation is high. In order to let tourists, have the best viewing experience and achieve the purpose of energy saving. I used heat reflective glass, which is a kind of glass with heat reflection coating on the surface of glass by chemical thermal decomposition, vacuum coating and other technologies. The reflectance of infrared rays from the sun can reach 30% - 40%, or even as high as 50% - 60% .(热反射玻璃_百度百科, 2020) The insulating glass made of this kind of glass also has good heat insulation effect, which can reduce the air conditioning load and achieve energy saving effect.

-Solar glass

Because my yacht is mainly powered by solar energy, however, the maintenance and configuration cost of solar panels is high. Solar glass is a kind of glass with a layer of shaped charge coating on the surface of glass, which is low cost and if use on the solar panel it can increase efficiency by 50%. (太阳能玻璃_百度百科, 2020) in addition, the shaped charge coating can be used not only on glass, but also on various plastic plates. Using this coating can save cost and not affect the beauty of yacht.

Manufacture

– Mass production/bespoke

My design is as an investment project, which is invested by investors. The hotel is purchased in batches and then rented to tourists as a new room type. So, this is mass production.

– Methods

My design is to use the glass fibre layout method.

The first process is to make the slipway. According to the ship type and main parameters, the channel steel is used to build the slipway, and the wooden square is fixed on the slipway, and the electric planer is used for levelling

Start modelling

First determine the centre line, make and make the template, and leave a certain height of exhaust at the bottom during assembly. The hollow part is paved with wood, and then putty is applied. Here, gypsum or putty is used. The surface is smoothed with a ruler and water sandpaper and coated with gel coat. Next, use a large amount of floor wax and apply more wax and less release agent. After demoulding, there is a protective film on the surface of the ship. After demoulding, wax and release agent should be applied once. Since the new mould is used, this method is the safest and cheaper. Mix with gel coat and curing agent. Spray the gel coat on the model with a spray gun. Resin and resin putty are used to coat the model, and then the composite felt is laid. The complex part of the model structure can be replaced by cloth and felt to reduce the difficulty of stacking. Wait for the resin to solidify, the resin solidifies to the degree that can reach person can carry on the next process, next use foam to install the skeleton. Finally, demoulding can be carried out by injecting air or water. (Baidu, 2020)

Culture

– Global challenge

A growing middle class has led to a series of problems. As people buy a lot of cars, the emission of carbon dioxide is increased, the greenhouse effect is produced, and the environment is also seriously polluted. China faces serious environmental problems, and the Chinese government has agreed to achieve carbon neutrality by 2060.

– fashion and trends

According to my research, I investigated the interior decoration style of the first generation of middle class. They preferred luxury, partial Chinese style design, and used mahogany furniture or some expensive natural stone to decorate their homes. They thought that such design more reflected their taste and status. And with the second generation of middle class, they prefer minimalist style, they think as long as they live comfortable and bright. They like to use some simple but not boring furniture or accessories of small brands. They think it is easier to clean and maintain. And because they prefer new things, they are more willing to spend money on new smart appliances.

– Society

Low carbon life

There are many hotels in Sanya, which leads to various environmental pollution and destruction, as well as waste. Sanya is a low-carbon pilot city in China. (Sanya, 2020) My design is "zero emission" and uses renewable energy solar energy to obtain electricity, which will not cause pollution and energy waste.

– National factors

Investment in hotel projects

Because most of the middle class in China have the habit of saving money, they like to invest their money in real estate, but this leads them to borrow mortgage, which brings them economic pressure. (How well-off is China's middle class?, 2020) The price and down payment of condo hotel in China are both high in the world, which makes them reluctant to invest in the hotel industry. (Qiuchen Xu, Shirley Liu and Tony Tao (2014) In order to deal with this problem, developers put forward a variety of concessions, such as investors can make profits and stay in the hotel free of charge.

My design project can make the investment mode and price more flexible. Investors will not be bothered by the expensive land price and down payment of house. On the other hand, developers can also provide investors with more diversified investment plans. At the same time, they can easily adjust their investment plans according to the different consumer classes, so as to attract more investors Enter the development of local economy and industry.

Context

– Benchmarking

- Silent yacht 80

It's a clean, pollution-free luxury catamaran, and this line of yachts has two motors to keep it moving smoothly. Among them, silent yacht 80 cruiser is similar to my yacht. It is the smallest yacht in this series. It has two 100kW e-motors to maintain the stability of the yacht. At the

same time, the solar electric system is very reliable and safe, and almost no maintenance work is required. At the same time, it offers the option of a fully automatic walking kit. (Böse, 2020)

- Catamaran Alegria 67

The range of yachts has luxury interiors, including catamaran Alegria 67 maestro version, which has a master room and four double bedrooms, 39 square meters of lounge and bathtub, and is equipped with performance equipment. 360-degree view, you can enjoy the beauty of the sea. Its standard power 2 * 110hp-2 * 110cv, it cruising speed is 7.6 knots at 1800rpm. (Catamaran Yacht Alegria 67

- Fountaine Pajot, 2020)

- my design

Compared with these luxury yachts, my yacht is an investment project, not a customized one. As villa yacht, the yacht's exterior design is very different from them, and the interior design will be closer to the hotel, so the yacht can only accommodate one family. I put the crew's room on the bottom floor, but the passenger's room is on the third floor, and there is a lifting platform in the room that can directly deliver passengers to the upper deck. In order to reduce the cost, I use a kind of solar glass to collect solar energy, and my yacht does not have to travel far, so it has less horsepower

- Product placement

According to (India, 2020), Sanya has moved from a popular tourist city in China to the world, attracting a large number of international companies to invest in Sanya. Many large international hotel brands have chosen this place. At the same time, in order to attract more yachts, these companies have also invested a lot in Wharf equipment and built many open ports. So, this place has the ability to manage a large number of yachts, and Sanya hotel industry is a hot industry.

On the other hand, the down payment for investment in Hotel Apartments is very high. The average down payment in the United States is 8000 US dollars, while that in China is 60000 yuan. (Catamaran Yacht Alegria 67 - Fountaine Pajot, 2020) My design gives more choices to the middle class who want to invest in the hotel industry

Yachts use clean energy and zero emission, which is conducive to the sustainable development of eco-friendly and local tourism Real estate investment.

- Brand

I want consumers to feel quiet and comfortable when they see my design. When they see the yacht, they feel like they are staying in a villa or an apartment, not a yacht. I think when they see my design, they think of the ocean.

Conclusion

- Users conclusion

Through reading materials and research. I chose the Chinese middle class as my user group. First of all, the number of the middle-class accounts for more than half of the number, and with the passage of time, the number of people is growing, the middle low class are become the middle high class in the future. So, this whole group is growing, they have become the main force of the consumer market. After investigating their consumption preferences and ideas, they will spend more money on tourism and education. This reminds me of Sanya, a famous international tourist resort, which receives a large number of domestic and foreign tourists every year. There are many famous brand hotels here, they promote the local economic development. I investigated the way the hotel industry operates. Developers in order to attract more investors, they put forward a variety of concessions, in which investors can get profits and enjoy the highest level of hotel treatment free of charge. This makes me think that yachts should not be used as private customization, but as an investment project, so that more people can afford to consume, and at the same time rent to tourists to make profits.

- Technology conclusion

Because of the special use of my yacht, this yacht will not be used for long-distance sailing, only activities near the island, while taking into account the local sustainable development issues. I considered hybrid motors and all electric, and finally chose all electric. Because compared with other all electric yachts, all electric motors and batteries can support yacht sailing. At the same time, solar glass can receive more solar energy, and then use electric propulsion's renewable brake charging, which is enough to support yacht navigation.

At the same time, in the choice of batteries, I have considered the lead-acid batteries which are cheaper than lithium batteries. However, the lead-acid batteries are too heavy, and the service life is short. The service life of lithium batteries is about twice that of lead-acid batteries. Because the yacht has to be rented in Sanya 7 days a week, it needs a lot of power generation. If the lead-acid battery needs to be replaced many times, it is more appropriate to use lithium battery in this case and save money.

- Materials conclusion

In terms of material selection, I have considered steel or plate according to my own design, but the steel is too heavy, which will cause more energy consumption. In addition, aluminium alloy is also considered, but the price is too high, and GRC and GRG have rough surfaces They are not suitable for my design. I think the surface of my yacht looks smoother, and GRP has strong shaping performance, so it can make various complicated shapes.

I have considered Low-E glass as the main glass decoration. Although the thermal reflection effect of this kind of glass is better than that of overheated glass, the colour of the glass itself will affect the beauty of yachts. Moreover, the heat reflecting glass has the effect of unidirectional image transmission, that is, the outdoor can be seen from the interior, while the interior can not be seen from the outdoor, which can protect the privacy of tourists.

– Culture conclusion

In terms of location selection, my design is a tourism project for the middle class. I have considered some developed countries, but through research 1, although the proportion of the middle class is high and the proportion of the upper middle class is large, the number of people in China is not enough. 2. The proportion of middle-class household savings in income in the United States and the United States is too small. 3. The number of middle class in China has increased year by year. This makes me think about putting the market in China. At the same time, I also consider the beaches in Qingdao, but because Sanya has more superior international ports and big international hotels, it has attracted many Chinese and foreign investors. So, I chose this project in Sanya.

Generally, it is an investment tourism project designed for the middle class, which is then rented by the middle class as consumers to promote the sustainable development of the local tourism industry and increase the employment rate.

-Design Brief and specification

-Aim ; Design a villa catamaran for four adults, two children and two crew members for a week

-Target user; Chinese middle-class family

-Manufacturing and presentation methods; belongs to mass production, using fibre layout

-General specification

Dimensions

Length overall	Beam overall	Guests	Crew
17m	8m	4adults +2childr en	2

Technology

Area	Spec	Add.info
Powertrain	2*50 Full electric engine	-solar glass -2*150 Lithium battery
Cruising speed	4-6 knots	-plug in
Top speed	12-13 knots	

Generator 100 kw Generator

Controls Steel wheel
Wireless remote

Material

Construction	GRP yacht construction
Material	Solar glass
	Heat-reflecting glass (make into double-glazed)

Room

Accommodation for guests	Accommodation	Facility
4adults+2children	Bedroom A: 1large size double bed (1.8*2m) Bedroom B: 2 double bed (1.05*1.8m)	Bedroom A -bathroom balcony Bedroom B -bathroom balcony

Other Room	Facility
	Living room, A -main living room, private area, on the third floor

	Living room B -main living room, kitchen, dinner room, bathroom on the first floor
Moving Chinese courtyard	BBQ area, Pavilion, Fishpond, bench, planet,
Bar -Main deck	Bathroom, Bar, Deck
Opening home spring bathhouse	Hot spring bath,
Crew room	Two bed bedroom and bathroom
gym	Indoor gym with the nice view, bathroom

Reference

ChinaPower Project. 2020. *How Well-Off Is China's Middle Class?*. [online] Available at: <https://chinapower.csis.org/china-middle-class/?fbclid=IwAR1RG7aQ_qlhYAkVondjv2C_cDmN2Hh_okl5WbRIYxxuVoQD_a3rapvPTm4> [Accessed 10 November 2020].

2020. 中产阶级（占有一定生产资料的阶级）_百度百科. [online] Available at: <https://baike.baidu.com/item/中产阶级/61166?fr=aladdin&fbclid=IwAR3cL0LxxuLchqVIFeL_L_CWT6pAhBlb3tl3btXnWD7Y0n8YvifvcRfTsL4#5_2> [Accessed 10 November 2020].

2020. [online] Available at: <https://www.mckinsey.com/industries/retail/our-insights/mapping-chinas-middle-class?fbclid=IwAR1q1nVZM4WGOWl620SuXP5_An6dQgp3nujC8g7Vyds_PbEErACDOY5GMw0> [Accessed 10 November 2020].
En.wikipedia.org. 2020. *Sanya*. [online] Available at: <<https://en.wikipedia.org/wiki/Sanya>> [Accessed 10 November 2020].

Electric Yacht. 2020. *All Electric And Hybrid Electric Drive - Electric Yacht*. [online] Available at: <<https://electricyacht.com/all-electric-and-hybrid-electric-drive/>> [Accessed 10 November 2020].

Böse, F., 2020. *SILENT 60 | Luxury Yachts | Solar Energy & Electric Propulsion*. [online] SILENT-YACHTS. Available at: <<https://www.silent-yachts.com/silent60/?fbclid=IwAR0x05wMPd9ZKpFc-xH5pJde9Aqptl6rb8pa457NCSzKX9G6SRdCZgC1rk>> [Accessed 10 November 2020].

Sale, M., Feet, C., Feet, C., Feet, C., Feet, C., Feet, C., All, C., Catamarans, P., Catamarans, B., Worldwide, C., Multihull, B., Multihull, S., Us, A., School, S., Consultation, Y., Statement, M. and Monohull, S., 2020. *CATAMARAN ELECTRIC PROPULSION*. [online] Multihullcompany.com. Available at: <<https://www.multihullcompany.com/articles/catamaran-electric-propulsion/?fbclid=IwAR2lLgOD6Sjqlh4nh3KpeaEcXVMN-5xZR0htJ7rZ8ljqtcgyeQZgaZFvrDK4>> [Accessed 10 November 2020].

Princess. 2020. *Wireless Boat Controls: What Are They For?*. [online] Available at: <https://www.princess.co.uk/2020/03/60866/?fbclid=IwAR1q1nVZM4WGOWl620SuXP5_An6dQgp3nujC8g7Vyds_PbEErACDOY5GMw0> [Accessed 10 November 2020].

VRScout. 2020. *AR Technology Is Changing The World Of Professional Yachting - Vrscout*. [online] Available at: <https://vrscout.com/news/ar-changing-the-world-of-yachting/?fbclid=IwAR1q1nVZM4WGOWl620SuXP5_An6dQgp3nujC8g7Vyds_PbEErACDOY5GMw0> [Accessed 10 November 2020].

World, Y., 2020. *Monitoring Apps: How The Internet Of Things Can Turn Your Boat Into A Smart Boat*. [online] Yachting World. Available at: <<https://www.yachtingworld.com/features/monitoring-apps-internet-of-things-smart-boat-125303?fbclid=IwAR0lnZGXh7dTkSHhuSQxcRlfwgkin4VudIsKyvE7U5C1Wqy8yV-KCI4nz0w>> [Accessed 10 November 2020].

Boats.com. 2020. *Boat Building: Basic Construction Of Resin, Fiberglass, And Cores - Boats.Com*. [online] Available at: <<https://www.boats.com/on-the-water/boat-building-construction-resin-fiberglass-cores/?fbclid=IwAR0x05wMPd9ZKpFc-xH5pJde9Aqptl6rb8pa457NCSzKX9G6SRdCZgC1rk>> [Accessed 10 November 2020].

Wenku.baidu.com. 2020. [online] Available at: <[Baike.baidu.com. 2020. 热反射玻璃_百度百科. \[online\] Available at: <<https://baike.baidu.com/item/热反射玻璃/4787435?fr=aladdin>> \[Accessed 11 November 2020\].](https://wenku.baidu.com/view/9c7f71d4d1f34693dbef3e15.html?rec_flag=default&fbclid=IwAR1q1nVZM4WGOWl620SuXP5_An6dQgp3nujC8g7Vyds_PbEErACDOY5GMw0#> [Accessed 10 November 2020].</p>
</div>
<div data-bbox=)

Baike.baidu.com. 2020. 太阳能玻璃_百度百科. [online] Available at: <<https://baike.baidu.com/item/太阳能玻璃/2367466?fr=aladdin&fbclid=IwAR1hawf8FB2jCTk6wrFHHixQ9WrwDiDkL-LXPUn6bECGAXpE9SiBvHM0GSg>> [Accessed 11 November 2020].

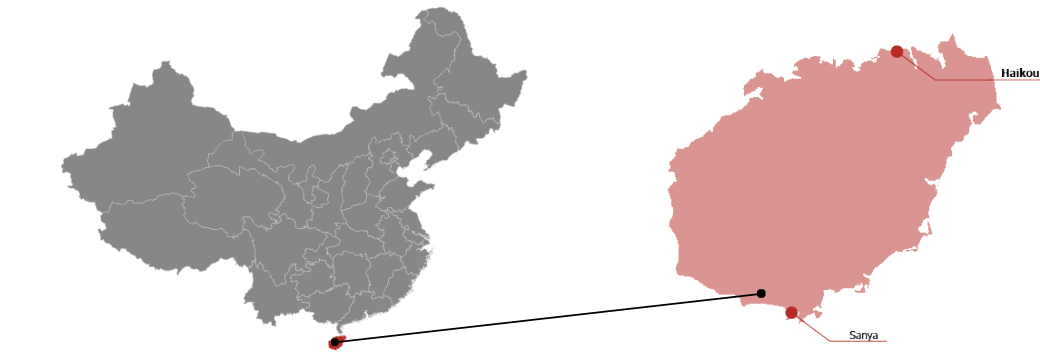
China Power Project. 2020. *How Well-Off Is China's Middle Class?* [online] Available at: <https://chinapower.csis.org/china-middle-class/?fbclid=IwAR0znHj0gMxkaomS3L9l3EylGGd7S0K_th-1Xa3Zjvmm59OGFhGAYltcGOE> [Accessed 11 November 2020].

Qiuchen Xu , Shirley Liu and Tony Tao (2014) In focus SANYA CONDON HOTEL INDUSTRIAL REPORT , HVS GUANGZHOU.

Fontaine Pajot. 2020. *Catamaran Yacht Alegria 67 - Fontaine Pajot*. [online] Available at: <https://www.catamarans-fontaine-pajot.com/en/sailing-catamarans/catamaran-alegria-67/?fbclid=IwAR1WRWr2DOlphaAl0DubuXTDWAzgtD9Pny7OirLQEach0NPpQyKs_jlb4k> [Accessed 11 November 2020].

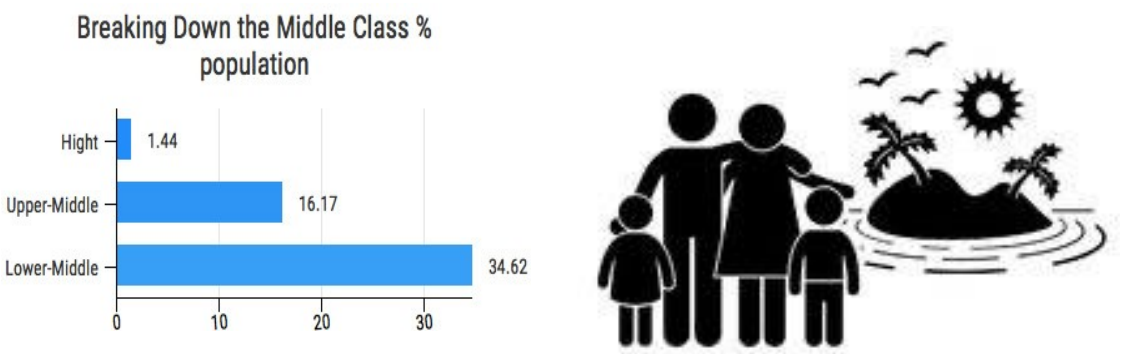
India, K., 2020. *Kerala Leads the Way in Responsible Tourism in India*. [online] euronews. Available at: <<https://www.euronews.com/2020/01/08/kerala-leads-the-way-in-responsible-tourism-in-india?fbclid=IwAR3BF CRP-plz-Yw96RssoS3PYNixMECjV0t1bApKOZpslgl0z0-MF0r0Ggw>> [Accessed 11 November 2020].

NAME： Mai Chen ID： 8877642



WHERE
This kind of yacht is used in Sanya, China's pilot low-carbon city, supported by tourism, with tropical marine monsoon climate

WHY
-As there are many hotels in Sanya, there is a serious oversupply market
-Due to the characteristics of the climate, the number of guests received by the hotel is related to the season and the income is uncertain.
-Provide new ways of vacation to attract tourists



WHO
-Tourists target middle and high income groups
-Lifestyle is a high-quality and tasteful life. Family partners or a group of friends take vacations. They like places with fresh and comfortable environment or places with rich activities
-The purpose of this study is to provide the tourists with the purpose of vacation and enjoy tourism, and those who want to experience yacht life

PERSONAL

Father
-Age 45-60 Living in the south of China Guangdong he is business man, an Engineer designer.
-Personality credible, calm person, really care for healthy, nature.
-Interest like to self drive traveling, like collect jade tea Chinese artwork reading.
-Want fishing
-Close contact with the ocean
-Safety first, easy landing

Mother
-Age 40-60 living in the Guangdong is a housewife.
-Personality like adventure, new thing
-Interesting like backpack travel, have fun with friends, shopping
-Want Leisure
The environment is clean, bright and comfortable

Son
-Age 20-30 living in the Shanghai, second big city • the manager of chateau and do alcohol business.
-Personality outgoing, and contacts new things
-interesting new technology product, big fans of crossing-bike racing PSP game table game
-Want water entertainment
Rich video games, board games
-There are party places and facilities

JOURNEY

From Mon-Sun , travel around the island , from Haitanwan to Yazhouwan is about 80 knts.



Villa Catamaran 2050

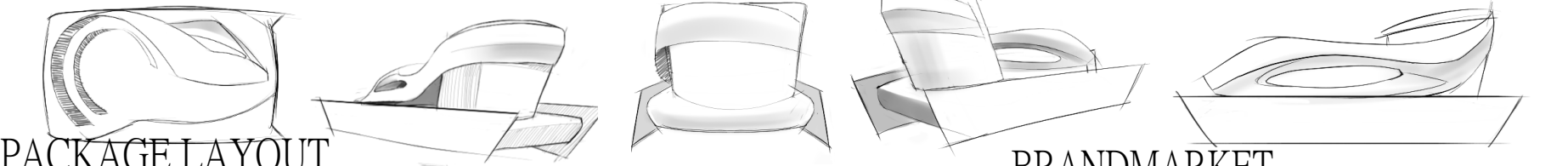
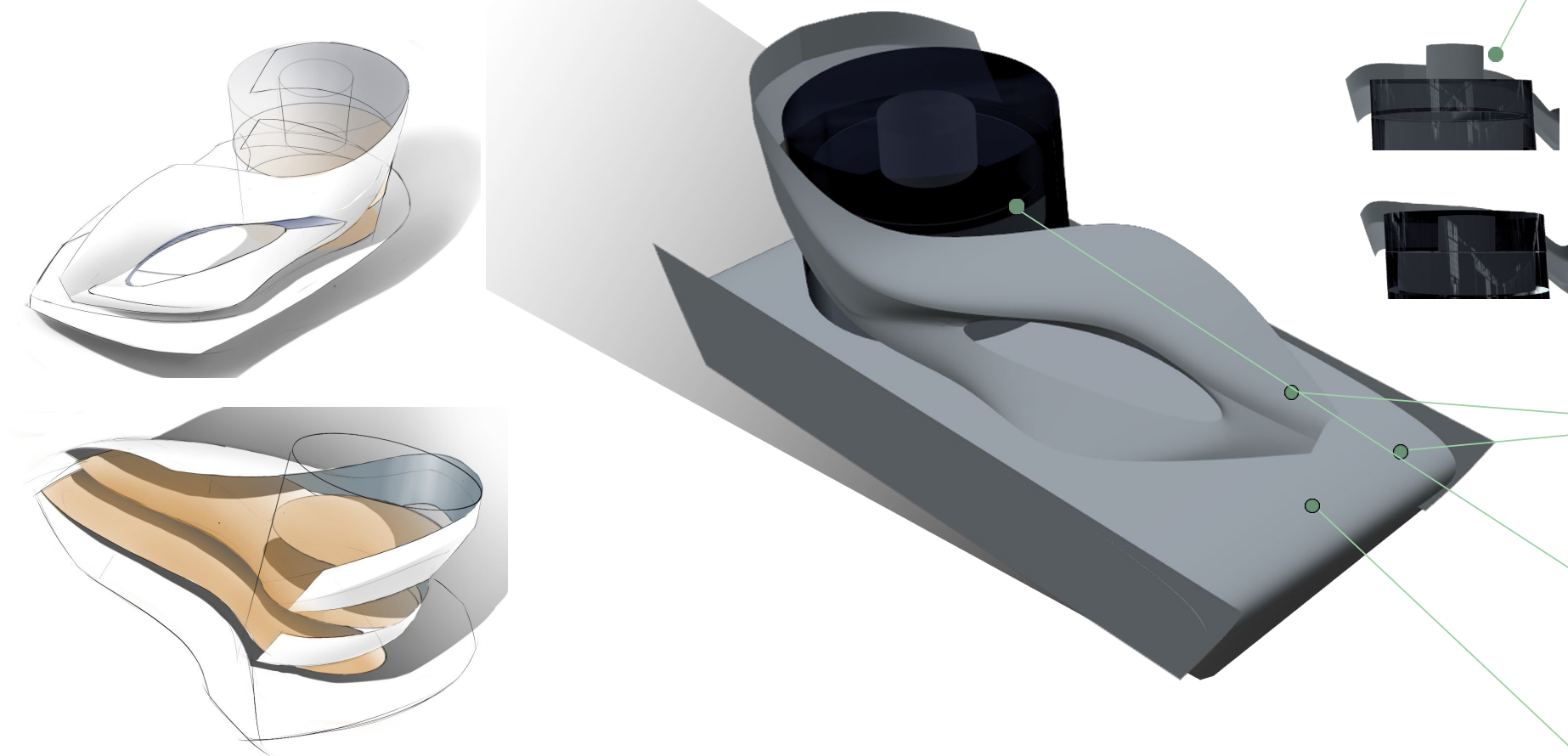
It is a Villa yacht combining Villa and catamaran. It provides a new way of island tourism and vacation for human beings in the future, and also provides a new business model for the hotel, so as to increase the economic benefits for the region with tourism economic industry as the pillar.

What
- is a combination of hotel, villa, suite and yacht
-The yacht has a raised space and a room on the sea floor, creating a sense of private villa
-5-star hotel can buy maintenance operation

INSPIRATION OF EXTERIOR AND INTERIOR

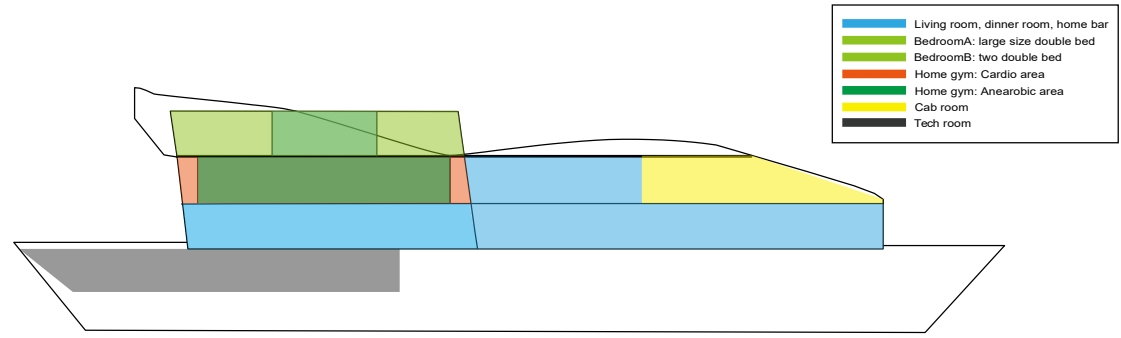


INITIAL SKETCHES



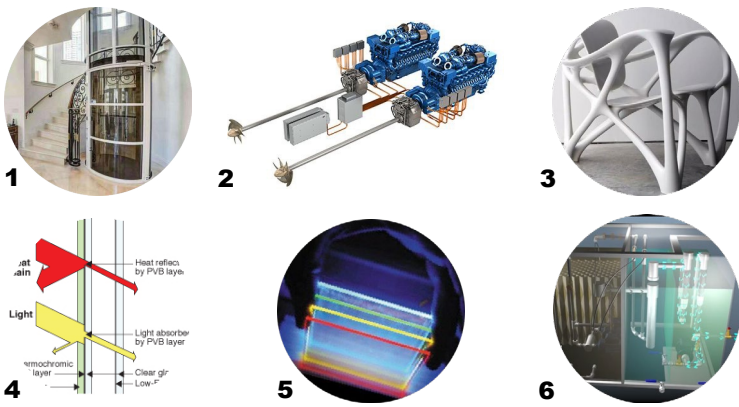
PACKAGE LAYOUT

Length overall 17m, Beam overall 8m, allow 4 adult, 2 children and two crew living for a wake. 2*50 Full electric engine with cv Cruising speed 4-6 knots, Top speed 12-13 knots. use solar glass and plug in to charge the battery. Rent for a day approximant 1500-2500 RMB, in popular time living it need approximant 18000 for a week. normal day is about 10500 RMB.



Conclusion

Generally, it is an investment tourism project designed for the middle class, which is then rented by the middle class as consumers to promote the sustainable development of the local tourism industry. It is a new way for vocation and



Dumbwaiters (figure 1.)
This elvetor didn't need to Arrange the cables, This elvetor system is basically tube in a sealed vacuum, and then the air forcing the elevator go and down. so it is easy to install and saving space. It Is popular in house

POWERTRAIN-2*50kw Full electric engine (figure 2.)

The villy yacht is not for long distance travel, didnt need too much power. It more use on tourist. the comfort and the stability of yacht is my choice .
Full electric engine have smaller size that can allow more interior space. It has remarkable slow speed control can helping yacht stability and is more suitable for sightseeing.
other because Sanya is one of one of the Low carbon city pilot project in China, full electric engine is Zero emissions.The low maintenance cost allow hotel afford it.(All Electric and Hybrid Electric Drive - Electric Yacht, 2020)

PROPULSION SYSTEM-electrical propulsion system

It can through regeneration , solar power or a battery charger used when dockside.(Sale et al., 2020) Electrical propulsion system is not just benefit the local environment sustainable. Also when the yacht travel around the island it can produce the power and it can store in the battery.

CONSTRUCTION-GRP yacht construction (figure 3.)

this GRP is weight light, easy to form and is durable material.(4 Materials Used In Yacht Construction - Cobra Yacht, 2020) The material is weight lighter then steel so that can save the power. This material can form easy, allow save the manpower so that can indirect

MATERIAL-heat-reflecting glass (figure 4.)

The Heat-reflecting glass can reduce the damage from solar radiation. Make the glass into double-glazed glass can reduce the load of air-conditioner, so that can achieve the purpose of energy conservation and emission reduction.

-Solar glass (figure 5.)

This glass has a polymer coating on the surface, so that glass can work like the solar panels, and it can work better than solar panels. the polymer coating increases efficiency by 50% and the coating can be used on a variety of plastics surface.

-Marine Sewage Treatment (figure 6.)

The grey water produced by a 4-8 person a day is about 1020 Littrre, which should be filled with at least 1.02 cubic meters. After four times of filtration, the water is even cleaner than drinking water. Finally, it is used as domestic water to plug in the tank. It needs at least 7.14 cubic meters of tank to maintain the yacht's life for a week. In addition, they also produce about 240-400 liters of black water a day, which requires about 1.68-2.8 cubic meters to maintain the yacht for a week.

Baike.baidu.com. 2020. 大大大大大大大 [online] Available at: <https://baike.baidu.com/item/大大大大/2367466?fr=aladdin&from=aladdin> [Accessed 11 November 2020].
Sale, M., Feet, C., Feet, C., Feet, C., Feet, C., Feet, C., All, C., Catamarans, P., Catamarans, B., Worldwide, C., Multihull, B., Multihull, C., School, Y., Consultation, Y., Statement, M., and Monodull, S., 2020. CATAMARAN ELECTRIC PROPULSION. [online] Multihullcompany.com. Available at: <https://www.multihullcompany.com/articles/catamaran-electric-propulsion/?fbclid=IwAR2LgOD6Sgh4nh3KpeaEcXVMN-5xZR0hd7z8JgtgcyeQzgaZFvrdK4> [Accessed 10 November 2020]
Elevators, H., PVE30, H., ECO, H., PVE37, H., PVE52, H., Elevators, S., Elevators, Y., Elevators, R., Components, P., US, A., Shows, T., Form, D., Dealer, B., Login, D., Builders, A., Course, A., Facilities, P., Request, I. and Financing, A., 2020. A Guide For Choosing The Type Of Elevator You Need. [online] Vacuumelevators.com. Available at: <https://www.vacuumelevators.com/a-guide-for-choosing-the-type-of-elevator-you-need/?fbclid=IwAR2BmgUz-gZhsv4Aib-yJ/enhpin_16ebYAZqD7a9n7ZJRClUAESUJ50> [Accessed 11 November 2020].
=Baike.baidu.com. 2020. 大大大大大大大 [online] Available at: <https://baike.baidu.com/item/大大大大/4787435?fr=aladdin> [Accessed 11 November 2020].