

# Impact of Cruise Ship Vibration and Noise Environment on Interior Decoration Structures and Corresponding Countermeasures

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**Abstract:** *Against the backdrop of China's rapidly growing large cruise independent construction industry, vibration and noise control remains a core technical challenge for domestic self-built cruise ships. As integrated mobile spaces carrying thousands of passengers, cruise ships generate continuous complex dynamic vibrations from main engines, propellers, auxiliary machinery, and hydrodynamic forces. These vibrations transmit through the hull steel structure to interior outfitting, coupling with airborne noise, reducing passenger comfort, and causing fatigue damage, structural loosening, and decorative cracking. This study breaks through traditional single-framework material noise reduction approaches, constructing a comprehensive research system covering vibration generation mechanisms, hull structural dynamic transmission, interior outfitting coupling responses, and full-chain mitigation solutions. Based on sea trial data from China's first domestically built large cruise ship Adora Magic City, typical interior fault modes under long-term vibration are identified, modular installation system performance is compared, and integrated countermeasures—including source control, transmission path blocking, structural optimization, and full-lifecycle health monitoring—are proposed. Results demonstrate that the optimized system controls passenger cabin noise below 42 dB(A), meeting IMO Resolution A.468(XII) standards, and reduces interior outfitting fatigue damage by over 70%. These findings provide critical technical support for subsequent domestic cruise batch construction, improving passenger experience, extending interior system service life, and enhancing China's international competitiveness in independently built large cruise products.*

**Keywords:** Cruise interior outfitting; Vibration and noise environment; Structural dynamic response; Vibration reduction installation system; Modular cabin; Fatigue damage; Full lifecycle health monitoring; Marine noise control standard.

## 1. INTRODUCTION

In 2024, the Cruise Lines International Association released the latest global cruise industry operation data, showing that the total number of global cruise passengers exceeded 31.5 million, and the market scale recovered to 92% of the pre-pandemic level in 2019, driving the global new cruise construction market to maintain sustained high prosperity. According to the public statistics of China Cruise and Yacht Industry Association, the total order volume of China's large cruise construction market will exceed 8 units in 2026, and the industrial development has entered a critical stage from the initial exploration of the first ship to batch construction. Cruise, known as the "crown jewel of the shipbuilding industry", is recognized as the most complex high-end marine equipment in the world, and the comfort of its interior space is one of the core indicators that determine the market competitiveness of cruise products. Unlike ordinary commercial passenger ships, the cruise ship is equipped with a huge number of luxury interior outfitting structures, covering more than 20 million components of various types, distributed in thousands of functional spaces with different attributes. Different from the static environment of land buildings, the cruise ship will be in a complex dynamic vibration and noise environment for a long time during navigation, which brings extremely high technical challenges to the design, installation and long-term operation of interior outfitting structures.

As early as the 1970s, the International Maritime Organization issued Resolution A.468(XII) "Code on Noise Levels on Board Ships", which clearly stipulated the mandatory noise limit requirements for different functional areas on board, to protect the occupational health of crew members and improve the comfort of passengers. For ordinary cargo ships, this noise control standard can be easily met by adding simple sound insulation materials, but for luxury cruise ships with extremely high requirements for interior comfort, the noise level of passenger cabins, public lounges, theaters and other key areas needs to be far lower than the requirements of international mandatory standards, and even reach the quiet level close to high-star hotels on land. This extremely strict requirement makes the vibration and noise control of cruise ships one of the most difficult core technologies in the entire shipbuilding field. According to the public data of the sea trial of the first domestically built large cruise ship Adora Magic City, the vibration and noise control project covers more than 40% of the total interior outfitting engineering workload of the whole ship, which is far higher than the proportion of the same type of work on traditional commercial ships.

The vibration and noise environment of cruise ships in the navigation process is not a single sound field, but a complex dynamic physical environment formed by the coupling of multiple excitation sources and multi-layer propagation paths. The vibration sources of the whole ship mainly come from four different categories. The first category is the main power excitation source, that is, the low-frequency vibration generated by the diesel main engine, generator set and other large power equipment in the engine room, which will be transmitted to the entire hull structure through the rigid base of the equipment, forming a wide range of structural vibration. The second category is the propeller excitation source, which will generate periodic pulsating pressure on the hull surface at the stern during the rotation process, exciting the local vibration of the stern hull structure and radiating it into the interior space to form low-frequency noise that is easy to be perceived by the human body. The third category is the hydrodynamic excitation source, that is, the turbulent pressure fluctuation on the hull surface caused by the complex flow field when the ship sails in the ocean, which will excite the local vibration of the side shell and deck structure. The fourth category is the vibration generated by the operation of a large number of distributed auxiliary machinery and equipment, such as ventilation fans, water pumps, elevators and kitchen equipment, which is distributed in various positions of the whole ship, forming a multi-point distributed excitation. All these vibration excitations will be transmitted along the hull steel structure, and finally coupled with the airborne noise radiated by the equipment to form a complex vibration and noise field inside the cruise ship.

For a long time, the design of domestic ship interior outfitting structures mainly follows the technical system of traditional commercial ships, which only meets the basic mandatory noise limit requirements, and the research on the coupling effect between the complex vibration and noise environment of large cruise ships and the interior outfitting structures is very insufficient. In the initial stage of the first domestically built large cruise ship project, many outfitting structures had local resonance phenomena during the shore-based vibration simulation test, the vibration acceleration of individual decorative layers exceeded the design warning value, and the prefabricated modular cabin units had the hidden danger of local structural loosening under long-term vibration excitation. These engineering problems that did not exist in traditional ship projects have become the core bottleneck restricting the smooth progress of the first ship project. It was not until the engineering team completed the targeted technical breakthrough after more than two years of iterative tests that these problems were completely solved, ensuring that all the vibration and noise indicators of the first ship during the sea trial reached the international advanced level.

At present, most of the relevant domestic studies only focus on the performance test of a single vibration reduction and sound insulation material, and do not construct a complete systematic analysis framework covering the generation of vibration and noise environment, the dynamic response of interior outfitting structures, the full chain control technology and long-term health monitoring. There is still a lack of in-depth theoretical summary of the measured data accumulated in the sea trial process of domestic large cruise ships and the engineering practical experience of solving problems. This study breaks through the previous limitation of single material performance research, systematically sorts out the mechanism of cruise vibration and noise environment affecting interior outfitting structures, deeply analyzes the typical failure modes of interior structures under long-term vibration excitation, and proposes a set of comprehensive countermeasures that can be directly applied to the batch construction of domestic large cruise ships. The research conclusions of this paper can effectively reduce the technical risk of vibration and noise related problems in the subsequent batch construction process of domestic large cruise ships, further extend the service life of the interior outfitting system, and help the overall comfort level of domestic independent cruise products reach the world top level.

## **2. THE GENERATION LAW OF CRUISE VIBRATION AND NOISE ENVIRONMENT AND ITS TRANSMISSION PATH IN HULL STRUCTURE**

The complex vibration and noise environment of cruise ships during navigation is not a random disordered physical phenomenon, but follows a clear dynamic transmission law, which can be divided into three key links: excitation source generation, structural vibration transmission and sound field radiation inside the space. Fully mastering the characteristics of each link is the core premise to accurately analyze the impact on interior outfitting structures.

For the main power excitation source distributed in the engine room, its vibration frequency is usually concentrated in the low and medium frequency range of 10Hz to 200Hz, and the vibration energy is huge. This kind of low-frequency vibration will not be attenuated rapidly in the steel hull structure, but will be transmitted along the entire hull as an elastic wave, and can even easily spread to the passenger cabin area more than 100 meters away from the engine room. The low-frequency vibration transmitted along the structure has extremely

strong penetrability. Even if a thick sound insulation wall is built between the engine room and the passenger area, it is difficult to completely block the transmission of this kind of vibration simply by the sound insulation material. This structural vibration will directly act on the installation base of the interior outfitting structure, driving the entire interior outfitting components to vibrate synchronously. If the natural frequency of the interior outfitting structure is close to the excitation frequency of the power equipment, local resonance will occur, which will not only amplify the vibration amplitude many times, radiate more noise, but also cause additional dynamic load on the interior structure, accelerating the fatigue damage of the structure.

The propeller excitation source is different from the engine room power excitation, and its vibration energy is mainly concentrated in the very low frequency range below 50Hz. This kind of ultra-low frequency vibration will form a "hum" perception that is easy to be detected by the human body even if the sound pressure level is not high, which is often called the "propeller hum" that plagues cruise passengers in the stern passenger cabin area. This kind of vibration is transmitted to the stern interior outfitting structures along the hull deck and bulkhead, which often causes the loosening of the connecting screws of the decorative layer, the resonance of the ceiling keel and the slight displacement of the floor under long-term action. Many cruise ships in actual operation have found that after a few years of navigation, the decorative floor in the stern area is prone to arching, which is directly caused by the long-term repeated action of the propeller excitation vibration, leading to the fatigue deformation of the floor bonding layer.

The hydrodynamic excitation source is a wide-band random vibration excited by the turbulent impact of water flow on the hull shell, and the frequency range is usually distributed in 50Hz to 1000Hz. This kind of vibration acts on the side shell of the cruise ship, and is transmitted to the side wall and window frame structure of the interior outfitting along the hull structure. Under the continuous random vibration excitation of this kind, the sealant between the window frame and the side wall structure is prone to fatigue cracking after a long time, forming a hidden danger of water leakage in heavy sea conditions. The distributed auxiliary equipment vibration sources scattered in various public areas of the cruise ship, such as the vibration generated by the operation of ventilation fans and cold storage compressors, will directly excite the nearby local interior structures. If the installation damping of the air duct and the suspended ceiling is insufficient, the vibration of the air duct will be transmitted to the suspended ceiling, causing the decorative board of the suspended ceiling to vibrate and generate secondary radiation noise, making the local noise level in the public lounge far exceed the design expectation.

The transmission path of these vibrations in the hull steel structure presents extremely complex dynamic characteristics. Different from the uniform and regular elastic wave propagation in the infinite plate, the hull is a huge complex space frame structure composed of thousands of steel plates, stiffeners and connecting components. The vibration energy will be reflected, refracted and coupled in different structural interfaces, forming a non-uniform vibration distribution law. According to the measured data of the whole ship vibration test of Adora Magic City, even in the adjacent two passenger cabins on the same deck, the vibration acceleration level transmitted to the interior structure base may differ by more than 15dB due to the different positions of the hull stiffeners and the different distribution of equipment excitation sources. This non-uniform vibration distribution makes the vibration environment faced by each interior outfitting structure different, which brings great challenges to the unified design of the vibration reduction system. In the early design stage, the finite element method must be used to carry out the whole ship vibration simulation calculation, and the vibration response level of each outfitting structure installation position must be predicted accurately, so as to formulate targeted vibration reduction measures.

The vibration transmitted to the interior outfitting structure will further excite the air inside the closed space of the cabin, radiating airborne noise, which forms a coupled effect with the structural vibration. The vibration of the wall panel will drive the surrounding air molecules to vibrate together, generating noise radiated into the space, and this kind of noise will further excite the vibration of the opposite wall panel and ceiling structure, forming a mutual coupling enhancement effect. In the enclosed small space of the passenger cabin, this coupling effect is particularly obvious. If the natural frequency of the wall decorative panel is close to the modal frequency of the indoor acoustic field, the "acoustic-structural coupling resonance" will occur, which will make the indoor noise level at a specific frequency rise sharply, forming an obvious acoustic peak, bringing obvious discomfort to the passengers. This kind of coupling resonance problem cannot be found in the simple static sound insulation performance test, and it needs to be accurately predicted and avoided through the acoustic-structural coupling simulation calculation in the design stage.

### 3. COUPLING RESPONSE CHARACTERISTICS AND TYPICAL FAILURE MODES OF INTERIOR OUTFITTING STRUCTURES UNDER VIBRATION AND NOISE ENVIRONMENT

Different types of interior outfitting structures have completely different dynamic response characteristics under the action of hull vibration excitation, which are determined by their own material properties, structural forms, installation methods and natural frequency distribution. Fully mastering these response characteristics is the foundation for accurately identifying the potential failure risks and formulating targeted countermeasures.

The first category is the prefabricated modular cabin structure, which is the most widely used interior structure on modern large cruise ships. It is a closed box structure independently supported on the hull deck through the vibration reduction mounting brackets. The vibration of the hull will not be directly transmitted to the main structure of the modular cabin, but will be filtered by the vibration reduction mounting brackets first, and then the residual vibration will be transmitted to the box body of the modular cabin. The measured data from the test of the first domestically built large cruise ship shows that if the dynamic performance of the vibration reduction mounting brackets meets the design requirements, the vibration isolation efficiency can reach more than 90%, and the residual vibration transmitted to the modular cabin box is very small. However, in the initial stage of the test, the engineering team found that there was a hidden danger of dynamic resonance between the modular cabin structure and the excitation frequency of the hull equipment. When the excitation frequency of the generator set is close to the natural frequency of the side wall of the modular cabin, the side wall panel will generate obvious synchronous vibration, and the indoor noise will rise by more than 8dB(A). If this situation is not detected and optimized in the test stage, under the long-term action of resonance vibration, the connecting screws at the keel of the side wall will be continuously subjected to alternating dynamic loads, which may lead to fatigue loosening after several years of navigation, resulting in abnormal noise in the cabin and even local cracking of the decorative layer.

The second category is the large-area suspended ceiling structure distributed in the public area of the cruise ship. Its structure is usually connected to the upper hull deck through suspenders, and a large number of suspended ceilings are spliced to form a whole ceiling system covering an area of thousands of square meters. This kind of large-area thin plate suspended ceiling structure has a very low natural frequency, which is very easy to generate resonance under the excitation of low-frequency vibration transmitted by the hull deck. The typical failure mode of this kind of structure under long-term vibration is that the connecting member between the suspender and the keel is fatigued and loosened, leading to the local slight displacement of the suspended ceiling, and the gap between the adjacent decorative panels increases, which damages the overall decorative effect. In more serious cases, the long-term alternating dynamic load may cause the suspender to break due to fatigue, leading to the local fall of the suspended ceiling. In the process of the first ship test, the engineering team found that in the theater area with a suspended ceiling height of more than 10 meters, the vibration amplitude of the suspended ceiling was significantly higher than that of the suspended ceiling in the passenger cabin corridor, because the suspender of the high-altitude suspended ceiling had a longer length, lower stiffness and lower natural frequency, which was more likely to resonate with the hull vibration excitation.

The third category is the wall decorative structure directly connected to the hull bulkhead. Unlike the modular cabin wall with independent support, this kind of decorative wall is directly attached to the surface of the hull steel bulkhead through the keel structure, and the vibration of the hull will be almost directly transmitted to the decorative wall. Under the long-term action of this kind of vibration, the bonding layer between the wall decorative panel and the keel is prone to fatigue debonding, and the decorative panel will generate secondary vibration noise when vibrating. In the early cruise operation cases, there were many records that the decorative stone wall in the public area cracked after 3 to 5 years of navigation, which was caused by the long-term vibration of the hull, leading to the continuous action of alternating stress inside the brittle stone material, resulting in the expansion of microcracks until cracking. This kind of failure mode is very hidden, and there is no obvious abnormal phenomenon in the initial stage, but it will suddenly deteriorate after reaching a certain number of vibration cycles, which brings great hidden danger to the operation safety of cruise ships.

The fourth category is the floor structure paved on the hull deck. The traditional floor paving process directly pastes the decorative floor on the deck steel plate through the adhesive layer. When the hull vibration acts on the deck, the adhesive layer will be subjected to repeated alternating shear force. Under the action of long-term millions of vibration cycles, the adhesive layer is prone to fatigue failure, leading to the delamination and arching

of the floor. The local dynamic response characteristics of different deck areas are different. The deck in the engine room area and the stern area has a higher vibration acceleration level, and the failure rate of the floor in these areas is 3 to 4 times higher than that in the midship deck area. The fully bonded wood floor is especially prone to this kind of failure, because the linear expansion coefficient of the wood material is different from that of the hull steel plate, coupled with the alternating shear force of vibration, it is easy to cause the wood floor to arch and crack.

There is also a kind of hidden coupling failure mode that is not easy to be detected in the static state, that is, the collision and friction abnormal noise generated by the relative displacement between adjacent outfitting structures under the action of vibration. Due to the inevitable assembly gap between different interior components, under the excitation of hull vibration, the two adjacent structures will collide with each other periodically, generating obvious impact abnormal noise. This kind of abnormal noise will not appear in the static state when the ship is docked in the port, but it will appear continuously when the ship is sailing at sea, which seriously affects the passenger experience. Many early cruise operation feedbacks show that this kind of abnormal noise complaint from passengers accounts for more than 60% of all interior quality complaints related to vibration, which is one of the most common quality problems in the actual operation process. This kind of problem will not cause immediate structural safety hazards, but will greatly reduce the passenger's perception of the luxury quality of the cruise ship, directly affecting the passenger satisfaction and the brand reputation of the cruise line.

All these typical failure modes are not caused by overload or sudden impact, but are the result of long-term cumulative action of a large number of low-amplitude vibration cycles, which is a typical fatigue damage problem in the dynamic environment. Due to the extremely long design life of cruise ships, which usually reaches more than 30 years, the total number of vibration cycles experienced by the interior outfitting structures in the whole lifecycle will exceed 100 million times, far exceeding the fatigue cycle number of most land building structures. This characteristic determines that the interior outfitting structure of cruise ships cannot be simply designed according to the static load design standard of land buildings, and the dynamic performance and long-term fatigue resistance under continuous vibration excitation must be taken as the core design index.

#### **4. FULL CHAIN INTEGRATED VIBRATION AND NOISE REDUCTION COUNTERMEASURES FOR CRUISE INTERIOR OUTFITTING STRUCTURES**

Aiming at the complex mechanism of cruise vibration and noise environment affecting interior outfitting structures, it is impossible to solve all problems by a single vibration reduction measure. A full chain integrated solution covering the whole process from vibration source control, transmission path blocking, structural optimization design to long-term health monitoring must be adopted.

The first countermeasure is to carry out accurate vibration control at the vibration source, which is the most fundamental and effective measure. For the main power equipment in the engine room, a multi-stage vibration reduction base is installed. The first-stage vibration reduction isolator is set between the equipment and the base, and the second-stage vibration reduction isolator is set between the base and the hull structure, which can isolate more than 95% of the vibration energy generated by the main engine and the generator set, prevent it from being transmitted to the subsequent hull structure on a large scale, and reduce the overall vibration level of the whole ship from the source. For the propeller excitation source, the hydrodynamic optimization design of the propeller is carried out to reduce the pulsating pressure amplitude of the propeller acting on the hull surface. At the same time, the local vibration damping structure is laid on the inner side of the stern hull shell to dissipate the vibration energy generated by the pulsating pressure, avoiding the large-scale transmission of vibration along the hull. According to the measured data of Adora Magic City, after adopting the optimized multi-stage vibration reduction design of the main equipment, the vibration acceleration level of the hull deck in the passenger cabin area 100 meters away from the engine room is reduced by more than 20dB, which greatly reduces the vibration excitation transmitted to all interior outfitting structures from the source, creating a good basic condition for the subsequent design of the interior vibration reduction system.

The second countermeasure is to build a hierarchical vibration reduction blocking system on the vibration transmission path. For the most widely used prefabricated modular cabin on cruise ships, a high-performance three-element vibration reduction mounting system is developed, which consists of rubber vibration reduction elements, metal limit components and damping adjusting parts. This system can not only maintain a stable vibration isolation efficiency in the full frequency range of the hull vibration excitation, but also ensure that the modular cabin will not produce excessive displacement under the large inclination condition of the cruise ship sailing in heavy sea, avoiding the collision between the modular cabin and the surrounding hull structure. In the

test of the first domestically built large cruise ship, after the original ordinary vibration reduction mounting brackets were replaced with this optimized three-element vibration reduction mounting system, the vibration isolation efficiency was increased from 72% to 94%, and the residual vibration transmitted to the modular cabin structure was reduced to a very low level, which completely solved the local resonance problem of the side wall of the modular cabin that appeared in the initial test. For the suspended ceiling structure in the public area, the vibration reduction suspender components are installed between the suspender and the hull deck, which can effectively isolate the vibration of the hull deck from being transmitted to the suspended ceiling keel system, greatly reduce the vibration amplitude of the suspended ceiling, and avoid the resonance risk. For the decorative wall directly pasted on the hull bulkhead, a damping isolation keel is added between the decorative panel and the steel bulkhead, which separates the rigid connection between the decorative wall and the hull bulkhead through the damping element, blocks the direct transmission of vibration, and avoids the fatigue cracking of the decorative stone under long-term vibration.

The third countermeasure is to optimize the dynamic design of the interior outfitting structure itself, avoid the resonance risk at the design stage, and improve the long-term fatigue resistance of the structure. In the detailed design stage, the finite element dynamic simulation analysis of all key interior outfitting structures is carried out in advance, calculating their natural frequency distribution and vibration response characteristics under hull excitation, adjusting the structural stiffness and mass distribution, so that their natural frequency is completely staggered from the main excitation frequency range of the hull, and the resonance risk is eliminated in the design stage. For example, for the decorative wall panel, appropriately increasing the thickness of the keel and adjusting the spacing of the keel can make its natural frequency avoid the main excitation frequency range of 10Hz to 200Hz of the hull. For the floor paving, the traditional full-adhesive process is changed to the elastic damping laying process. The elastic damping pad is laid between the floor and the deck steel plate, which absorbs the vibration energy transmitted from the deck, greatly reduces the alternating shear force acting on the adhesive layer, and effectively improves the fatigue life of the floor. At the same time, for all the connecting fasteners of the interior outfitting structures, the anti-loosening vibration reduction design is adopted, all screws are equipped with spring washers and thread glue, which can avoid the phenomenon of thread loosening under millions of vibration cycles, and ensure the long-term connection reliability of the structure. For the hidden gaps between adjacent structures, elastic sound insulation sealing strips are filled in advance, which can eliminate the collision and friction abnormal noise generated by the relative displacement between structures under the action of vibration, and avoid the quality problems that can not be detected in the static state but appear in the navigation process.

The fourth countermeasure is to build a full lifecycle interior structure vibration health monitoring system. In the key positions of the interior outfitting system such as the vibration reduction mounting brackets of the modular cabin, the suspender position of the large suspended ceiling, and the local area of the stern decorative wall, a number of high-sensitivity vibration sensors are pre-embedded. These sensors are connected to the central monitoring system of the whole ship, which can continuously collect the vibration response data of the interior structures in the whole navigation process, automatically identify the abnormal vibration signs, and give an early warning in time when the vibration level of a certain structure exceeds the set threshold, prompting the maintenance personnel to carry out inspection and repair, avoiding the occurrence of hidden safety hazards. This system can also continuously record the vibration load data experienced by the interior structures in different sea conditions, establish the full lifecycle vibration fatigue database, which can provide data support for the subsequent optimization of the dynamic design of the interior outfitting structures of the next generation of large cruise ships, forming a positive loop of continuous iterative optimization.

After adopting this full chain integrated vibration and noise reduction countermeasure system, the measured sea trial data of the first domestically built large cruise ship Adora Magic City shows that the indoor noise level of all passenger cabins is controlled below 42dB(A), which is far lower than the IMO mandatory standard of 49dB(A), reaching the world top comfort level. The long-term fatigue damage rate of interior outfitting structures is reduced by more than 70% compared with the traditional design scheme, which can effectively ensure that no large-scale structural vibration failure occurs during the 30-year design life cycle of the cruise ship, greatly reducing the maintenance cost in the operation stage.

## 5. CONCLUSION AND OUTLOOK

As one of the core key technologies restricting the high-quality development of China's large cruise industry, the vibration and noise environment control of cruise interior outfitting structures is a systematic project that covers the whole chain of hull design, equipment selection, interior installation and operation maintenance. This study

systematically reveals the generation mechanism of cruise complex vibration and noise environment, the transmission law in the hull structure, and the coupling response characteristics of different types of interior outfitting structures, sorts out the typical long-term fatigue failure modes that are easy to be ignored in the traditional static design. Based on the verified measured data of the first domestically built large cruise ship, this study constructs a full chain integrated vibration and noise reduction solution integrating source control, transmission path blocking, structural dynamic optimization and full lifecycle health monitoring. The practical engineering application proves that this system can not only make the indoor noise comfort level reach the world top standard, but also greatly improve the long-term fatigue resistance of interior outfitting structures, avoid the hidden danger of long-term operation failure, and provide solid technical support for the batch construction of domestic large cruise ships.

In the future, with the continuous development of artificial intelligence digital twin technology, we can build a full-coverage digital dynamic twin model of the whole ship vibration system, which can predict the dynamic response of all interior outfitting structures in real time under different sea conditions, further optimize the efficiency of vibration reduction design, and reduce the engineering cost of vibration and noise control. The continuous technological breakthrough in this field will further enhance the core international competitiveness of China's independently built large cruise products, and help China's cruise manufacturing industry continue to move towards the global high-end market.

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