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Research on Opportunities, Challenges, and Countermeasures for the Development of the Cruise Ship Interior Outfitting Technology Major in China

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Abstract: ***With the continuous eastward shift of the global cruise industry and the launch of China's domestic cruise shipbuilding market, the talent gap in cruise ship interior outfitting technology, as a key supporting technology, is becoming increasingly prominent. This paper aims to explore the historical opportunities and practical challenges faced by Chinese universities in establishing the Cruise Ship Interior Outfitting Technology major and proposes corresponding development strategies. The study argues that national policy support for high-end shipbuilding, substantive breakthroughs in domestic cruise shipbuilding projects, the industrial chain demand driven by a huge consumer market, and the gradual deepening of international cooperation collectively constitute significant opportunities for developing this major. However, the program development also faces multiple challenges, including the lack of a mature curriculum system and textbooks, a severe shortage of "dual-qualified" faculty, high investment costs and difficulties in constructing training facilities, and the challenge of aligning with international industry standards. To address these challenges, this paper proposes establishing a collaborative education model involving government, industry, enterprises, and schools; developing modular and project-based curriculum systems; creating high-level "dual-qualified" teaching teams through multiple pathways; and jointly building and sharing high-level training bases. Through these countermeasures, it is expected to systematically advance the development of the Cruise Ship Interior Outfitting Technology major, providing intellectual and talent support to fill the domestic talent gap in related fields and bolster the development of the national cruise industry.***

Keywords: Cruise Ship Interiors, Program Development, Talent Cultivation, Curriculum System, Training Base.

1. Introduction

Cruise ships are known as the "golden industry floating on the sea," and their design and manufacturing epitomize the integration of modern industry and artistic design. The Cruise Ship Interior Outfitting Technology major is a comprehensive, interdisciplinary, and application-oriented field focused on the design of interior spaces, material selection, process implementation, project management, and safety regulations specific to cruise ships. It differs from traditional naval architecture or interior design, with its core lying in meeting the extreme safety standards (such as fire prevention, fire resistance, weight reduction, environmental protection), strict international regulations (like the SOLAS Convention), and high-end aesthetic customization requirements unique to cruise ships.

Currently, China is transitioning from a "major cruise tourism consumer" to a "major cruise shipbuilder and supplier." For a long time, the design and interior outfitting technology of large cruise ships were monopolized by a few European companies, becoming a bottleneck constraining the independent development of China's cruise industry. The successful delivery and operation of the first domestically built large cruise ship, "Ada Modu," marks China's initial mastery of large cruise ship construction capability. However, the localization of core interior outfitting technology and the systematization of talent cultivation are still in their early stages. Therefore, systematically researching the development path for the Cruise Ship Interior Outfitting Technology major is urgently and critically important for breaking technological barriers, ensuring industrial security, and promoting the sustainable development of China's cruise ship manufacturing industry.

2. Opportunities in Program Development

2.1 Strong Impetus from National Strategy and Industrial Policies

In recent years, national-level strategic documents such as "Made in China 2025" and the "Shipbuilding Industry Deepening Structural Adjustment and Accelerating Transformation and Upgrading Action Plan" have been issued, explicitly identifying high-end ships and marine engineering equipment as key development directions. The localization of large cruise ships, hailed as the "crown jewel" of shipbuilding, has been elevated to a national strategic level. Ministries like the Ministry of Industry and Information Technology and the National Development and Reform Commission have provided supporting policies, encouraging technological breakthroughs and talent cultivation in key areas such as cruise design and interior outfitting. This provides an unprecedented policy environment and potential for resource allocation for universities to establish this major.

2.2 Substantive Launch of the Domestic Cruise Shipbuilding Market

Marked by the delivery of the first domestically built large cruise ship undertaken by Shanghai Waigaoqiao Shipbuilding Co., Ltd., China has officially entered the club of large cruise shipbuilding nations. This project has driven the development of hundreds of domestic supporting enterprises and spurred plans for subsequent orders. Furthermore, regions like Fujian, Shandong, and Hainan are actively planning cruise ship repair, building, and supporting industrial parks. The substantive launch of the market creates a stable and sustained demand for professionals in cruise ship interior outfitting technology,

providing clear employment prospects for graduates and solving the "output" concern for establishing the major.

2.3 Intrinsic Demand from a Vast Consumer Market and Full Industrial Chain Development

China has become the world's second-largest source market for cruise tourism, with an increasingly 完善的 cruise homeport system centered around Shanghai, Tianjin, Shenzhen, and Xiamen. The huge consumer market not only supports cruise operations but also drives the development of cruise shipbuilding, repair, refurbishment, and supporting services. On average, a cruise ship requires a mid-life refurbishment every 5 years and a comprehensive upgrade every 15-20 years. This creates a continuous after-sales service and refurbishment market for interior outfitting talents, broadening their career development paths.

2.4 Window of Opportunity for International Cooperation and Technology Transfer

During the development of domestic cruise ships, Chinese companies have engaged in extensive technical cooperation with international leaders such as Italy's Fincantieri and Germany's Meyer Werft. Through joint design, personnel exchanges, and technology licensing, domestic institutions and enterprises have gained access to advanced international design concepts, craftsmanship, work methods, and project management experience in cruise ship interiors. This provides a valuable window for universities, in the early stages of program development, to learn from mature international curriculum frameworks, introduce original teaching materials and training resources, and conduct international faculty exchanges.

3. Challenges in Program Development

3.1 Lack of Mature Curriculum System and Localized Textbooks

Cruise ship interior outfitting technology involves multiple disciplines such as naval architecture, architecture, materials science, art design, and fire safety. Domestically, there is no mature undergraduate or vocational curriculum system readily available for direct application. Existing teaching content is often scattered across related majors, lacking systematic integration. Furthermore, directly translated foreign textbooks may not align with domestic ship regulations, material standards, and industrial practices. Compiling a localized series of textbooks that suit China's context and encompass international regulations requires significant time and practical experience accumulation.

3.2 Severe Shortage of "Dual-Qalified" Faculty

Qualified full-time teachers need not only solid theoretical foundations but also rich practical experience in cruise ship interior outfitting engineering. Currently, such high-end talent is extremely scarce in China, mostly concentrated within a few shipbuilding companies, making it difficult for universities to recruit them. Doctoral or master's graduates recruited directly from universities generally lack practical experience, while part-time teachers hired from enterprises might face challenges like insufficient teaching ability or time constraints. The faculty bottleneck has become a core challenge constraining the teaching quality of this major.

3.3 High Investment Costs and Complexity in Constructing Training Facilities

Teaching cruise ship interior outfitting requires authentic or highly simulated training environments. Examples include actual ship sections for teaching, sample libraries of various interior materials (like fireproof panels, composite flooring, eco-friendly paints), specialized tools (such as CNC cutting, edge banding equipment), and training areas for standardized construction processes. These facilities and equipment are expensive, require large spaces, and incur high construction and maintenance costs, making it difficult for a single institution to bear the burden independently. This often leads to a disconnect between student practical training and actual production practices.

3.4 Complex Industry Standards and High Requirements for International Alignment

Cruise ship interior outfitting must strictly comply with a series of international conventions like the International Maritime Organization's International Convention for the Safety of Life at Sea (SOLAS) and the rules of classification societies (such as DNV, BV, CCS). These standard systems are vast, complex, frequently updated, and written entirely in foreign languages. Enabling students to become familiar with, understand, and apply these international standards during their studies poses a significant challenge to both teaching content and faculty expertise. Simultaneously, as the China Classification Society promotes the localization of related standards, balancing international requirements with national characteristics presents another challenge.

4. Countermeasures for Program Development

4.1 Establishing Systems and Mechanisms for Deep Industry-Education Integration and Collaborative Education

Education authorities should take the lead in establishing cooperation platforms and formulating encouraging policies. Universities should proactively establish deep cooperative relationships with industry associations (e.g., China Association of the National Shipbuilding Industry), leading shipbuilding enterprises (e.g., Shanghai Waigaoqiao Shipbuilding, Guangship International), and core interior outfitting subcontractors. By jointly establishing a professional development guidance committee, enterprises can participate in the entire process of talent demand research, training program formulation, curriculum development, student internships, and employment, achieving co-cultivation of talent, co-management of the process, and sharing of outcomes.

4.2 Developing a Modular, Project-Based Curriculum and Teaching Resource System

Oriented towards typical cruise ship interior outfitting tasks (e.g., cabin unit installation, public area decoration, fire

protection system integration), a curriculum structure of "Basic Modules + Professional Core Modules + Directional Elective Modules" should be constructed. Core courses should extensively adopt Project-Based Learning, real or simulated engineering projects throughout the teaching process. Concentrating efforts from industry and academia, collaboratively develop loose-leaf or workbook-style textbooks based on Chinese practical cases, and simultaneously build a digital teaching resource library containing international regulation interpretations, process videos, and 3D models.

4.3 Building a High-Level "Dual-Qualified" Professional Teaching Team Through Multiple Pathways

Implement a strategy combining "recruitment and cultivation." On one hand, create positions for "Industry Professors" or "Industry Mentors," flexibly hiring high-level technical experts from partner enterprises to undertake core course teaching and graduation project supervision. On the other hand, establish teacher enterprise practice stations, regularly selecting young teachers for hands-on practice and technical services at the frontline of cruise ship construction, and consider this experience an important factor in professional title evaluation and appointment. Simultaneously, encourage teachers to participate in enterprises' technical projects to enhance their engineering practice and research capabilities.

4.4 Jointly Building and Sharing Regional, High-Level Professional Training Bases

Given the difficulty for individual schools to build complete training bases, it is recommended that local governments or industry associations take the lead, uniting multiple institutions and key enterprises within a region to co-invest in establishing a "Public Training Center for Cruise Ship Interior Outfitting." This center should 参照 modern cruise ship construction workshop standards, be equipped with key process equipment, simulate real production environments, be open to all allied institutions, and undertake corporate employee training and social service functions. This approach can achieve intensive resource utilization while ensuring the training content keeps pace with industry technological developments.

Jiangsu Maritime Institute, as one of China's earlier vocational colleges entering the cruise field, has developed its Cruise Interior Outfitting Technology program by closely aligning with industry demands and vocational education characteristics, forming distinct educational features. Building upon the institute's traditional strengths in naval architecture, this program focuses specifically on the specialized area of cruise ship interiors, committed to cultivating versatile technical talents skilled in interior environment design, specialized material application, international regulation interpretation, and project management. Regarding practical training conditions, the institute actively collaborates with enterprises, establishing facilities such as simulated cabin training labs and material process training centers, allowing students to engage with near-authentic construction environments during their studies. Simultaneously, the teaching team has gradually optimized its "dual-qualified" faculty structure by recruiting technical personnel with industry experience and arranging for teachers to undertake practical training at shipyards. In recent years, with the advancement of domestically built large cruise ship projects, the institute has proactively engaged with leading enterprises like Shanghai Waigaoqiao Shipbuilding, exploring cooperation models such as "order-based" training and jointly building training bases. This enables students to participate in actual project processes, effectively enhancing their job adaptability. Although challenges remain in areas like curriculum localization and integrating international standards, the program is steadily becoming an important talent base supporting the regional cruise industry through the continuous deepening of industry-education integration.

5. Summary and Outlook

In summary, the development of the Cruise Ship Interior Outfitting Technology major in China is at a critical juncture, facing both opportunities and challenges. Seizing the opportunities presented by national strategic support, market launch, industrial chain extension, and international cooperation, while actively addressing challenges related to curriculum, faculty, training facilities, and standards, through systematic countermeasures like collaborative education, curriculum reform, faculty development, and base sharing, is the necessary path to promote this major from non-existence to existence, and from existence to excellence.

Looking ahead, with the continuous maturation of China's cruise industry and the increasing level of localization in interior outfitting technology, the Cruise Ship Interior Outfitting Technology major is bound to gradually form an educational system and talent cultivation standard with Chinese characteristics. It will not only provide a stable talent supply for domestic cruise shipbuilding, operation, and maintenance but also has the potential, accompanying the "Going Global" strategy of China's cruise industry, to become a significant force in the international cruise talent market, ultimately realizing the leap from "Made in China" to "Created in China."

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