

How to Promote the Industrial Integration of Acoustic Beacons

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ABSTRACT

Acoustic beacons are widely used in navigation, public security frontier defense, fishery supervision and fishery administration, fishery fishing and breeding, marine ranching, emergency rescue and relief, scientific investigation, sports, marine construction and other industries, with a large number of operators and equipment at sea and a wide application prospect. It is of great significance to promote the industrial integration of acoustic beacons for improving the security of national marine development and scientific and efficient maritime search and rescue.

Keywords: *acoustic beacons, emergency rescue and relief, industrial integration*

1. INTRODUCTION

With the development of navigation industry, the task of water traffic security and emergency search and rescue is becoming increasingly heavy. In 2006, China's maritime search and rescue center and maritime agencies organized and coordinated 1620 maritime search and rescue operations, 5322 ships of various types, and 17498 people in distress. According to the priority development theme of "national public security emergency information platform" in the national medium and long term science and technology development plan (2006-2020), the theme requires the development of an integrated emergency decision-making and command platform for rapid early warning and efficient disposal, and the urgent need to develop a rapid alarm and search and rescue positioning system for water operators when they accidentally fall into the water. At present, the operation on water involves many fields, such as navigation, public security frontier defense, fishery supervision and fishery administration, fishery fishing, rescue and relief, scientific investigation, sports, marine engineering construction. There are a large number of operators. The development of the search and rescue positioning system for the drowning personnel is not only related to the safety of these personnel, but also can improve the rescue system on water in China. For the sake of safety, according to the relevant regulations of the International Maritime Organization and Chinese maritime affairs, the marine life-saving articles usually provided by the marine operators include lifeboats, life-saving radio stations, light smoke pipes for communication, sea water colorants, sun reflectors, flashers, signal guns, compasses, etc. But at present, almost all of the life-saving articles equipped need manual operation. Once the accident occurs, when the personnel are unconscious or unable to operate due to injury, this life-saving equipment will lose its function, and

the existing life-saving equipment is only limited to the use above the water surface. If the personnel and equipment sink into the water, they cannot contact, let alone search and locate the drowning personnel.

2. CHARACTERISTICS AND APPLICATION OF ACOUSTIC BEACON TECHNOLOGY

Acoustic beacon is a kind of small-scale acoustic generator that automatically emits acoustic pulse signal when entering water. The beacon can be activated by water. After entering water, the signal can be transmitted immediately, and the signal can also be delayed (set by program). The acoustic signal takes water as the propagation medium, and is installed on the target in water to be searched and positioned as the guiding sound source for search and positioning. Underwater acoustic beacon has the characteristics of small volume, light weight, easy installation, long continuous working time and long transmission distance. At present, underwater positioning beacons in China have been widely used in the development of marine resources, marine salvage, marine military test and training, and now they have been applied to the safety of operators and equipment on the water. It is not only suitable for installation and use on a variety of devices, but also can be worn on people. Different applications can be realized by installing underwater acoustic beacons on different devices:

- 1) The installation of acoustic beacon on the underwater operation equipment can guarantee the salvage and recovery of the equipment;
- 2) When the acoustic beacon is installed on the fishing boat and other water tools, it can provide an effective means for underwater search and positioning in case of accident and sinking;
- 3) The acoustic beacon can be worn on the diver and other underwater operators, which can be used to monitor the

underwater activities of the personnel, ensure the safety of life, and also can be used for the underwater construction of precise location, etc;

4) The acoustic beacon is applied to the underwater positioning support of the aircraft black box. When the aircraft crashes into the sea, the acoustic beacon installed on the black box transmits the acoustic signal. The searcher can locate the underwater black box according to the acoustic beacon signal, so as to salvage it and analyze the cause of the accident.

Therefore, the development of a series of beacon products and search and rescue positioning systems for different occasions will make up for the shortcomings of the existing GPS and radio means, be able to use the acoustic signal to realize the detection, search and positioning of personnel under water or submerged underwater state, independently develop the core technology for the equipment, have full independent intellectual property rights, and achieve the domestic leading and international advanced level. After the scale industrialization, the beacon products will have a lower cost. The shipborne search and positioning system is suitable for installation and use on various types of search and rescue ships, which is conducive to widely promotion and application in the field of marine fishery safety assurance and emergency search and rescue, and has a strong product and technical competitiveness advantage in this field.

3. THE CURRENT SITUATION AND SHORTCOMINGS OF PROMOTING THE DEEP DEVELOPMENT OF INDUSTRY INTEGRATION SUCH AS ACOUSTIC BEACONS

3.1. Present situation

At present, our country mainly relies on the positioning of wireless beacon in the air, sometimes even on the visual inspection of search and rescue personnel on the aircraft, such as the sea water stained by dye in the life-saving device, the signal bomb sent by the drowning personnel, the reflection of the sun reflector, the light of the cold light tube at night, etc. Most of the operators on the water only carry some life-saving equipment, such as transmitting radio waves and smoke, which can not work when the drowning person sinks into the sea or loses consciousness. When the important equipment falls into the water, because the attenuation of radio and electromagnetic wave in the water is very large, it is far from meeting the needs of people in marine activities, so it is more difficult to salvage and search. The acoustic beacon has the advantages of small volume, long working time, good underwater pressure resistance and automatic operation in water. If it is effectively integrated with the civil product market, it can provide more guarantee for people to develop marine resources.

3.2. Insufficient

The complex characteristics of acoustic beacons, such as high production cost, high threshold, small batch, multiple varieties, multiple restrictions, long cycle, single demander, are totally different from those of civil products, such as low cost, large batch, multiple demanders, fast market return, etc. Acoustic beacons are mostly used for military products. If they are put into civilian products market, they need to be refitted with technology, renewed with materials to reduce costs, and industrial structure to be arranged.

The management system, talent circulation and resource allocation of state-owned enterprises and private enterprises are in a long-term state of separation. There are still big barriers for state-owned enterprises to enter the civil market and private enterprises to participate in the scientific research and production of state-owned enterprises. Specifically, private enterprises are affected by the market information of military products, blocked order channels, complex access procedures, tax and other policies, so it is difficult to import their own superior products into the military industry sector. Military industry group still has the problem of using administrative plan to distribute resources, and has not really participated in the market competition.

4. MEASURES TO PROMOTE THE DEEP DEVELOPMENT OF SOUND BEACON INDUSTRY INTEGRATION

Chinese acoustic beacon industry is in the direction of industrial integration more and more in-depth, and gradually on the track of steady development. It is necessary for the government and enterprises to work together to build an information sharing technology platform, establish classified information management mechanism according to different confidentiality levels, jointly establish a talent mutual use mechanism, establish human resource planning, talent information database, talent sharing system, talent attraction policy, etc.

4.1. Emancipate the mind and innovate the internal environment

The core of industrial integration is cultural integration, which provides a good environment for industrial integration by shaping a corporate culture suitable for talent growth. The integration of culture is first embodied in the pursuit of the same value, that is, to build a strong socialist country and realize the great rejuvenation of the Chinese nation. "Chinese dream", as the core of Chinese socialist culture, is also the common value pursuit of both sides. The industrial integration and development should be realized through people, and the development results should benefit

the employees in the two fields of state-owned enterprises and private enterprises. We should make full use of the talent resources of state-owned enterprises formed over the years, let the civil industry talent team grow rapidly through training, communication and other ways; use the management concepts of marketing and capital operation in the civil field, improve the R & D management level of state-owned enterprises talents, realize complementary advantages, and build a dual-use excellent talent team; and benefit the civil industry development through capital relations Two areas of staff. We should also use talents in both fields fairly and fairly, and the integration of people should be guaranteed through an effective system.

4.2. Promote the integration of management mechanism and resource elements

Through the overall planning of industrial resources, the organic combination of the government's leading role, the main role and the market supervision role, the acoustic beacons are effectively put into the market, It is in line with the national policy development and planning ideas, and also embodies the purpose of "people-oriented" in today's society, which is to strengthen the construction of Chinese maritime search and rescue system and improve the emergency response capacity of maritime safety It is of great significance in terms of social and economic benefits. In terms of system, according to the strategic thought of industrial integration, we should break the construction mode of separation of military and civilian and self-contained system, promote innovation in technology, organization, management and other aspects, accelerate the establishment of a new industrial integration system, and seize the commanding heights of the scientific and technological revolution and industrial revolution. It is hoped that the government, enterprises and research institutes will jointly formulate the compulsory measures of similar insurance to effectively guarantee the life safety of each fisherman.

4.3. Set up a platform to promote industrial integration and development

In order to get a wide range of applications, industries such as acoustic beacons need to effectively integrate all aspects of data, break the part between state-owned enterprises and private enterprises that hinders the effective development of the industry, and optimize and organize various resources. To strengthen the development of industrial integration, first of all, the production technology of the products related to acoustic beacons is constantly innovated, so that the cost of production is effectively reduced. The government, universities, enterprises and research institutes should form industrial alliance to exchange information and get what they need, accelerate the agglomeration of new business forms, and promote the integration and development of new business models. Efforts should be made to form a two-way

flow situation of personnel, capital and technology, strengthen policy guidance through innovative system and mechanism, encourage and support enterprises and scientific research institutes to adopt the joint development mode of sharing interests and risks to carry out project cooperation, and actively explore the paths and methods of participating in industrial integration projects such as venture capital and equity investment funds to ensure that the deep development of industrial integration is effective.

5. CONCLUSION

Acoustic beacons are widely used in the ocean positioning system. Different systems and engineering requirements are different in different applications, so the requirements of acoustic beacons are different. The underwater acoustic beacon has the characteristics of high reliability, low cost, convenient use, small size, which is suitable for installation on a variety of equipment, or wearing on people. Different applications of the system can be realized by installing the underwater acoustic beacon on different equipment. If the acoustic beacon is installed on the underwater operation equipment, it can provide protection for the salvage and recovery of the equipment; if the acoustic beacon is installed on the fishing boat and other underwater tools, it can provide effective means for underwater search and positioning in case of accidental accident and sinking; if the acoustic beacon is worn on the diver and other underwater operation personnel, it can be used to monitor the underwater activities of personnel and ensure life safety. In order to realize the dream of maritime power, increase the combat power in the information war and promote the effective reform of economic structure, the acoustic beacon industry needs to seize the opportunity to adapt to the development space and gradually meet the market demand. In the development of acoustic beacon industry, it is necessary to promote the in-depth development of industrial integration, organically integrate the two markets in the field of state-owned enterprises and private enterprises, and fully drive the continuous innovation and development of the sound Beacon and other industries.

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