High-precision Navigation Technology of Underwater Long Endurance Vehicle

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Abstract

The report is based on the underwater long-hour navigation plan and analyzes both the offshore conditions and the deep-sea conditions. The current mainstream method of near-seawater positioning systems is the INS+DVL combination mode. The article will discuss other acoustic, magnetic, and gravity assistance. Application issues of the method, such as the improvement of navigation accuracy in long-time navigation and the establishment of long-term underwater navigation calibration systems; multi-sensor information fusion will be carried out in deep sea conditions, and appropriate navigation methods will be adopted according to environmental factors to achieve long navigation time for underwater submersibles. High-precision, high-reliability work, plans to use three composite methods to achieve underwater navigation: inertial / acoustic integrated navigation, inertial / magnetic passive navigation, cross-media platform collaborative navigation. The key technologies of the above two schemes are studied, such as error compensation technology, passive navigation technology, and multi-source information fusion technology.

Yong Chen, born in 1957, received his B.S. in computer science from Harbin Institute of Engineering, China, in 1977, and received M.s. in Weapons engineering major from Naval University of Engineering, China, in 2006. He is currently a Deputy Chief Engineer and Researcher in the Department of Weapon Science, also a part-time professor in Naval University of Engineering, Naval submarine college, as well as Harbin Engineering University.

Being engaged in scientific research for 37 years, Professor Chen always in the front of national defense research, his current research interests are in underwater vehicle designing and ship target characteristics researching. From the professional group leader, the director designer, the chief designer assistant, the deputy chief designer to the chief designer, he has won more than 40 awards, such as the National defense science and technology progress award, the Natianal defense individual award. His major achievement in scientific research is developing in Fish-X torpedo, which has brokenthrough high power brushless propulsion motor technology and other key technologies. At present, the production of 200 torpedoes has been completed and the armed forces have become the weapon of the navy.