Hydroacoustic Aided Inertial Navigation – HAIN A New Reference for DP

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Abstract

No one disputes the statement "A Dynamic Positioning (DP) system can never become better than its references".

Automatic control of a vessel's position in a critical operation or location requires good redundancy of all the control system components. Whether it is a vessel's position extremely close to a fixed platform, or a construction platform vessel for a critical deep underwater installation, it will require automated, accurate and controlled position keeping.

A DP system is a controlling computer that feeds the thrusters and propellers with accurate signals of power required to hold the position of the vessel, or moving it in a controlled fashion from one position to another, in any environmental weather condition. The DP cannot function without input from position reference systems and operates often with many such systems in an integrated solution.

Each position reference system contributes by sending its present logged position data to the DP. Each reference system has different characteristics of strengths and weaknesses. They are often classified according to how stable they are in position accuracy, position deviation and position update rate.

There are many position reference systems available in the market, but when a vessel is alone in the open ocean a long way from shore it is only the satellite based Global Positioning System (GPS) and the seabed transponder based Hydroacoustic Position Reference (HPR) that can give reliable reference positions.

This paper focuses on the challenges of classifying, or weighting, the HPR to the same level as GPS in the DP algorithm, and data examples from deepwater operation will be presented.

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