Accuracy is Addictive – New Techniques for High Accuracy Positioning

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Abstract

Position accuracy is addictive. As a DGNSS service provider operating worldwide, Fugro continually strives for ways to meet our customers expectations for increased performance. This paper focuses on techniques for providing high accuracy positioning in offshore regions hundreds of kilometers from land.

In the offshore environment, the approach to improving accuracy must be different to the approach on land. One cannot always add local reference stations or establish an RTK (Real Time Kinematic) system. The reasons are obvious. There are limited options for reference station locations and limited infrastructure for broadcasting the correction data to marine users. While, the seas and oceans are covered by satellite communication systems, there is a limit to the data bandwidth usage that is practical for technical and economical reasons. On the other hand, the open seas offer a near ideal environment for GNSS signal tracking. The antenna generally has a clear line-of-sight to all satellites above the horizon and GNSS receivers on board a ship experience few cycle-slips.

This paper presents technologies for high accuracy positioning far from land. A particular solution developed by Fugro is discussed and test results are presented. Emphasis is made both on the accuracy and the integrity of this approach. In addition to reviewing this state-of-the-art technology, a vision for what to expect in the future is also provided.

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