

New Techniques in Relative RTK GPS Positioning Between Dynamic Platforms

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Abstract

This paper will discuss the latest advancement in Real Time Kinematic (RTK) GPS Positioning, *Moving Base RTK*. Developed by Trimble, Moving Base RTK differs from conventional RTK positioning, where the reference station remains stationary at a known location, while the rover moves, by allowing both the reference and rover receivers to be moving whilst calculating a centimeter accurate 3D vector between them.

The Moving Base RTK technique is ideal for applications where the precise relative offsets and closing velocities of two or more moving vessels is required, such as when a shuttle tanker is approaching an FPSO, FSRU, SPM or similar.

In its simplest form, the Moving Base RTK solution provides absolute vessel positioning, that is 'real-world' positions, accurate to autonomous GPS level (approximately 20m) but relative positioning between each vessel accurate to 1 - 2 centimeters. Enhanced Moving Base RTK allows for either shore or satellite broadcast DGPS or shore based RTK corrections to be included in the solution. If this option is implemented then the absolute 'real-world' positions are improved to either submeter, in the case of DGPS, or centimeter, in the case of RTK, levels. Regardless of whether Enhanced Moving Base RTK is used or not the relative positioning between each vessel remains at the high centimeter level.

Trimble's Moving Base RTK differs from currently available products by providing centimeter level relative accuracy's and update rates at up to 10hz.

This paper will present the Moving Base RTK technology with particular reference to the offshore oil & gas industry.

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