



PSEUDOLITES FOR PRECISION APPLICATIONS

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Overview

Precision requirements for navigation systems are getting more and more stringent for an increasing number of applications, such as car tracking, automatic guidance for agricultural equipment or open pit mining monitoring.

These requirements cannot always be fulfilled by conventional satellite based systems. In particular, high accuracy can not be guaranteed in challenging signal environments like urban or natural canyons. In such cases, it is necessary to combine the satellite system with other types of sensors and aiding systems.

The Multisensor Systems group is developing combined systems capable of processing signals from different navigation technologies. These systems merge information from satellite receivers, inertial sensors and so-called pseudolites to assure seamless operation of the system at the required level of precision.

Pseudolites

A pseudolite system consists of several transmitters acting as "pseudo-satellites" (pseudolites), installed in an area where signals from satellites are partially or totally blocked.

Pseudolites can help increase the availability of satellite signals by supporting the tracking loops or even, if needed, be used as standalone navigation system.

Using an innovative signal structure for the pseudolites and a judicious combination with inertial sensors, the accuracy of satellite navigation systems can be maintained through signal outages. In many cases pseudolite systems can even improve position accuracy throughout the whole area. The opportunity to place pseudolites according to specific user needs makes these systems highly flexible and therefore a cost effective solution to a wide range of applications.