

POS LV™

The ultimate location referencing tool

Position and Orientation System for Land Vehicles (POS LV) is a state-of-the-art Aided Inertial Navigation System that provides precise roll, pitch, heading, velocity and position information to other onboard measurement subsystems, making it Roadware's latest and most advanced geometric system for the ARAN® mobile data collection system. It provides ARAN users with an even more precise alternative to the standard gyro geometrics package.

POS LV combines data from sensitive gyros and accelerometers, packaged in an Inertial Measurement Unit (IMU), with the Geographic Positioning System (GPS) and a Distance Measurement Instrument (DMI). This position information is used to motion-compensate the ARAN sensors, making it possible to accurately derive the position and attitude of points on the road surface.

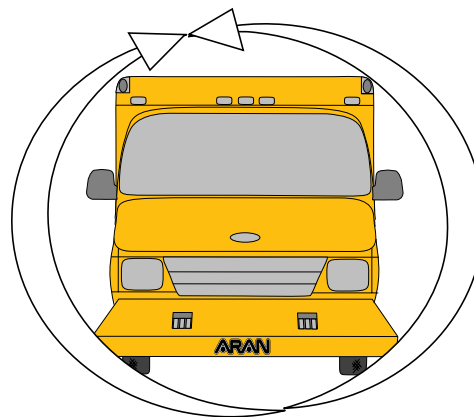
GPS and the Inertial sensor are complementary technologies. GPS corrects any drift evident in the Inertial sensor over time, while the Inertial sensor ensures that positioning will be continuously available, even in periods of GPS outage (e.g. due to tree canopy or urban canyon).

The POS LV solution helps determine longitudinal and transverse

profiles of multi-lane roads as well as other geometric data such as curve radius, grade, and elevation measurements with survey-level accuracy. The Inertial Measurement Unit is mounted in the Front Instrument Enclosure (bumper) for precise "roll" information without the error introduced by the twist of the vehicle frame. These data are used to determine the transverse profile of the road surface.

ARAN software utilizes the high-accuracy position and orientation solution provided by POS LV to determine crossfall and calculate precise mill and shim quantities of asphalt needed to restore the road to acceptable standards.

POS LV makes it possible to construct or update existing maps when it is used with a Geographic Information System (GIS) database.



Features

- **Rod and Level Accuracy**

Field tests demonstrate millimeter accuracy for measurements taken at high-way traffic speeds

- **Strap-Down Inertial Measurement Unit**

Provides higher reliability than gimbaled gyro systems using accurate, military quality instruments with proven reliability and performance

- **GPS Azimuth Measurement System (GAMS)**

Guaranteed heading accuracy independent of geographic latitude and vehicle dynamics

- **Sophisticated Filtering Algorithm**

Data is analyzed in real-time using a Kalman filtering algorithm which blends Inertial data with output from the DMI and GPS while at the same time it filters out anomalies and errors

- **Rugged Design**

Field tested solution, designed to withstand vibration and shock without degrading accuracy or reliability