

# Combining GNSS Positioning Capabilities



Topcon Positioning Systems recently unveiled the IP-S2, a vehicle-mounted, mobile 3D precision mapping and survey system. The IP-S2 combines dual-frequency GNSS signal tracking and positioning and inertial measurement to integrate laser scanning and digital imaging.

Using 3D laser scanners, LIDAR, and/or cameras, the data collected is integrated, time-stamped and geo-referenced. The customer can then quickly and accurately combine LIDAR "point cloud" and digital imaging data to build 3D models of the areas driven. Sensor integration creates unlimited applications for the technology in GIS, construction, agriculture, mapping, and machine control -- all areas where Topcon has market leadership.

With its scanning and inertial measurement capabilities, its ability to support a variety of sensors and its 360-degree hemispherical digital video camera system, the IP-S2 can gather accurate measurement data in difficult conditions, such as tunnels, under bridges, in heavily wooded areas or urban canyons.

Collecting field data for GIS applications has always been a time-consuming task, usually taking several years to fully accomplish. As a result, many databases are incomplete, preventing managers from utilizing their full potential. Safety has also been an issue, requiring personnel to stand in highly traveled road corridors where most assets are located.

The IP-S2 standard system includes three high-resolution LiDAR scanners that cover the vehicle path at ground level and sweep the adjacent areas to a distance of 30 metres. The technology can provide location and geo-referencing with survey accuracy of visible utilities, traffic signals and roadways, modeling GIS maps, examining tunnels, taking inventory of and collecting 360-degree digital images (at a rate of 15 frames per second) to catalog surroundings in real time.

The IP-S2 software and hardware were designed and constructed in a modular format so that an array of present and future sensors can be easily integrated to the existing scanner ports.

There are more than 400 of the units currently in use worldwide.