

Mapping on the move

LANDINS PROVIDES KEY TO BREAKTHROUGH IN MOBILE SCANNING



ABA Surveying Limited, a pioneer of high-speed 3D data capture using laser scanners, has selected a LANDINS inertial navigation system (INS) to provide the vital position and orientation data required by its ground-breaking kinematic mapping system.

Just over a year ago, ABA set out to develop a survey/mapping system that could be installed in a road vehicle and hence used for a variety of highways, civil engineering and urban architectural applications.



LANDINS Inertial Navigation System

ABA has vast experience of this kind of survey and mapping work in the railway industry, where such surveys are uniquely carried out by them using rail trolleys. In this case, the scanning platform is very stable and there is a perfect trajectory – the track itself – on which to hang the scan data. On the roadway, however, those trajectories are lost and scanning systems become heavily reliant on positional information provided by global navigation satellite systems (GNSS). Unfortunately, in urban environments containing buildings, bridges, trees, road cuttings and so-called urban canyons, GNSS performance

is significantly degraded, and information can sometimes be lost altogether. An INS system is therefore needed to qualify the GNSS data and to reverse compute the scanner trajectory during GNSS outages.

Alan Barrow, ABA Surveying's founder, said: "The choice of INS was made after much careful evaluation and experimentation. Our aim was to develop a scanning system with an absolute accuracy of better than 10 mm when being used at highway speeds. There are only a handful of suppliers offering high-end systems that are capable of achieving the results we were looking for. IXSEA is well known for its expertise in fibre-optic gyroscope technology, and its LANDINS system ticked all the right boxes."

IXSEA developed LANDINS specifically for land-based mobile applications in urban environments where GNSS data are of limited quality. The units provide highly-accurate positional information in real time with precise timings and very high output rates. Their open architecture also means they are easily integrated with other survey/mapping system components.

From a practical standpoint, LANDINS raises the survey/mapping performance of mobile 3D laser scanning systems into the realm of that achieved by static scanning systems. Survey speed is obviously significantly increased and there are safety advantages: operators do not need to be positioned in road lanes and there is no disruption to traffic.

Yves Paturel, Technical Director of the Land & Air Division, IXSEA, said: "ABA is to be congratulated on the development of such a practical and accurate survey/mapping system. The combination of ABA's scanning experience with IXSEA's traditional strength in navigation and positioning has resulted in a tool that sets new standards and is sure to find widespread application."

ABA's mobile scanning system is contained in a "scan-van" and principally comprises three Leica 6000 scanners, GNSS geodetic quality receivers (selected for their sensitivity and ability to rapidly re-establish their position after a break in the signal), a LANDINS unit, an advanced data logger and a rack-mounted computer based on an i7 processor for systems control and monitoring. The whole system is operated from a conventional keyboard and two 20-in flat-screen monitors in the back of the van.

The system was first made available commercially in September 2009. Its first use was for a project for UK company Near Global and involved the capture of architectural images of central London as part of the creation of a virtual cityscape. High-density scanning was performed with a nominal point-spacing of 15 mm.

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About IXSEA

Formed in 2000, IXSEA designs and manufactures navigation and positioning systems based on its state of the art Fibre Optic Gyroscope technology, along with a complete range of seafloor mapping solutions for the scientific, offshore and defence industries.

IXSEA has more than 400 clients on five continents with a turnover of €35 million in 2009.

To learn more about IXSEA, visit the company's web site at www.ixsea.com.

About ABA Surveying

ABA Surveying was formed in 1990 and has always been at the leading edge of technology. The aim is to bring to its clients the benefits of such technology by developing for them the most appropriate solution to their data requirements.

Particular successes in recent years have been in leading the field in the development of 3D scanning techniques for surveying purposes. The company operates three of the highest specification scanners in the UK and has developed proven techniques for a wide range of surveying tasks.

To learn more about ABA Surveying, please visit the company's web site at www.abasurveying.co.uk.

Further information:

Anne Colliou

Press Manager

IXSEA

Email: anne.colliou@ixsea.com

55 Avenue Auguste Renoir

78160 Marly Le Roi, France

Tel: +33 (0)1 30 08 98 88