



LMI TECHNOLOGIES

CASE STUDY



SSI USES GOCATOR 2375 MULTI-SENSOR NETWORKING IN ITS PAVEMENT PROFILING SOLUTIONS

ABOUT THE CLIENT

A long term partner of LMI, SSI (Surface Systems & Instruments, Inc.) is a systems integrator that manufactures test equipment for measuring various surface characteristics of roads, bridges, runways and commercial floors.
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smoothroad.com



SSI Pavement Profiling Solution

The Challenge

The American Association of State Highway and Transportation Officials (AASHTO) has introduced new provisional specifications outlining the collection of transverse pavement profiles, determining pavement deformation parameters, and analyzing cross slopes from collected transverse profiles.

AASHTO's specifications define measurement of ruts, cross slopes, deformations and lane-edge drop off. However, no affordable complete profiling systems that comply with these specifications were available in the market.

Multiple (typically 5 or more) single-point displacement sensors previously used for rut scanning were unable to provide the required AASHTO specified data density across the pavement width. Nor did high priced pavement management systems offer a viable solution to paving contractors and consulting engineers.

The Solution

SSI assembled a team to develop a completely integrated, AASHTO-compliant system. They quickly identified the need for this system to have 3D sensors with the ability to provide high speed data acquisition with a large coverage area, large clearance distance, high measurement accuracy in an outdoor environment, and a robust industrial package with a small footprint.

As a long time user of LMI's Gocator 2342 sensors (and earlier models)

for pavement profiling, SSI selected the newly introduced Gocator 2375 sensors for their integrated solution.

Several profiler systems mounted on pickup trucks have been completed and are currently in use. To cover the specified transverse profile width of 4.0 or 4.25M, five 2375 sensors were mounted on each vehicle, three pointed straight down, and the outer two angled outward to minimize vehicle width while maintaining a large scan width.

SSI also equipped the vehicles with GPS for location monitoring, an Inertial Measuring Unit for vehicle pitch and roll compensation, a camera for area imaging, two Gocator 2342 3D sensors in the vehicle frame for IRI (ride and roughness) measurement and a high end ruggedized notebook computer.

SSI integrated all sensors with data synchronization, and developed a sophisticated software package for analysis, display and reporting in compliance with the AASHTO specifications.

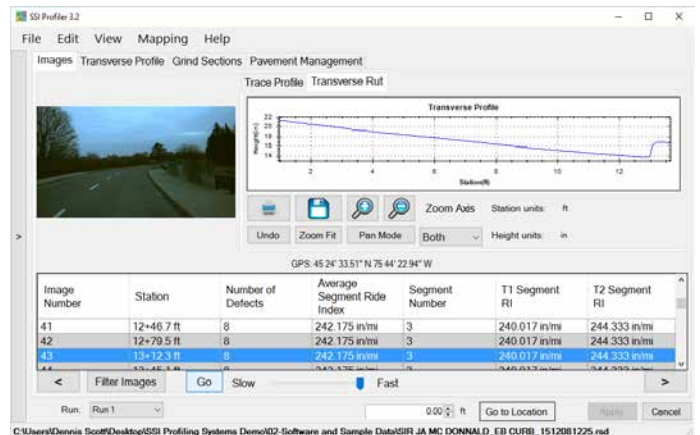
Advantages of the Gocator sensor:

- Are affordable and scalable
- Gocator 2375 sensors meet the AASHTO specifications for transverse data point separation, spacing between profiles, and vertical resolution and accuracy
- To meet the high profiling speed requirement, LMI equips the sensors with dynamic windowing capability
- Gocator's ability to operate in high ambient light, on a wide variety of surfaces meet the needs of profiling in outdoor conditions
- Easy integration (one cable, more compact) for easy setup/removal from the vehicle
- Gocator sensors are factory pre-calibrated, ready-to-use out of the box, eliminating the need for the system builder to implement complex sensor calibration procedures
- Multiple sensors are easily synchronized with an LMI Master

Advantages of the Profiler System:

- SSI now provides the first fully integrated profiler compliant with new AASHTO specifications.
- Profilers quantify and report measurement of ruts, cross slopes, deformations and lane-edge drop off, as well as ride and roughness statistics.

¹ See AASHTO PP 70-14 (Collecting the Transverse Pavement Profile) and PP 69-14 (Determining Pavement Deformation Parameters and Cross Slope from Collected Transverse Profiles).



Transverse Profile Viewer

The Results

Gocator's high-speed data acquisition with a large coverage area, large clearance distance, measuring accurately in an outdoor environment meet needs for 3D sensors for AASHTO compliant profiling.

SSI has delivered multiple profilers, now in use in North America. Currently SSI is following up on interest expressed in their profiling system from several Departments of Transportation (DOTs).

Gocator provides the high profiling speed required to meet AASHTO specifications in a cost-effective, scalable package.

—Dennis Scott, President, SSI



To learn more about Gocator All-In-One 3D Smart Sensors, please email contact@lmi3d.com

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