Hawkeye 1000 Series

The Hawkeye 1000 Series is a portable range of road survey equipment, designed to offer affordable solutions for profiling and video data.

The economic benefits of the Hawkeye 1000 Series and fit for purpose specifications make it an ideal solution for both video and road profiling applications. The system is contained within an easily portable and accessible hardcase that sits within the back seat or cargo area of the vehicle.

Collecting accurate distance, time, and spatial information is assured through the use of our unique development, the Heartbeat. The Heartbeat module and acquisition software accurately synchronizes each sensor in the system, to align multiple data stream inputs to the Distance Measurement Instrument

(DMI) and DGPS/INS spatial systems, to ensure full synchronization between the various survey modules. This also allows for seamless modular upgrades of your equipment.

By combining multiple modules, the Hawkeye 1000 Series is capable of supporting up to a three-laser profiler, two digital imaging cameras, Gipsi-Trac Geometry and GPS or DGPS.

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Hawkeye 1000 Series

HAWKEYE

Digital Camera system
Capture images of road assets and pavement features.

GPS or DGPS
GPS provides an accuracy of 5m-15m, while DGPS achieves real time sub-meter accuracy.

Digital Acquisition system
Hawkeye Onlooker Live software is an interactive and real-time acquisition control interface that monitors all of the Hawkeye systems simultaneously.

GIPSI-Trac 2 Geometry
Uses dead-reckoning sensors and dual GNSS antennas to collect position and road geometry information with sub-meter accuracy.

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Digital Laser Profiler
Laser profiler accurately records the roughness and texture (MPD and SMTD) of the road surface.

Rotorpulser
Uses distance pulses from a sensor attached to a wheel of the survey vehicle to provide distance data.

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Digital Laser Profiler

The H1000 Digital Laser Profiler (DLP) measures longitudinal profile, roughness and macrotexture.

A World Bank Class 1 profiler, the H1000 DLP measures longitudinal road profile with precision laser sensors sampling at 32 thousand times a second, along with high precision distance encoder and high frequency, low noise accelerometers to compensate for vehicle body movement.

The Profiler can be front or rear mounted and completely portable, utilizing a detachable beam that comes complete with a tow-bar mounting kit, making it perfect for less frequent survey demands.

Applications

- Pavement condition assessment.
- Accurate paving quality assessments.
- Quality control and dilapidation surveys.
- Contract validation.

Features

- World Bank Class 1 profiler with a choice of one, two or three laser combinations to suit all budgets.
- Simple turnkey operation.
- Can be easily shipped for remote survey requirements and short-term vehicle installations.
- Easily installed on a vehicle without special tools or technical personnel.
- Lightweight aluminium beam with external weatherproof housing.
- Data is tightly synchronized to distance and spatial coordinates.
- Operational at highway speeds to reduce survey time and costs.
- Results are independent of vehicle type.

- Macrotexture (MPD and SMTD).
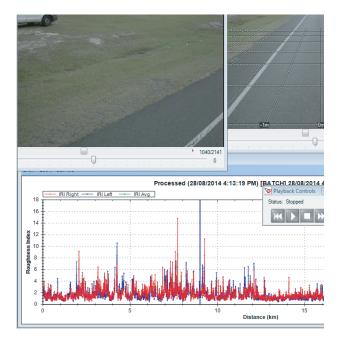- Rut index (3 point).
- GPS location.
- Distance.

Outputs

- Longitudinal profile in CSV, ERD, PPF formats.
- Advanced wavelength filtering options.
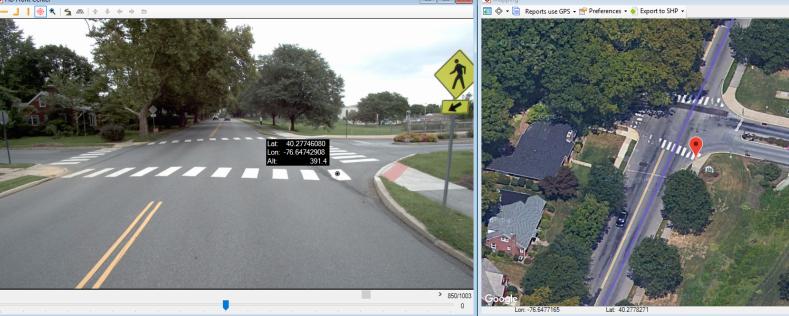- Roughness (IRI, NAASRA, Ride Number, HATI).

Standards Compliance

- ASTM E950
- ASTM E1656: Class L111
- ASTM E1845
- ISO 13473-1
- EN 13036-5
- EN 13036-6: Class L111
- AASHTO M 328
- AASHTO R 43
- AASHTO R 54
- AASHTO R 56
- AASHTO R 57
- TMH 13 Part C
- AGAM-S001
- AGAM-S005
- AGAM-T001
- AGAM-T013

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Features

- Up to three HD cameras can be supported.
- Simple turnkey operation.
- Can be shipped for remote survey requirements and short-term vehicle installations.
- Uses .AVI storage files.
- Data is linked and synchronized to distance and GPS coordinates.
- Operational at highways speeds to reduce survey time and costs.
- Ideal for use on a variety of vehicles.
- Georeferencing and measurement capabilities.

Outputs

- Digital imagery in AVI and JPEG formats.
- Spatial location.
- Distance.
- Shapefiles.

Digital Imaging System

The H1000 Digital Imaging System (DIS) is an imaging unit for visually capturing and locating roads and roadside features.

The full high-definition (HD), color camera utilizes the latest in digital image sensor technology in combination with high grade optics and can be mounted on a windscreen or vehicle dashboard.

The DIS is completely portable, using a suction mounted camera and transportable carry case, allowing for the system to be easily transferred between vehicles.

If more than one camera is required, a custom roof rack is included to enable the mounting of the cameras onto the survey vehicle. Zoom and focus controls, along with software exposure algorithms optimized for on road image collection, produce crisp high-resolution images in all road conditions.
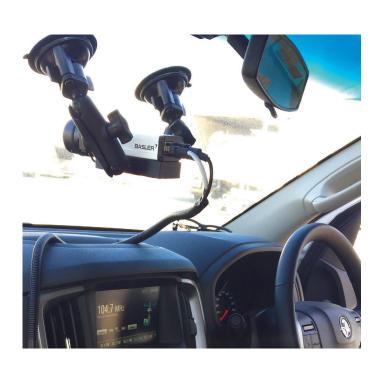
Applications

- Visual identification of roadside assets.

- Right of way assessment.

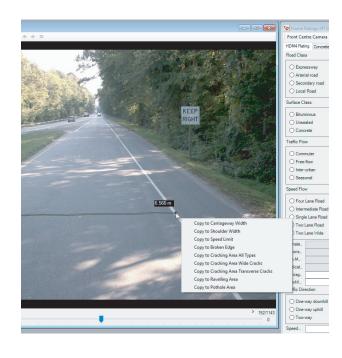- Road safety assessment.

- Conformance to pavement specifications.

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HAWKEYE

Features

- Uses an integrated dual antenna GNSS receiver and dead reckoning inertial sensors.
- 200Hz fused data output.
- Exports to CSV and point or polyline shapefiles.
- Fully customizable GPS projection methods:
  - Lat, Long, Easting, Northing and a range of datums.
- Typical mapping accuracy of 1.2m in all conditions.
- Operates in all locations:
  - Inside tunnels.
  - Under bridges.
  - Highly vegetated or mountainous regions.

Outputs

- Grade.
- Cross-slope.
- Horizontal and vertical curvature.
- Inertially corrected GNSS position.
- Distance.

Gipsi-Trac Geometry

The Gipsi-Trac 2 is next generation GNSS + INS (Global Navigation Satellite Systems + Inertial Navigation System) geometry module.

The system records and combines inertial data from a 3-axis gyroscope, 3-axis accelerometer and a distance sensor with dual GNSS antenna positional information.

This combined system boasts real-time fused GNSS/INS outputs in all survey conditions, including periods of GNSS outage with no post-processing required.

The built-in dead-reckoning allows for position data to be accurately recorded when in tunnels, under bridges and locations with little or no GNSS coverage.

Applications

- Road geometry and measurement.

- Mapping.

- Road safety assessment.

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Hawkeye Software Suite

The easy-to-use Hawkeye interface allows the user to monitor data collection, then process, analyze and review all collected survey parameters.

The Onlooker Live acquisition software runs on a dedicated computer in the vehicle, allowing for a fully customizable layout to suit individual operator requirements. The network control interface enables real-time result reporting and the capability to progressively add new Hawkeye modules, without the need for additional software.

The software utilizes survey navigational tools such as compass, location reference points, maps and recording of events. Computer generated speech can be enabled for system warnings and other items requiring attention.

The Processing Toolkit software can calculate various outputs such as IRI, MPD and other with standard and custom processing parameter settings.

Advanced image analysis tools can be used to review and rate individual video frames against distance and GPS, save images to file and zoom-in to inspect areas of interest. Multiple images can be assessed simultaneously, and the road can be 'driven' at a rate selected by the operator.
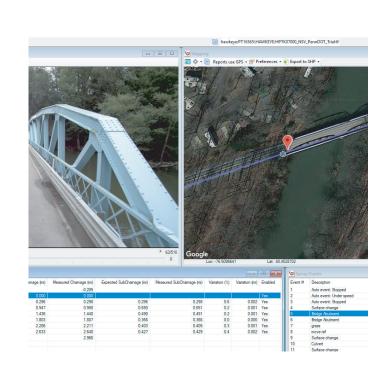
Processing Toolkit Features

- Extensive analysis and reporting capability for profile, texture, geometry and imagery assessment.
- Advanced mapping interface that supports Google background maps.
- Centralized databases to allow multiple users to process and view the same survey data simultaneously.
- Multiple language support: English, Chinese, Spanish, Arabic and Russian.
- Metric and Imperial measurement systems supported.
- Windows launching allowing for cross reference of data between applications.
- Data compression algorithms to optimize storage.
- Batch rubber banding and editable reference points.
- Survey search filter capability.
- Export to most PMS and GIS applications.
- Batch processing and exporting.
- Data export to CSV, PDF, MS Word, MS Excel, RTF, KML and SHP formats.
- Windows (64-bit) compatible.

Capabilities

- Calculation of:
  - International Roughness Index (IRI).
  - MPD and SMTD macrotexture.
  - Rut Index.
  - Faulting.
  - Longitudinal profile.
  - Geometry.
- Image area/length/height measurement.
- Image stitching, zoom and resizing.
- Asset location.
- Profilometry analysis.
- Graphical inertial/GPS mapping.
- Shapefile imports.
- User configurable rating forms.
- Advanced HDM-4 exporting.

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