The Dynatest Multi-Function Vehicle (MFV)

Ranging in capabilities from high-resolution 3D pavement imaging to longitudinal and transverse profiling, the Dynatest MFV offers a suite of modular component technologies requisite for accurate and repeatable pavement condition assessments. Each Dynatest MFV is outfitted with the appropriate combination of these technologies based on the end-user's pavement data collection goals and objectives.

Regardless of the configuration, all Dynatest MFV components are synchronized through a single operating system, Dynatest Control Center (DCC). DCC allows components to be activated and controlled via one common platform, which ensures the synchronization of all data and facilitates the sharing of critical linear and geospatial information.

Through the seamless integration of state-of-the-art pavement surface imaging and measurement technologies, the Dynatest Multi-Function Vehicle (MFV) provides a modular, customizable system that may be configured to meet the diverse needs of roadway and airport pavement Engineers worldwide.

Modular Component Technologies

3D PAVEMENT IMAGING – High Definition Cracking (HDC) acquires 3D profiles and 2D images of the pavement surface using two high speed cameras, laser illumination, and advanced optics. This unique 3D vision technology allows for 4m (13ft) wide pavement condition assessments during day or night at speeds up to 100km/h (62mph). HDC analysis software offers several capabilities, including automated crack detection and classification, rutting measurements, detection of ravelling, and assessment of macro-texture parameters. HDC utilizes the Laser Crack Measurement System (LCMS) technology developed by Pavemetrics Systems Inc. HDC cannot be combined with HDI or HDR.
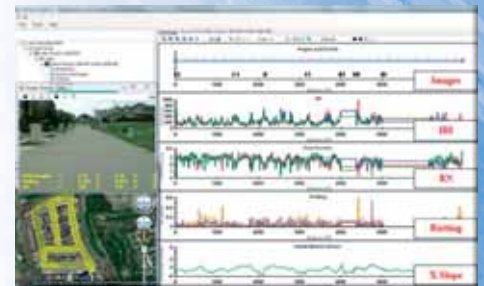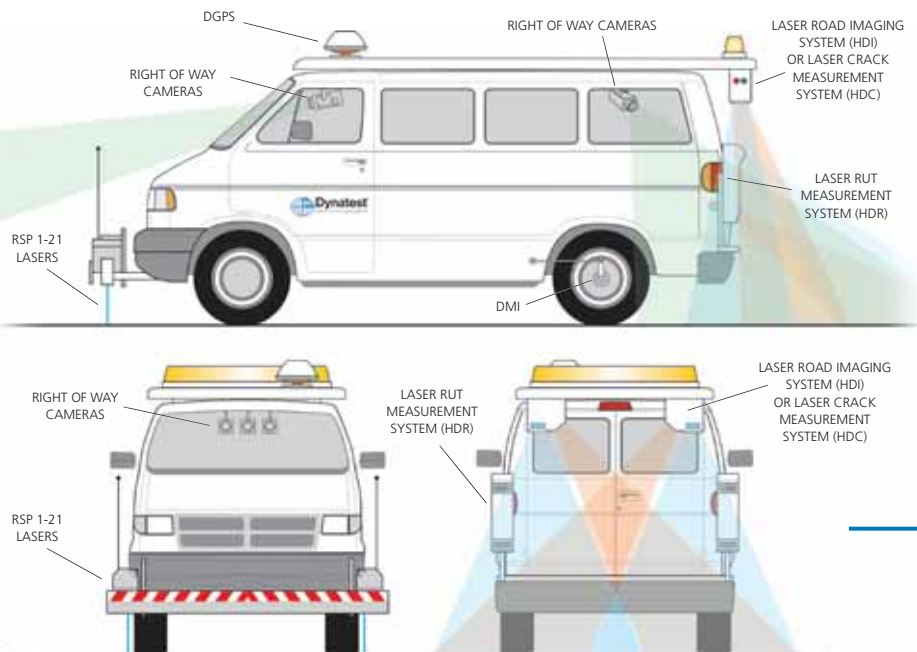
2D PAVEMENT IMAGING – High Definition Imaging (HDI) acquires 2D images of the pavement surface using two high resolution linescan cameras and laser illumination. This technology scans at up to 28000 lines/s and allows for 4m (13ft) wide pavement condition assessments during day or night at speeds up to 100km/h (62mph). HDI captures cracks as narrow as 1mm along with all other visible distresses. Back in the safety of an office, HDI 2D images are post processed with the Dynatest Explorer (DE) and Distress Rating Module (DRM) software packages. DRM allows for distress identification, measurement, and classification. Furthermore, pavement condition indexes may be calculated directly or exported for use in a pavement management system. HDI incorporates the Laser Road Imaging System (LRIS) technology developed by Pavemetrics Systems Inc. HDI can be combined with HDR.

High Definition Rutting (HDR) acquires a 1000+ point filtered transverse profile (rutting) using two laser profilers that cover up to 4m (13ft) width of the pavement surface. With a transverse profile sampling frequency of up to 250 Hz, the transverse profile can be stored at approximately 110mm (4.4in) intervals at 100km/h (62mph). HDR provides summary and statistical rutting data. Raw transverse profiles are stored for viewing and analysis in Dynatest Explorer (DE). HDR also provides rutting indices as defined in required under AASHTO R 48-10 and FHWA-RD-01-024. Vehicle wander within the lane is compensated for by using the inner lane's pavement markings as the edge of the inside wheel path. Detection of lane markings is performed in real time. HDR also allows for manual, real-time truncation of the outer limits of the lane width so that rut measurements occur only on the pavement surface. HDR incorporates the Laser Rut Measurement System (LRMS) technology developed by Pavemetrics Systems Inc.

Capabilities

- 3D Surface Imaging – Automated distress identification, measurement, and classification
- 2D Surface Imaging – Manual distress identification, measurement, and classification
- Longitudinal and Transverse Profiling – Ride characteristics, rutting measurements, and pavement geometrics
- Texture measurements
- Right-of-Way Imagery
- Integrated GPS
- Dynatest Explorer™ (DE) Analysis Software

DYNATEST EXPLORER™ (DE) ANALYSIS SOFTWARE

Dynatest®
Equipment & Pavement Engineering Specialists

Diagram labels (side view):
- DGPS
- RIGHT OF WAY CAMERAS
- RIGHT OF WAY CAMERAS
- LASER ROAD IMAGING SYSTEM (HDI) OR LASER CRACK MEASUREMENT SYSTEM (HDC)
- LASER RUT MEASUREMENT SYSTEM (HDR)
- RSP 1-21 LASERS
- DMI

Diagram labels (rear views):
- RIGHT OF WAY CAMERAS
- RSP 1-21 LASERS
- LASER RUT MEASUREMENT SYSTEM (HDR)
- LASER ROAD IMAGING SYSTEM (HDI) OR LASER CRACK MEASUREMENT SYSTEM (HDC)

With the Dynatest Explorer™ program it's possible to view and store a large number of data sets from different equipment and/or from different years on the same screen, giving the engineer an overview of the total pavement condition, both functionally (on the surface) and structurally.

Longitudinal and Transverse Pavement Profiling

Dynatest's Mark III Road Surface Profiler (RSP) is capable of real-time measurements of longitudinal and transverse profile elevations and the "on-the-fly" calculation of International Roughness Index (IRI) values, Ride Number (RN) values, rut depths, and macro texture values (per MPD). Dynatest also offers the portable Mark IV RSP capable of capturing longitudinal profile elevations, IRI, RN and MPD, in one or two paths in real time. Both RSP models offer Dynatest's unique "Stop and Go" capability, which enables the calculation of IRI values in traffic and at intersections. Dynatest's RSPs meet Class 1 precision and bias specifications as defined by ASTM E950, TxDOT TEX-1001-S specification, AASHTO R 56-10, and AASHTO R 48-10.

Right of Way (ROW) Imagery

ROW imagery is used as a reference for pavement distress surveys and may be conveniently viewed – along with all other imagery and data sets – during post-processing in Dynatest Explorer (DE). Up to five cameras may be mounted on a Dynatest MFV. High definition (1920x1080p) or standard (1280x960p) cameras may be used.

Dynatest Explorer™ (DE) Analysis Software

Dynatest Explorer (DE) is a comprehensive network- and project-level pavement analysis program used for both the automated and manual analysis of 3D and 2D pavement images, ROW imagery, and longitudinal and transverse profile data. DE displays 3D and 2D distress data sequentially alongside ROW images, rutting measurement, ride characteristics, geometrics, friction data, Falling Weight Deflection (FWD) data, pavement layer moduli output from ELMOD6, and pavement layer thickness data from Ground Penetrating Radar (GPR). DE provides graphical and tabular views of data sets that may be exported directly into pavement management systems and other databases and software packages. DE data can also be conveniently plotted with Google Earth.

Please contact Dynatest for complete specifications, pricing, and more detailed technical information.

www.dynatest.com • E-mail: EquipmentSales@dynatest.com

HDC utilizes the Laser Crack Measurement System

- Crack detection and severity assessment
- Multiple macro-texture measurements (MPD)
- 3D and 2D data to characterize: Potholes, patching, ravelling, sealed cracks, joints in concrete, tining, etc.
- 4160 point rutting
- Day or night operation

HDI utilizes the Laser Road Imaging System

- 1 mm imaging at 100km/h (62mph)
- Measurement of 4m (13ft) width in single path
- Crack image contrast enhancement
- Day or night operation
- Low power consumption

HDR utilizes the Laser Rut Measurement System

- Measurement of transverse profile and rut depths using either straight edge or string line methods
- 1280 point transverse profiles
- Day or night operation
- Survey speeds up to 100km/h (62mph)

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