



Video Imaging



The ARAN can be equipped with a variety of production-proven and reliable pavement imaging subsystems according to the user's application and budget.

Pavement View Digital Images

With the ARAN's pavement imaging subsystem, planer-view digital pavement images (JPEG format) are recorded directly to disk for 100% of the driven lane (up to 14 ft or 4.3 m). Digital storage is configured to create a complete back-up of every collected image to guard against data loss and to avoid time consuming rework.

All pavement imaging subsystems offered by Fugro incorporate artificial lighting in order to provide better consistency and resolvability of pavement images which in turn results in more accurate distress determination. Through the ARAN architecture, pavement-view images are specially-encoded to allow for subsequent distress analysis using either semi-automated or fully automated distress analysis software.

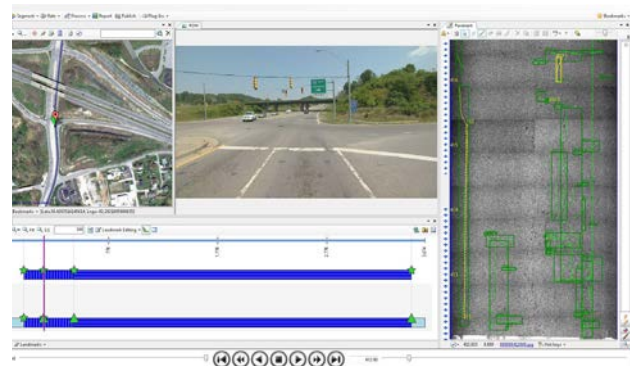
Available system configurations include:

Pave3D: Optimally Pave3D system collects continuous 3D images of all types of road surfaces. This unique 3D vision technology allows for precise pavement condition measurement, day or night, up to highway speeds.

2mm Resolution with Strobe Lighting: Optimally angled and camera-synchronized strobe lights provide intense artificial lighting even in the presence of natural sunlight. The quality and intensity of light provided by strobe systems is superior to that provided by standard incandescent systems which tend to require filming during low-light periods of the day to ensure optimal image quality. High-intensity strobe systems permit pavement imaging throughout all hours of the day and under all lighting conditions (e.g. overcast, full sun, etc.).



ARAN pavement camera



Pavement image with distress



Vision software



Video Imaging

Left and right cameras are synchronized and real-time software properly overlaps and “stitches” left and right frames to provide an uninterrupted view of the full lane width (~4.3 m maximum width). The resultant images each represent a continuous 1/100th mile of road.

1mm Resolution with Infrared Lighting: Fugro’s 1mm Pavement Imaging System provides high resolution imagery of the pavement surface. Cracks down to 1 mm in width can typically be seen in images of hot mix asphalt roadways (JPEG format) and may be rated visually or through Fugro’s automated crack detection software (WiseCrax). Left and right cameras are synchronized and real-time software properly overlaps and “stitches” left and right frames to provide an uninterrupted view of the full lane width (~3.9 m maximum width). The resultant images each represent a continuous 1/100th mile of road.

Illumination of the pavement surface is provided through laser lighting which is not discernable to the naked eye. The incident illumination angle of the laser causes cracks to project shadows which improve visibility and contrast. The laser illumination is immune to shadows and variations in ambient lighting, allowing consistent collection of quality images in all light conditions.

The collected imagery may serve as a stand-alone video inventory of collected sections, or may be used in conjunction with additional Fugro software applications. Additional functionality may be found through:

Vision: Fugro’s Vision is an all-in-one desktop data processing and analysis suite that can export to any PMS system. With Vision, the user can browse and interact with all collected data in a synchronized environment. The collected data is stored in a central project SQL database and can be matched to the clients’ road network using both LRS and GPS references.

Windshield Rating: Perform windshield distress rating surveys from the office.

Automated Detection: Using pavement images and advanced image recognition algorithms, Automated Detection - WiseCrax Pavement Module automatically detects, classifies, and rates visually apparent cracking at widths as low as 1mm (0.03 in).

System Components

Digital Camera(s): Cameras are available in resolutions capable of capturing fine cracks from widths of 2mm (0.07 in) down to 1mm (0.03 in) on hot mix asphalt surfaces.

System Control: Cameras and captured images are controlled by the Digital Video Storage (DVS) system. Through the DVS graphical user interface (GUI) image adjustments may be made prior to or during collection.

Accuracy

Using Fugro’s ARAN DMI and GPS, image location is reported to within 10 cm (3.94 in) of actual geospatial position.

Additional System Integration

Digital images will be linked to data from other available ARAN subsystems, including roughness, rutting, faulting, texture, and ROW images.

Output

All images are stored in a user-definable lossless compressed jpeg format. Metadata, including locator information is stored in the images and can be video on top of the banner image.

Features

- Available in resolutions for 2mm and 1mm crack detection
- Real-time monitoring of image quality during collection
- Adjustable compression for optimizing image quality
- Intuitive directory structure
- Easily accessible through image viewing software
- Calibrated images for performing distress extraction with Fugro’s Vision WiseCrax Pavement Module

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