ASTRA
- Modular system for high-performance assessment -

ASTRA is a multifunction device that allows in a single pass to acquire all data or measurements necessary to assess or issue a roadway diagnosis.

This modular high-performance assessment system meets the needs of road network managers by offering them a simple tool to be implemented.

Overview

The data storage is performed for each function on its storage device then centralized on the mainframe. Their backup is made on compatible media (removable hard drive, DVD Rom, etc...).

All of the images acquired and GPS data and the curvilinear distance are stored in real time.

The acquiring GPS can function either without real-time correction, either by differential correction of positions in real time (Omnistar, Egnos for example). The GPS receiver is used at a sub meter correction in real-time correction.

Each image is marked in the curvilinear system following an acquisition step (settable by the operator and may be different from the acquisition of the other functions: GPS, longitudinal profile,...), but also in latitude / longitude / altitude given by the GPS positioning.

The reading and event degradations are conducted via two keyboards having 20 keys (or functions) each. All the keys on the two keyboards are configurable by the operator. It can store a library of basic configurations for the keyboards on surveys of vertical signaling readings and markings, pavement equipment, or reading of degradations according to different levels of severity.

Principle

Astra currently has the following functions:

- The reading of the curvilinear distances,
- The GPS georeferencing (Global Positioning System),
- The acquisition of digital high resolution images front and rear, The degradation and event readings,
- The longitudinal profile, the macrotexture,
- The transverse profile,
- The geometrical characteristics.

Thanks to its modular and scalable design, ASTRA can:

- Carry out the acquisition of the data set, simultaneously or individually,
- Have new features added that do not exist today.

The information issued by ASTRA are formatted to be compatible with the Roadway Data Management Systems (Visage,...), the GIS geographical information systems (Apic, ArcView, ArcInfo, MapInfo).

It also allows building up a bank of high resolution digital images of the roadway and its environment.

Features

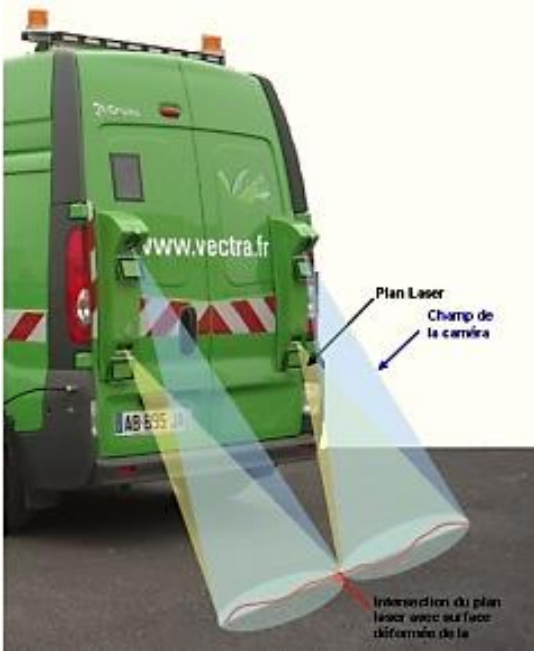
DISTANCE MEASUREMENT
• Optical Encoder 5,000 pulses/turn of the wheel
• Accuracy: 0.2 %

MEASUREMENT OF THE LONGITUDINAL ROUGHNESS: NBO, IRI...

MACROTEXTURE: Average Profile Depth (APD)

MEASUREMENT OF THE TRANSVERSAL ROUGHNESS
• Profile definition: 1,280 points, width: 3.50 m (0.49 ft)
• No acquisition: up to 1 m (3.3 ft) at 80 km/h (50 mi/h),
• Vertical resolution: 1 mm (0.04 in)

MEASUREMENT OF DGPS POSITIONING AND GEOMETRY
• Drop-off (in %), accuracy: + 0.25 %,
• Cant (in %), accuracy: + 0.25 %,
• In-plane bending radius: in m (ft),
• In X, Y, Z, precision: < 2 m (6.6 ft) (95 %) direct,
• Opportunities for sub metric accuracy: < 1 m (3.3 ft) with correction
in real time.



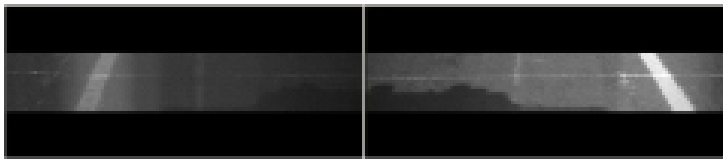
Principle of transverse profile sensors

Applications

Astra provides the information and the necessary measurements for the Roadway Data Management Systems database.


Keyboard to read degradations and events

The information delivered by ASTRA are directly compatible with the Roadway Data Management Systems (Visage,...), the GIS geographical information systems (Apic, ArcView, ArcInfo, MapInfo).
It also allows to build up a bank of high resolution digital images of the roadway and its environment


Sample images from the transverse profile on axis and on edge

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ZI de Tours, 36500 Buzançais

Vectra Equipment Production site
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