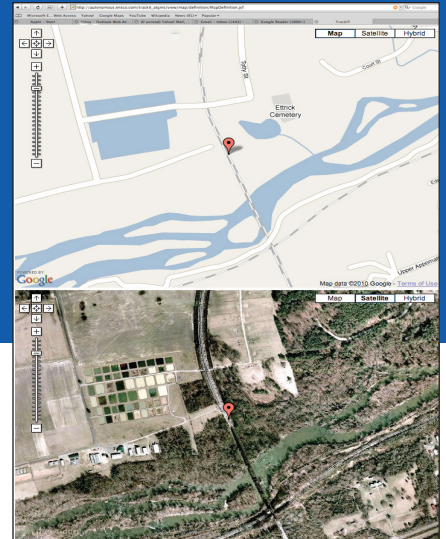


Autonomous Track Geometry Measurement System (ATGMS)



Accurate and reliable track geometry measurement data is essential for immediate and long-term maintenance planning. ENSCO, a leading provider of track geometry measurement systems, has built upon its expertise in providing reliable, unmanned inspection systems to develop the Autonomous Track Geometry Measurement System (ATGMS). ENSCO's ATGMS provides reports on geometry conditions—including those pertaining to gage, crosslevel, alignment, surface/profile and limiting speeds in curves—with the same accurate and dependable performance as ENSCO's traditional track geometry measurement systems without the need for an onboard crew.

Autonomous, cost-effective measurement system for maintenance planning and to meet railway standards

System architecture

ENSCO's ATGMS is comprised of three essential components

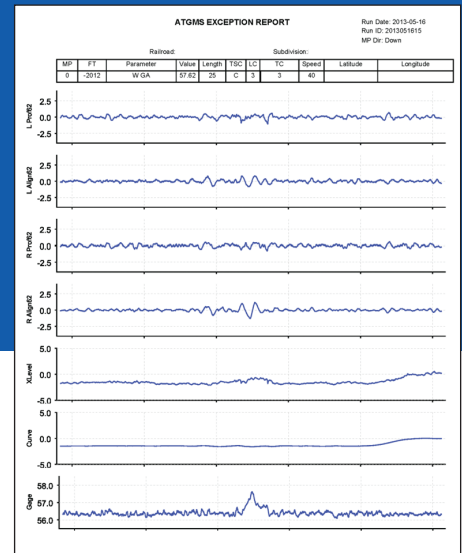
- An **onboard unit** located on a railcar containing a full instrumentation suite
- A **processing server** to collect the critical information from the host rail car
- A **communication link** between the onboard unit and the server

The system's onboard unit provides the sensors, computing platform and location determination technology required to deliver accurate track assessments.

The communication link uses the available cellular service to send data from the car to the processing server; if cellular service is not available, the system queues data until it can be transmitted.

The processing server receives data from the onboard unit through the communication link, determines exceptions, and sends alerts to designated track maintenance personnel or direct to railway work order management systems. The information is also stored in ENSCO's enterprise web-based data management system, Track/IT[®], to view, analyze and drive maintenance decisions.

This architecture provides near real-time reporting of track geometry conditions, as well as historical reporting for trending and analysis.



Cost-effective

The ATGMS offers several advantages for revenue cars over traditional manned track geometry measurement approaches.

- Increased frequency of surveys—every train movement presents an opportunity to assess the track
- Reduced operational costs—crew and travel costs are not required
- Enables potentially higher speeds than traditional inspection cars
- Data collection does not impact railway traffic flow

The benefit of frequent measurements

The increased rate of data collection through use of the ATGMS leads to early identification of track anomalies, resulting in a change in maintenance practices from reactive to preventative. This reduces the number of emergency repairs and slow orders, as well as track-caused derailments throughout the railroad industry.

Measuring track at an increased frequency provides a larger set of data, which enables more accurate trending for maintenance planning. Effective maintenance planning is based on identifying trends in the data—the more data collected, the higher accuracy in identifying trends in track quality.

The ATGMS can be configured to support any railroad's inspection standards and the reporting of exceptions can be enabled to meet any railroad's needs. Contact your ENSCO representative to discuss how an Autonomous Track Geometry Measurement System can be customized to improve your operations today.

Features of the ATGMS

- Automated data assessment
- Accurately determines location and associates with all measurements, even in GPS-denied territories
- Transmits notifications using existing cellular networks, resulting in near real-time reporting and eliminating the need to establish costly wayside communication solutions
- Remote administrative access to the system eliminates regular visits to the inspection equipment
- Power available through a variety of sources including existing power systems or solar arrays



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