

SpeedTrax™

onboard GIS mapping system

HAX Technologies has its headquarters located in Fort Worth, Texas, with a satellite office in Cedar Rapids, Iowa. HAX provides specialized engineering and design, Positive Train Control systems solutions, pre-wired instrument enclosures, material containerization, and comprehensive field construction services to the Railroad Signal and Communication industry.

SpeedTrax™ is a non-invasive, highly accurate, low maintenance system which is configurable to the customers' needs. The system is installed on a locomotive or hy-rail vehicle that, during its normal day to day operations, traverses the track. While installed, SpeedTrax™ is collecting GPS, inertia, and video data. This data is then processed in our office, producing GIS data that includes all the required features needed to run an on-board PTC system, as well as any other features a railroad may require. SpeedTrax™ is configurable so that the level of accuracy the railroad desires is met, without wasted time or the added cost of providing data which is not wanted. However, all levels of accuracy will exceed Federal Railroad Administration requirements and can be delivered in the standard GIS format.

Non-Invasive: SpeedTrax™ is installed in a manner that does not interfere with the operation of the vehicle during normal day to day use. Railroad employees operate the vehicles as their job requires and the system will gather the needed data. The system is simple to install and remove, making it easy to transfer between vehicles.

SpeedTrax™ system is made up of a forward-facing camera assembly, an antenna, a GPS receiver, an Inertia Measurement Unit (IMU), an interface device, and a storage device. The camera is set up with a clear view of the right of way, while the antenna is mounted on the roof. The remaining items are stored in a durable case that fits under or behind the seat of a hy-rail vehicle, or tucked away in a locomotive cabinet. While portability has proven to be a very important aspect of the system, a SpeedTrax unit may be permanently installed in a vehicle.

Highly Accurate: SpeedTrax™ uses a highly accurate GPS unit which was designed to calculate precise position information while moving. This specific hardware technology has been around for 10 years and our GPS partners are considered the standard measuring device in several industries. Our GPS unit provides position information at 20Hz, with 100Hz and 10Hz options. With WAAS correction, SpeedTrax™ can achieve .6 meter, at 95% CEP, path accuracy in a single pass. Multiple passes allow us to achieve an accuracy of up to .12 meter, at 99% CEP.

Low Maintenance: The system is designed to be portable, reliable, and durable. The individual components used in the system are designed to withstand extreme conditions, such as those typically associated with rail operations. Furthermore, data is easily retrievable and can be pulled out of the system within a few minutes. SpeedTrax™ can store approximately 250 hours of running video and GPS data on our standard hard drive. Couple this with our ability to restrict data collection to when a vehicle is moving and a SpeedTrax™ unit can be in-service and unmanned for weeks at a time.

Track Evolves: Regardless of how the track and features are initially surveyed, that data will become stale as the railroad maintains and upgrades its infrastructure. SpeedTrax™ provides a cost effective method of continually surveying for planned and unplanned changes across an entire rail network. With the ability to compare newly located or missing features against the existing railroad infrastructure, SpeedTrax™ allows for a cost effective method of providing change management review and compliance.

More than just GIS Data: While SpeedTrax™ provides great GIS data; it also provides high quality video of the railroad, from the locomotive crew perspective. This video can be used for training, simulations and visual track inspection. The highly sensitive IMU device provides a feel for the track. By analyzing the IMU data, track variances can be identified and precisely located for further investigation. With the system's ability to tie directly into the locomotive, it is able to capture information such as brake triggering. This information used in conjunction with SpeedTrax™ highly accurate velocity measurements allow for a detailed braking study that could be conducted over many different terrain types and train characteristics unique to the railroad. These braking curve results would feed the on-board PTC equipment for better braking algorithm implementations. SpeedTrax™ is more than a quality track survey choice; it is a GIS data management solution.

The Management Team: The team is made up of President and Chief Executive Officer, Greg Hackbarth; Stanley Taylor, Vice President of Business Development; Mickey Tomlin, Vice President of Field Operations; and Glen Dargy Vice President of Systems Development. We are firmly committed to our motto of "Integrity, Innovation and Enthusiasm", and believe those principles are at the core of our success.



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