

Improving vehicle data with WIM technology

From strategic decisions for roadway planning, to transactional information for tolling, the quality of results from a decision-making process is dependent on the quality and quantity of the data available. Additional and high-quality data in a decision-making process enables roadway operators to maximize the return on the investment from the systems used to gather the information.

Weigh-in-motion (WIM) technology supplies vehicle and traffic data without causing interruption to traffic. These systems record wheel, axle and gross vehicle weights (GVW), and are able to calculate vehicle speed and classifications for traffic patterns and flow. Planners can incorporate this information into proposals for roadway construction and temporary or permanent enforcement sites.

At the core of these WIM systems are Intercomp's strain gauge strip sensors. Installed in a single day into a 3in-wide channel cut into an asphalt or concrete roadway, these sensors have a minimally invasive installation process, cutting the time needed for lane closures during installation while providing an accurate and durable in-ground means for weight detection.

Application configuration

Intercomp WIM systems are available for applications including data collection, screening for enforcement, pre-selection, bridge protection, tolling and ports of entry.

Locale-specific legal requirements demand certain accuracies from WIM systems, which stem from the ASTM (American Society for Testing and Materials) and COST (Cooperation in Science and Technology) standards adopted

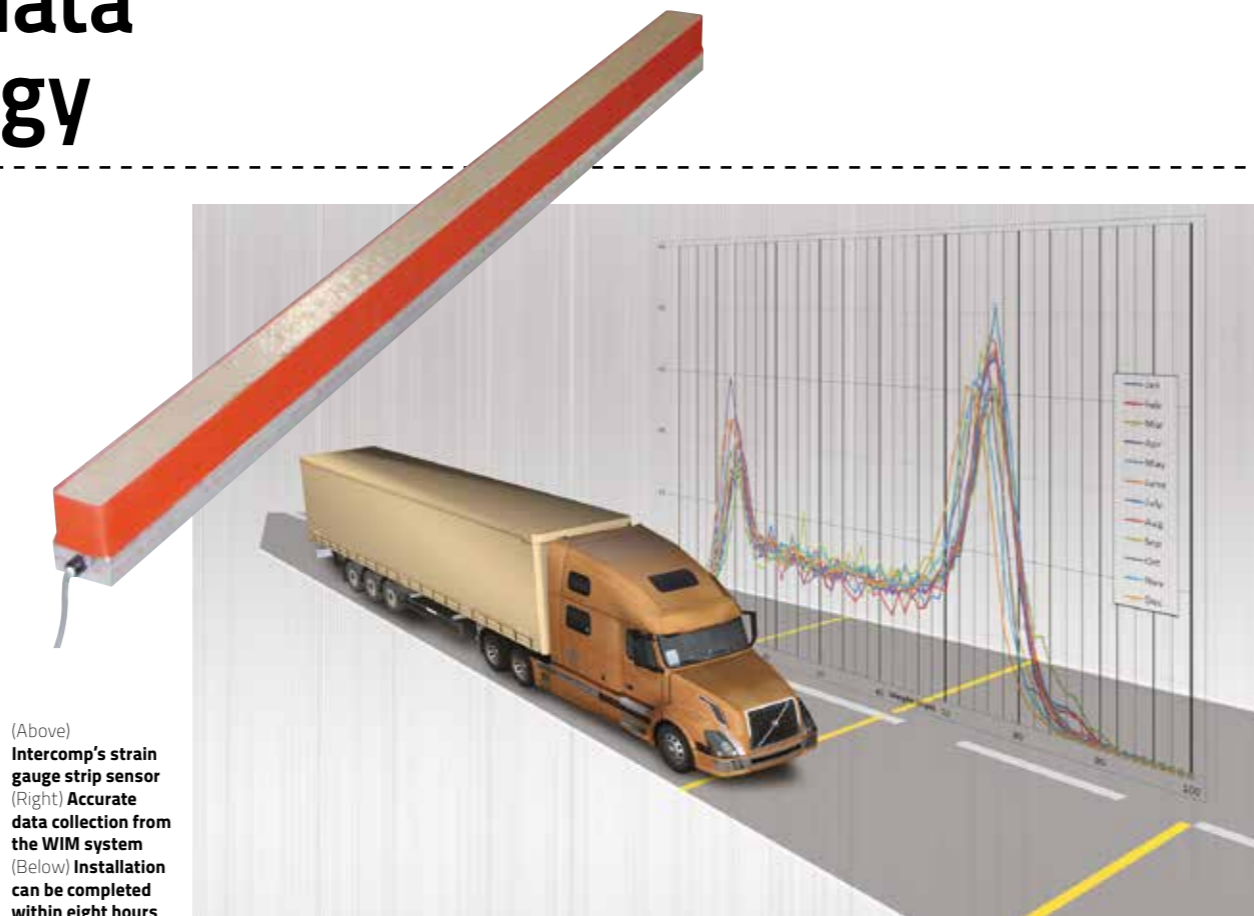
Need to know

WIM systems can collect vehicle data without interrupting traffic flow

- > With strain gauge strip sensors, temperature compensation is accomplished internally, generating consistent readings over a wide temperature range
- > Stability of readings over time and temperatures is achieved, giving operators confidence in the data without having the system electronics compensate for variations in local conditions
- > The strain gauge sensors have an operating temperature range of -40°F to 175°F (-40°C to 80°C), which enables operation in the harshest environments

by many countries. Intercomp's systems and sensors are capable of meeting performance requirements for ASTM E1318-09 Type III and COST 323 A(5) methods, and can be paired with cameras and other equipment specific to the site and application requirements.

WIM applications requiring higher degrees of accuracy, such as enforcement and determination of weight-based fees, use multiple pairs of in-road sensors. WIM tolling, when integrated into automated toll systems, has the added benefit of accuracy without causing interruptions and congestion inherent in the types of processes that stop vehicles for fees.



(Above) Intercomp's strain gauge strip sensor (Right) Accurate data collection from the WIM system (Below) Installation can be completed within eight hours



Intercomp finds that four-sensor (two pairs) and six-sensor (three pairs) configurations are sufficient for most applications to deliver high-quality data without the need for the extensive civil works and system expenses associated with other WIM

systems. The strain gauge strip sensors can be integrated into new or existing sites, and have the ability to interface with operators' current electronics and software. This gives operators the desired quality of vehicle weight data, with the flexibility to

deliver the data from the most efficient system configuration for the site requirements.

For data collection in mainline installations, typically a single pair of strain gauge strip sensors coupled with a loop, CPU and electronics are employed. As high degrees of accuracy are not required in data-collection applications, a single pair of Intercomp sensors will typically exceed the required accuracy at a wide range of vehicle speeds. Accurate vehicle data and overload frequency information improves the quality of data that the WIM site generates for further analysis. ○

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New technologies are driving innovation and changing business

“ There has been a lot of controversy lately surrounding several new industries that rely on new technologies in order to operate. How will these ‘innovations’ affect traditional transportation operations? How will we adapt – or can we?”

Disruptive businesses are not new. Did you ever think movie rental magnate Blockbuster would go away? Well it did, due to the launch of video streaming services. Remember years ago when an unlikely startup challenged conventional shopping? Amazon, a company that started selling books online, changed one of the most traditional businesses models: shopping. Today, conventional bricks-and-mortar stores are struggling despite recent studies showing competitive pricing.

Now we see similar ‘innovative companies’ springing up in transportation. Companies such as the app-based Uber have exploded in popularity. Users like the convenience, and the ride providers like the income. Yet traditional transportation providers are fighting politically to keep market share.

Waze, a traffic reporting social media application is rapidly gaining popularity. Users really like it. Will companies such as Waze be disruptive to traditional intelligent transportation systems? How will interfacing with a cell phone in a vehicle fit with laws against distracted driving? I know that the Waze application specifically asks if you are driving, but could this become a legal issue? Can social media applications such as Waze reduce or eliminate the need for variable message signs and other intrusive and expensive traffic sensors?

Technological changes are not only driving new innovative businesses; they are also changing traditional ones. What changes will we need to make to adapt to the coming popularity of autonomous vehicles? How will these cars interface to the connected city of the future?

Even traditional payment systems are in danger. It is not just the ‘younger generation’ that are not carrying cash. The ‘older generation’ are shedding their traditional wallets, too. Technologies such as Apple Pay and Google Wallet are gaining popularity. Would you have believed even a year ago that you’d now



Our challenge is not to fight innovation, but to find a way to embrace and integrate it

be able to make payments with your watch? A year ago I had stopped wearing a watch because I had a smartphone.

So what if all this innovation came together? Apple and Android phones are being integrated into vehicles, autonomous vehicles are now on the road, and BMW is building in an application that finds parking spaces. Your watch can now call for a ride or guide you on a walk. Now add applications such as Waze and Apple Pay to your car. Locate, start or even have your car pick you up with your watch. Pay your user fee, whether toll- or mileage-based, through your vehicle's built-in payment system.

All this sounds like the Jetsons but so did robotic vacuum cleaners several years ago. Our challenge is not to fight innovation, but to find a way to embrace and integrate it, leveraging existing commercial applications. Our business models are going to change. We either give our customers the technologies and service they want or risk being another Blockbuster.

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