

Sensor intelligence

A single sensor can meet the accuracy, performance and cost-efficiency needs of a variety of WIM applications

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WIM site screening for enforcement in the USA



Installation of the strip sensors can be done in a single day

Weigh-in-motion (WIM) systems continue to be a cornerstone of information gathering systems. Operating without interrupting the flow of traffic, WIM systems offer vehicular information that is valuable to many different stakeholders, including gate operators, highway planners, law enforcement officers and DOT officials. These systems provide speed, vehicle classifications, wheel weights, axle weights and gross vehicle weight (GVW); consolidating the information over time gives traffic counts and the ability to track traffic trends at the WIM site location.

The goal of WIM systems is to increase safety for vehicle and cargo traffic. Identifying where overweight traffic most frequently occurs and screening that traffic to remove overweight vehicles increases the safety of both the overweight vehicles and traffic that encounters them. Additionally, overweight vehicles substantially contribute to pavement degradation, so minimizing this increases roadway quality and usability.

WIM characteristics

There are common desired attributes of WIM information gathering systems that span across the different applications. The requirements for these systems are to

gather information quickly and accurately, to rapidly process information, or to store data for processing at a later date. Systems must be reliable, with minimal downtimes for installation and maintenance, and equipment should be acquired at the best possible price to preserve budgets.

Contrasting performance requirements for the different applications has led to multiple options that are selected based on the performance criteria. WIM accuracy requirements span a wide range, and have been divided up into types or classes within ASTM 1318 and COST 323 regulations.

In response, Minnesota-based Intercomp has developed a strain gauge strip



(Above) Three pair configuration of sensors installed in concrete

sensor that meets or exceeds the various requirements across these WIM applications. With configurations achieving high degrees of accuracy, operators find a single sensor type capable of addressing all of the stakeholders' requirements: performance, reliability and cost.

Installed in 3in (75mm) channels cut into the roadway surface, the strain gauge strip sensors have the benefit of being installed within a single day. Strain gauge load cell technology is what operators have relied upon for highly accurate static weights, and now Intercomp has developed this technology for WIM applications. With the technology comes the added benefit of temperature compensation within the sensor, allowing for stable performance over a range of temperatures and time.

Screening for enforcement

When screening vehicles for overweight conditions, higher degrees of accuracy are required for WIM systems, making the process more efficient for drivers and officials. Accurately identifying overweight vehicles via WIM reduces time spent at weigh stations by allowing weight-compliant trucks to bypass the station.

Employing two to three pairs of Intercomp strain gauge strip sensors for enforcement applications is found to exceed ASTM 1318 Type III and COST 323 A(5) performance requirements for WIM applications. The sensors can be incorporated into existing electronics or used as new WIM sites are installed.

Data collection

Although accuracy requirements for data collection tend to be less stringent, the desire for systems providing a higher degree of accuracy is growing as the quality of the large data set can be affected by the accuracy of the singular vehicle records. Deployed in a single pair configuration per lane, the Intercomp strain gauge strip sensors deliver WIM vehicle data with excellent GVW accuracy. Coupled with existing electronics or incorporated into new WIM sites, officials have the flexibility to use the sensors in standalone sites and installations that yield excellent performance.



(Above) Strain gauge strip sensors have internal compensation for temperature variations (Below) WIM sensors accommodate gate operations at lower speeds



The strain gauge strip sensors yield accurate vehicle information that is easily accumulated into larger databases, which may include WIM enforcement sites. This becomes possible as the difference between data accuracy is minimized.

Tolling applications

Accuracy requirements for tolling systems are similar to enforcement applications, but the speed of the vehicles is lower when compared with highways. The strip sensors maintain their performance at low speeds, offering the same sensor benefits that are realized from high-speed applications.

From decades of experience developing proven strain gauge load cell-based vehicle weighing solutions, Intercomp strain gauge strip sensors meet the performance, reliability and cost requirement for enforcement and screening WIM applications. This industry-leading technology is enabling operators all over the world to incorporate this Intercomp strip sensors into WIM sites spanning across many applications. ■

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Weigh-In-Motion Strip Scale Sensors

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