• Application Note •
STRIP SENSORS for VIRTUAL WEIGH STATIONS

Intercomp's Strain Gauge Strip Sensors, configured in a double-threshold setup, ensure accurate load measurements at the Osina, NV site.

Advancing Road Safety Through Automated Inspections

The implementation of a new generation of Virtual Weigh Stations (VWS) is causing a paradigm shift in weight enforcement programs across North America. Through the seamless integration of high-performance Weigh-in-Motion (WIM), Tire Anomaly and Classification Systems (TACS®), and Automatic License Plate Readers (ALPR), these automated inspection systems enhance road safety, conserve resources, and enable data-driven decision-making. The State of Nevada's Vehicle Size and Weight Enforcement Program is an example of how WIM has evolved to become a central element of road safety programs in North America.

Nevada's network of VWS stations with Strain Gauge Strip Sensors is currently made of 17 lanes equipped with high-performance WIM systems deployed by Intelligent Transportation Systems (ITS) integrator International Road Dynamics (IRD). These Virtual Weigh Stations exemplify the strong commitment in North America to enhancing safety through weight enforcement. The high accuracy provided by the WIM sensors ensures that vehicles selected for enforcement are overweight and warrant intervention by Nevada State Police Highway Patrol, the agency tasked with enforcing state and federal motor carrier safety regulations.

The Nevada VWS sites illustrate how combined screening technologies meet the objectives of the state's Commercial Vehicle size and weight enforcement program.

VWS installations in Nevada are configured with one or two pairs of Strain Gauge Strip Sensors, which are designed to maintain accuracy under the wide temperature ranges typical of the sites, meeting the ASTM E1318-09 Type I and Type III specifications for WIM accuracy, respectively. The WIM systems are composed of Intercomp Strip Sensors and IRD's iSINC® electronics. The level of reliability of these solutions enables thorough data collection and screening, promoting safer roadways by identifying and addressing non-compliant vehicles that pose potential hazards.

In conjunction with WIM, the VWS network in Nevada incorporates TACS®, a system developed by IRD to identify tire anomalies at highway speeds. TACS® detects flat, missing, or mismatched diameter tires on dual tire sets, all of which pose significant safety risks. Vehicles with identified tire anomalies are signaled to report to the weigh station, allowing enforcement personnel to promptly take them out of service. By integrating TACS® with WIM and vehicle records, the VWS achieves advanced automation, improving the overall efficiency of the inspection process.

The Virtual Weigh Stations (VWS) in Nevada exemplify the effectiveness and benefits of incorporating high-end technologies into weight enforcement programs. By streamlining the inspection process, VWS sites save resources by serving multiple purposes and reducing the need for manual inspections. The combination of WIM, TACS®, and ALPR in the VWS system not only ensures accurate weight measurements but also identifies vehicles with tire anomalies, thus protecting the public from accidents caused by poorly maintained and overloaded vehicles. These automated inspection systems promote safer roadways, conserve resources, and enable informed decision-making for improved enforcement practices and infrastructure maintenance. As VWS technology continues to evolve, we can expect even greater advancements in ensuring road safety across North America.

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