

Question: What are the benefits of weigh-in-motion (WIM) technology compared to those of static weighing?

Answer: The primary advantage of using WIM scales is the ability to achieve higher productivity. For example, using static weighing, a five-axle truck could take three minutes to weigh on an axle scale or 30 seconds to weigh on a full platform scale (considering the time it takes to slow down, stop and get back up to speed). However, a WIM system can weigh trucks at highway speeds.

For customers who wish to use a WIM system for checking weight compliance, the WIM software's ability to check weights against the Federal Bridge Formula is also a major benefit, as static scale software cannot check compliance against the Federal Bridge Formula.

Question: What are typical applications for weigh-in-motion vehicle scales?

Answer: Historically, the most common applications for weigh-in-motion vehicle scales have been for weigh station "ramp sorters" and for highway data collection applications. More recently, applications have emerged for in-bound and out-bound weighing at seaports, border ports of entry, toll roads, and at a trucking terminals where trucks are checked for weight compliance.

Question: Are WIM systems "legal-for-trade"?

Answer: No. The gross vehicle weight tolerance of a WIM system, when properly installed, is about +/-3%. There is no NIST HB-44 category for vehicle WIM scales. ASTM Standard 1318-02 is used as a reference for the performance of WIM systems.

Question: What types of WIM systems are available?

Answer: There are two major categories of WIM systems: high speed (40-70 mph) and low speed (5-15 mph). High-speed systems are typically used in ramp sorter and data collection applications, while low-speed systems are used in seaport or truck terminal applications. Different technologies, such as load cell, piezoelectric, and bending plate-based systems, provide different accuracies and have varying costs. METTLER TOLEDO offers load cell-based systems, which are the most accurate and have the longest life. Piezoelectric systems are most often used for data collection applications, and have much lower accuracy and shorter life than load cell WIM systems.

Question: What are the major components of a WIM system?

Answer: The major components are the scale platform, inductive loop sensors to detect approaching vehicles, electronics to interpret the load cell signals, a computer for data processing and storage, and a CRT display. Depending on the application, options can include an interface to a static scale (weigh stations) message signs, overheight detectors, automatic vehicle identification (AVI) interface, video cameras, modem, and printers.

Question: What type of load cells is used in WIM systems?

Answer: Shear beam analog load cells are used due to their very fast sampling rate.

Question: What are product advantages does METTLER TOLEDO offer versus those offered by the competition?

Answer: METTLER TOLEDO offers the most accurate, robust WIM scale in the industry. Closed loop calibration (in weigh station applications) and 4 x load cells per weighing platform contribute to this accuracy advantage. A comprehensive lightning protection system also protects the WIM systems' electronics. METTLER TOLEDO has been manufacturing WIM systems for over 15 years, and is the world's largest manufacturer of weighing systems with over 100 years of history in the weighing industry.

Question: How does a WIM system compare in cost to other vehicle scales?

Answer: Depending on the options selected a WIM system can cost two to three times what a typical axle scale would cost. However, a WIM system is less expensive than a platform scale. As a rough guideline for applications in which a scale weighs 50 or more vehicles per day the payback versus the cost of an axle scale is less than two years.

Question: How much space does a WIM system take?

Answer: The size of the foundation for a WIM scale is approximately 13.5'W x 8'L x 10"D. A minimum of 25' of straight, level, concrete approach is required for a slow-speed WIM, and 150' for a high-speed WIM system. Also, a minimum 24"W x 24"W x 8"D controller enclosure is mounted within 70' of the scale platforms, with the computer typically placed in a climate controlled building.

Question: What information is needed to select the appropriate WIM scale?

Answer: The major configuration criteria include application, desired weighing accuracy, vehicle volume, what output or format the weight data needs to be captured in, the peripheral equipment that is desired, and the vehicle flow near the scale. The METTLER TOLEDO WIM Application Profile form can be used to capture this information and communicate it to WIM application engineering.