

Weigh-in-Motion



Vehicle Weigh-in-Motion (WIM)

Solutions for Weigh Stations,

Enforcement, and More



Proven Reliability and Ease of Use
for Vehicle Weight Enforcement

METTLER TOLEDO

Fixed Facility Weigh Station Solutions

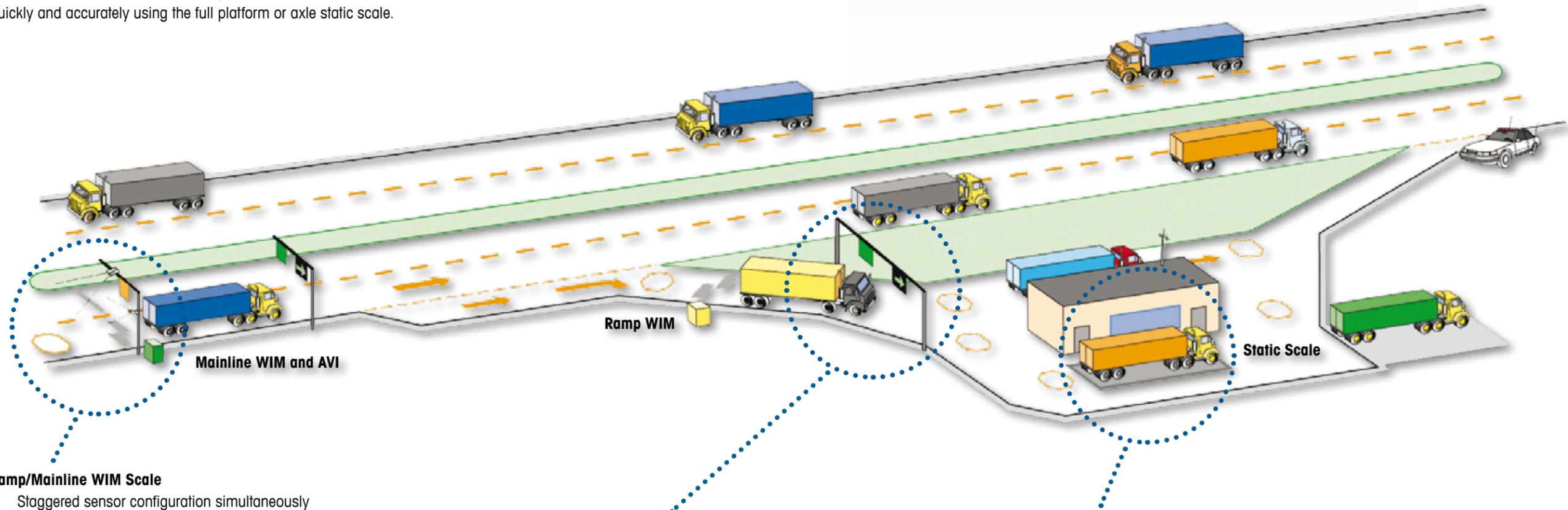
For fixed facility weigh stations, METTLER TOLEDO provides Weigh-in-Motion (WIM) systems, static scales, and peripheral equipment such as over-height detectors, directional signals, variable message signs, AVI interface, and vehicle classification equipment.

How Fixed Facility WIM Systems Work

The WIM scale and controller system directs suspected overweight vehicles to the static scale, with the ability to process thousands of vehicles per day, error-free, around the clock. Overweight vehicle citations are processed quickly and accurately using the full platform or axle static scale.

Fixed Facility WIM System Benefits

- Safely, efficiently and accurately weigh thousands of vehicles per day with legal-for-trade accuracies.
- Minimal operator intervention is required because of the system's fully automatic operation.
- Ability to combine the weighing operation with other commercial vehicle safety and compliance checks at one facility.
- Ability to network multiple facilities into statewide data network.



Ramp/Mainline WIM Scale

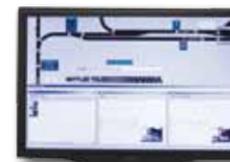
- Staggered sensor configuration simultaneously measures vehicle speed and individual wheel loads, eliminating the need for redundant sensors.
- Auto-calibration via static scale interface eliminates the need for costly regular calibration.
- Designed to comply with ASTM E 1318-09 requirements.
- Choice of load cell or Lineas® Quartz sensor technologies.

Peripheral Devices

- AVI (Automatic Vehicle Identification)
- Over-height detection
- Sort signs and variable message signs for traffic control
- In-motion vehicle dimensioning (length, width, height)
- Inductive loops for vehicle tracking
- Video capture system
- License Plate Reader (LPR) system with optical character recognition (OCR)

Static Scale at Operator Station

- Extreme-duty weighbridge construction designed for high traffic loads and harsh conditions.
- METTLER TOLEDO POWERCELL® PDX® load cell technology for fast, error-free operation, superb lightning protection, and easy maintenance.
- METTLER TOLEDO IND780 terminal, the industry's most advanced, provides high reliability and maximum user flexibility.
- Intuitive operator interface including virtual graphics panel for operator control and tracking of vehicle location.
- Robust, user-configurable software that provides:
 - Instant weight, size, and other violation notification.
 - Single screen reporting of static and WIM data.
 - Multiple reporting options including vehicle type classification, daily reports, monthly reports, summary violation reports, and WIM accuracy reports.



Virtual Weigh Station Solutions

Cost-effective and flexible, virtual weigh station solutions from METTLER TOLEDO provide a high-tech approach to curbing overweight vehicles that may take alternative routes (secondary roads and bypasses) to avoid weigh stations.

The METTLER TOLEDO unattended virtual weigh station solution includes a WIM and video capture system, which collects accurate, reliable weight and image data for vehicles travelling at speeds up to 80 mph. The system captures weight, speed, and vehicle class, and provides remote communication to a patrol vehicle, weigh station, or traffic control center.

How Virtual WIM Systems Work

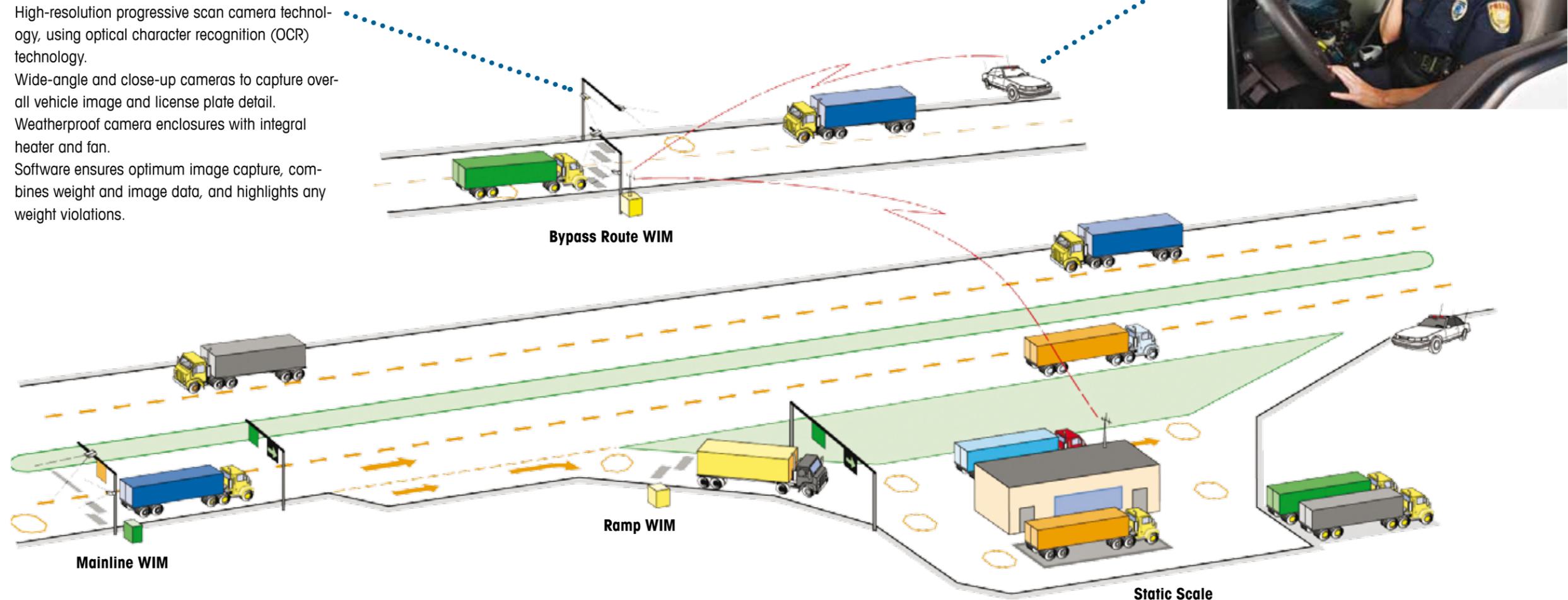
As vehicles cross the WIM scale, a photo overview image of the vehicle is captured. If the vehicle is overweight, the image, weight data, and speed data are stored for remote retrieval, or are instantly transmitted via a modem or wireless connection to a laptop computer in a nearby, hidden, patrol car. An enforcement officer can connect to the WIM system and observe the weights of passing vehicles on the computer screen in order to pull over likely violators.

Virtual WIM System Benefits:

- Accurate, reliable, and efficient weight enforcement at a fraction of the cost of a fixed facility weigh station.
- Provides instant information for mobile enforcement officers to stop vehicles most likely to be in violation of weight limits.
- Continuous image capture and storage can be used to monitor for repeat weight or speed violators. Data is downloaded remotely via a modem or Ethernet link.
- System can store vehicle traffic data for use in traffic and enforcement planning.

Image Capture System

- High-resolution progressive scan camera technology, using optical character recognition (OCR) technology.
- Wide-angle and close-up cameras to capture overall vehicle image and license plate detail.
- Weatherproof camera enclosures with integral heater and fan.
- Software ensures optimum image capture, combines weight and image data, and highlights any weight violations.



METTLER TOLEDO Weigh-In-Motion Solutions

For more than 20 years, METTLER TOLEDO, the world's largest manufacturer of weighing systems, has offered solutions for commercial vehicle weight enforcement and screening, data collection for transportation planning, industrial applications, and more. Installed across the United States and around the world, METTLER TOLEDO fixed facility weigh station solutions and virtual weigh station solutions continue to prove their operational reliability and accuracy in high-volume applications.

Combined with comprehensive METTLER TOLEDO project management and after-sales support, our WIM systems offer the reliability, accuracy, cost effectiveness, and ease of use for which METTLER TOLEDO weighing solutions have long been known.

WIM Accuracy

METTLER TOLEDO WIM systems meet the following ASTM E 1318-09 Type III accuracy requirements.

Function	ASTM E 1318-09 Type III
Speed	10-80 mph (16-130 km/h)
Axle Load	± 15%*
Axle-Group Load	± 10%*
Gross-Vehicle Weight	± 6%*

*Tolerance for 95% compliance. Installation and site construction must be according to METTLER TOLEDO requirements.

Vehicle Data Collected by WIM Systems
Wheel Load
Axle Load
Axle-Group Load
Gross Vehicle Weight
Speed
Center-to-Center Spacing between Axles
Vehicle Class (via axle arrangement)
Site Identification Code
Lane and Direction of Travel
Date and Time of Passage
Sequential Vehicle Record Number
Wheelbase (front-most to rear-most axle)
Equivalent Single-Axle Load (ESAL)
Violation Code



WIM System Sensor Technologies

METTLER TOLEDO WIM solutions are available with a choice of either load cell (strain gauge) or piezoelectric technology. As a vehicle passes over the scale, the system records the weights measured by each platform or sensor, and adds them together to obtain the axle weight. The scale is placed in the travel lane, perpendicular to the direction of traffic.

Load-Cell-Based WIM Systems

Load-cell-based WIM systems are regularly used in weigh station ramp presorting systems and for industrial weighing. Load cell scales typically require permanent installations with some minor excavation into the road, but offer a robust solution with a long service life.

METTLER TOLEDO load-cell-based solutions:

- Use the most accurate vehicle weighing technology available today.
- Use eight load cells per system for superior weighing performance.
- Feature rugged construction to ensure reliable operation and long life, including
 - Stainless steel, hermetically sealed load cells
 - Stainless steel sheathed load cell cables



Piezoelectric-Based WIM Systems

Piezoelectric-based WIM systems are typically used in mainline presorting systems and data collection systems. METTLER TOLEDO uses the Lineas® Quartz sensor, which can be installed in a matter of hours and provides the optimum combination of excellent weighing accuracy and minimum infrastructure impact.

METTLER TOLEDO piezoelectric-based solutions:

- Minimally invasive technology means easy, fast installation.
- Suitable for all kinds of pavements, from concrete to asphalt.
- Unlike other piezoelectric sensors, temperature effects are negligible.
- Sensor surface can be ground-flush to maintain conformity with surrounding pavement.



METTLER TOLEDO

Weigh-in-Motion Support



METTLER TOLEDO offers comprehensive on-site support to help ensure a smooth, timely project installation and start-up.

Services include:

- Engineering assistance
- Construction management
- System start-up
- Operator training

After-Sales Support

Together with a comprehensive warranty, the exclusive METTLER TOLEDO network of trained service technicians helps ensure maximum system uptime and low operating costs. Maintenance contracts are also offered, providing you with years of trouble-free weighing operations.

Global Availability and Support

We serve our customers worldwide with one of the largest sales and service networks in the industry.

Other WIM Solutions

METTLER TOLEDO also provides WIM solutions for other vehicle weighing applications such as border crossings, toll roads and bridges, seaports, and trucking terminals.

www.mt.com/wim

For more information

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07/2018
TR03509.2E

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