cross®

WEIGH-IN-MOTION

LENGTHENING THE LIFESPAN OF ROADS

SYSTEMS FOR DETECTING OVERLOADED VEHICLES

WEIGH-IN-MOTION

SIZE MEASUREMENT SENSOR

LPR SYSTEM

← DIRECT ENFORCEMENT

PRE-SELECTION
FOR ON-SITE SOLUTION OF OFFENCES

VMS

PRESELECTION →

CONTROL UNIT
CROSSWIM

TICKET
XYZ 12 34
WEIGHT
35 T

Toll-by-Weight
#OPTIWIM®

PROTECTION OF ROADS, FAIR TOLL SYSTEMS

WEIGH-IN-MOTION

Imagine a world with fast-moving traffic on smooth motorways. No restrictions, no gridlock, no diversions. No endless repairs creating hold-ups. Safe roads with fair tolls.

Longer lifespans of roads

Overloaded lorries cause ruts, potholes, damaged edges and costly repairs, easily avoided by diverting them off motorways. CROSS WIM systems protect roads, extend their lifetimes and cut costs.

Charging fair tolls

The amount charged to use a road should relate to the distance travelled and load carried by a vehicle. The toll fee ought to reflect that a fully laden lorry wears the surface more than an empty one.

Improved driving safety

Modern cars are safer, faster and more technologically advanced than ever before. Our technologies engender fast-running, well-maintained roads where vehicles can perform to the best of their abilities.

Easier operation and planning of maintenance

It pays to have accurate data on all aspects of traffic, making it possible to divert oversized vehicles, free up city streets and schedule roadworks and construction.

CROSSWIM

CrossWIM is a cutting edge, high-speed, weigh-in-motion system that meets the most demanding criteria for traffic detection and dynamic weighing. CrossWIM is used to gather traffic statistics and facilitates pre-selection and direct enforcement.

It was developed with an emphasis on accuracy, reliability and simplicity. It is suitable for basic, single-lane installations through to extensive, multi-lane environments with heavy traffic.

Compatible with third-party components

Modular system for every purpose

Compatible with various WIM sensors

- Minimal recommended speed of 10 km/h
- Sensitivity to 10 kg in weight
- Traffic volume accuracy of 98%
- Classification accuracy of 95% (the average depends on the vehicle category)
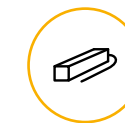- Communication options of GSM/GPRS, TCP/IP, Wi-Fi

- Vehicle data (gross vehicle weight, axle load, wheel load, type/class of vehicle, vehicle speed, gapped distances, vehicle dimensions)
- Measures the dimensions of vehicles (height, width, length)
- Detects multi-tyre vehicles
- Measures the speed of vehicles
- Highly accurate vehicle classification
- Watchdog monitoring system
- Web API for integration of third-party data
- SQL database

VEHICLE CLASSIFICATION

- Standard EN 8 + 1
- EUR 13, COST 323
- Option for complete adaptation to specific national standards
- Custom categories to reflect specific customer/end-user needs and requirements

- 120 GB SSD for data storage (higher capacity is an option)
- Max. cable length to loop: 300 m; WIM sensor: 100 m
- Designed for operations in extreme climatic conditions (standardised versions: ARCTIC, TROPIC and DESERT)
- The 3U rack covers up to 6 lanes; the 6U rack handles up to 12 lanes

TYPICAL ACCESSORIES

XYZ 0102
License Plate Recognition

Vehicle size measurement sensor

Variable Message Signs (VMS)
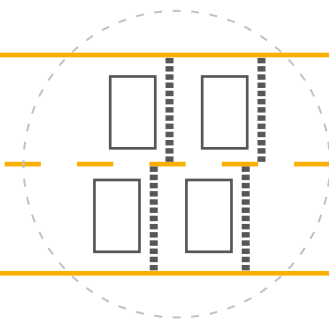
Overview cameras

A MODULAR SYSTEM

CrossWIM is designed as a modular system and can be configured to deliver the precision required. The potential exists to combine various units and build stations suitable for particular applications, as described below.

CROSSWIM STATISTICS

Weighing with accuracy of **± 20%**

If required, greater precision in measurement of overall weight is possible by applying QUARTZ or OptiWIM sensors.

CROSSWIM PRE-SELECTION

Weighing with accuracy of **± 7.5%**

If required, greater precision in measurement of overall weight is possible by increasing the number of QUARTZ sensor rows; to obtain a precision level of ± 5%, two rows of QUARTZ sensors are needed; alternatively, an option exists to apply OptiWIM sensors.

CROSSWIM DIRECT ENFORCEMENT

Weighing with accuracy of **± 5%**

If required, greater precision in measurement is possible by adding skewed PIEZO thresholds and additional sensors (e.g. vehicle size measurement) to detect other parameters.
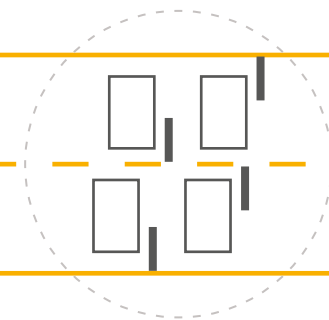
TYPICAL INSTALLATION

- Two induction loops per lane
- Two rows of PIEZO sensors per lane
- Indicative measurement of speed, the number of axles, length of the vehicle, wheelbase and axle load
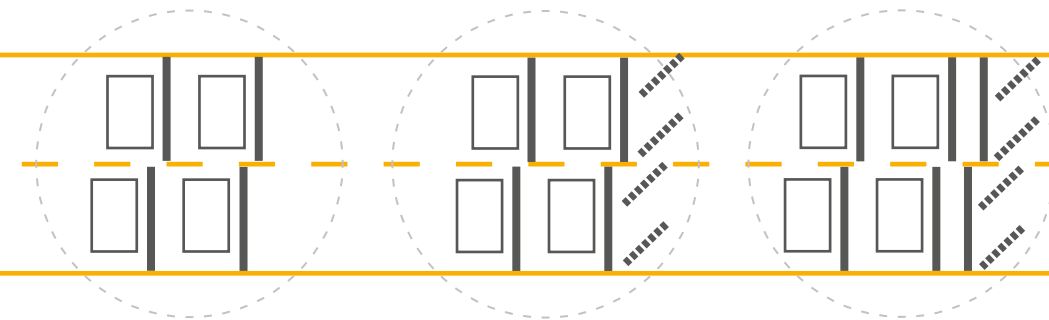- Vehicle classification

TYPICAL INSTALLATION

- Two induction loops per lane
- One row of QUARTZ sensors per lane
- Measurement of speed, the number of axles, length of the vehicle, wheelbase and axle load
- Vehicle classification

TYPICAL INSTALLATION

- Two induction loops per lane
- Two (or three) rows of QUARTZ sensors per lane
- Measurement of speed, the number of axles, length of the vehicle, wheelbase and axle load
- Optional diagonal sensors for detecting double-tires (multi-tires) and axle width
- Enhanced vehicle classification

OTHER CROSSWIM APPLICATIONS

- Monitoring the movement of lorries and weighing them at logistics centres and similar commercial premises
- Protecting city centres from overloaded vehicles
- Accurate statistical data for licensed users

cross Good Journey Innovations

#OPTIWIM

The #OptiWIM sensor measures vehicles across the full width of the road with great accuracy. New fibre-optic technologies mark it out as a First World system for obtaining precise data from any part of the roadway.
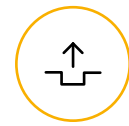
TYPICAL INSTALLATION

- Two induction loops per lane
- One or two rows of #OptiWIM sensors per lane
- Detects multi-tyre vehicles and under-inflation of tyres
- Measurement of speed, the number of axles, length and width of the vehicle, wheelbase and axle load
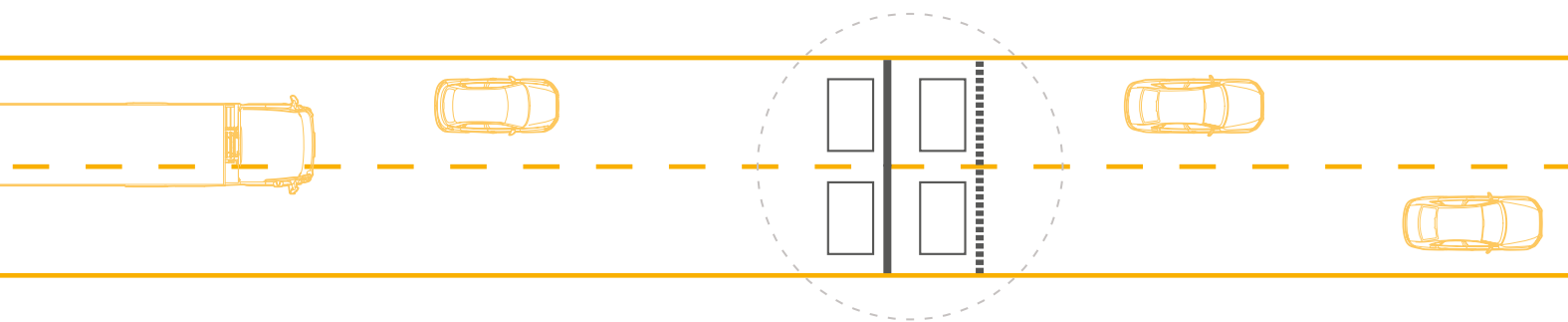- Extremely precise vehicle classification

Weigh-in-Free-Flow

Simple placement and removal

Toll-by-Weight ready

Resist to ambient interferences

Sensor

Side holders

U-Bed profile

CROSSWIM

Referred to as the Watchdesk, the input module of this online application provides an easily manageable console that displays data on vehicles that have recently passed by, giving a preview of them and indicating any violation. It is possible to view detailed information for each vehicle recorded, such as the number of axles it has and the weight and speed of the wheels. The system is able to function in various languages, which it automatically sets according to the one running in the browser.

LINUX AND SQL DATABASE

- Real-time visualization of passing vehicles, including shots from LPR and overview cameras
- Access to a vehicle database, including search and filtering options
- Detailed information of every recorded vehicle (e.g. total weight, wheel and axle weight, indication of overloading, speed, validity of measurement)
- Traffic statistics (e.g. overloaded vehicles, vehicle classification, country of origin, weight and speed statistics)

- Display of measurement protocol in the case of an offence
- Data export to Microsoft Excel and PDF
- Device calibration and configuration of operational parameters
- Management of user accounts, database management and regional settings
- Web API for data integration
- Calibration and maintenance tools

STATISTICS

- Vehicle categories
- Overloaded vehicles
- Weight-related statistics

CASE STUDY

REFERENCES
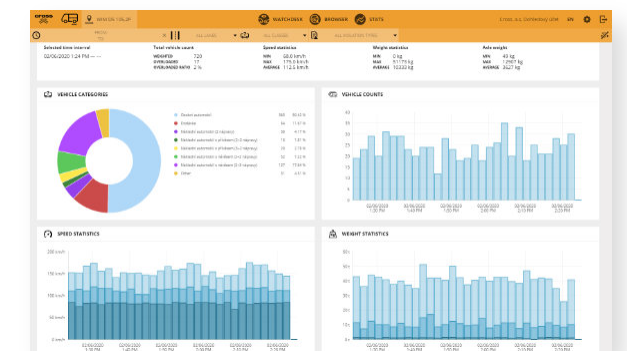
Initiated in 2011, CROSS Zlín was the first organization in the Czech Republic and the world authorized to implement a high-speed weighing station for the purposes of direct enforcement. The station is equipped with a CrossWIM weigh-in-motion unit - a certified measuring tool for automatically weighing vehicles in motion to an accuracy of ± 5% for gross weight and ± 11% for individual axle weight.

Featuring an automatic ticketing system, the roads in question have benefited from a substantially higher level of protection against damage by overloaded vehicles, dramatically lengthening their lifespan and leading to significant cost savings on repairs.

"The Czech Republic was the first to introduce legal regulations that enable direct enforcement of violation by overloaded vehicles based on high-speed, weigh-in-motion scales."

Poland
CrossWIM and vehicle size (height) measurement

Hungary
Motorway network, 106 CrossWIM stations

Lithuania
Motorway network, CrossWIM for direct enforcement

Saudi Arabia
Motorway network, pre-selection CrossWIM

Dubai, United Arab Emirates
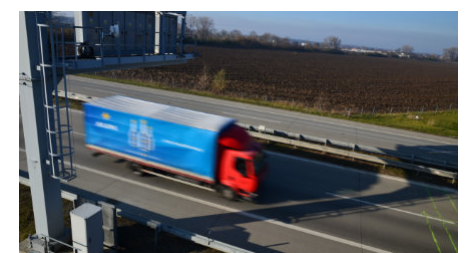Pilot project for motorway network

Slovakia
Motorway network, CrossWIM for precise counting and classification

Thailand
CrossWIM for pre-selection

Czech Republic
#OptiWIM

EUROPEAN UNION
European Regional Development Fund
Operational Programme Entreprise
and Innovations for Competitiveness

www.cross-traffic.com