Weigh-in-Motion Systems for Transport and Industry
Product catalog
Weighing Systems for you for more than 25 years

TENZOVAHY offers you a comprehensive range of weighing systems for transport, forwarding, logistics, industry, construction and public administration. Our products meet national and international standards applicable in the EU, including OIML and ASTM international recommendations.

We are ready to find the right solutions for every requirement related to truck scales and weighing. We actively cooperate with our clients from the first inquiry through to final service. Quality is our main goal.

With more than 25 years of serving our customers, we have implemented hundreds of successful weighing systems in the Czech Republic and abroad.

Why is vehicle weighing so important?

The correct determination of the weight of raw materials and final products has a direct impact on economic efficiency of every company. Nowadays, Weighing Systems are often part of the comprehensive system monitoring the material flow.

Governments not only aim at improving the road traffic safety, but also at protecting state property. The widespread introduction of overload monitoring has become a common topic for European transit countries.

So why not to be prepared?

Utilize the possibility of checking the weight before transporting goods – by means of a certified device!

When choosing a Weighing System, the most important parameter is not its price, but the long-term reliability of the product under hard operating conditions.

With years of experience in the area of scales and weighing, we will certainly find a suitable solution for your operation!

Structure of our services

Our weighing systems have been prepared for installation by System Partners.

We provide:

- Finding the right solution
- Design
- Production
- Delivery
- Installation support
- Maintenance
- Calibration, verification
- Diagnostics tools
- On-line support

Our Weighing Systems have been approved for use in

Transport

- Container terminals
- Logistic centres
- Forwarding

Construction & other Industry

- Mining (Quarries, Sandpits)
- Road construction
- Construction companies
- Repository of building materials
- Concrete plants
- Chemical & Petrochemical plants
- Testing vehicles

Environment

- Composting plants
- Bio-waste incinerators
- Collecting yards
- Biogas plants
- Waste Water Treatment
- Recycling

Law Enforcement

Weighing in Motion on highways and roads
Weighing System VM-1.2 for Automatic Dynamic Weighing vehicles in Motion

The TENZOVÁHY WIM System VM-1.2 offers unique way of weighing cargo at logistical terminals, in forwarding, in quarries and construction companies as well as for Law Enforcement on roads and highways.

Main advantages

- Besides total vehicle weights, the system detects also axle loads, group loads more
- High throughput of vehicles
- Automated operation
- Smooth integration into Enterprise Information System
- Continuous surveillance service 24/7
- Equipment for operation in extreme climates
- Certificate for Commercial and Official Law-Enforcement Weighing

Product description

The Weighing System provides real-time information to the monitoring centre about immediate weight of the vehicle, all data about its operations, including statistics, trends and possible extreme variations in weighing.

An easy-to-use software not only allows for keeping a well-arranged record of vehicles, materials and carriers, but also for issuing invoices and balances and exporting data to the company’s related information systems. This facilitates further planning and process optimization.

Technical specifications

- Weighing capacity range (per single axle) (Min–Max): 400–20,000 kg
- Safe overload per single axle: 30,000 kg
- Number of weighed axles, total vehicle weight, total vehicle length: unlimited
- Scale interval “d” in static mode or in Weigh-in-Motion mode: 5 / 10 / 20 kg
- Scale interval “e” in static mode / in motion mode: 20 / 20 kg
- Vehicle speed for Weigh-in-Motion: 1–6 km/h
- Max. speed during crossing the bridge: 10 km/h
- Max. tire diameter of weighed vehicle: 1,800 mm
- Min. axle base (axle resolution): from 850 mm
- Accuracy class of Weigh-in-Motion according to OIML R134 (in verification / in operation): 1 (+/- 0.5 %, +/-1 %)
- Accuracy class of static weighing according to European direction EN 45501: 4B
- Through road profile: 3,200 mm
- Protection against corrosion: by hot-dip galvanizing
- Material of sensors: stainless steel
- Anti-freeze protection: base frame heating
- International type-approval certificate (issued by CMI - notified body 1383): TCM 128/97-2590-R1
**PW-10 Portable System for checking vehicle loads**

Portable Weighing Systems PW-10 are used both for law enforcement and in the private sector, where they are used to randomly check the loading of vehicles in transport companies and industrial plants.

The thin and light weighing device PW-10 combines the reliability of tensometric weighing systems with high mobility in everyday operation. The system provides exceptional operability in vehicle weighing. The preparation of the site takes only a few minutes to start weighing.

**Product description**

Weighing System PW-10 is a fully portable battery-powered weighing equipment, which can be installed and fully operational within minutes. The unique tensometric weigh pad design together with advanced real-time evaluation allows for checking vehicles both in the common static mode (axle by axle), and in the dynamic Weigh-in-Motion (WIM) mode, which is much faster and more efficient. Weighing accuracy is confirmed by type-approval certificate issued by the Czech Metrology Institute. The weighing system consists of two weigh pads, a set of levelling mats and a PC controlled evaluation system, which performs the vehicle load analysis according to national load limits and prints the Weighing Protocol with overload charges.

**Technical specifications**

- Weighting capacity range (per single axle) (Min-Max): 500–20,000 kg
- Approved max. weighting capacity (per wheel / per axle): 10,000 kg / 20,000 kg
- Safe overloading - valid if contact pressure is lower than 12 kg/cm² (per wheel / per axle): 15,000 kg / 30,000 kg
- Number of weighed axles, total vehicle weight, total vehicle length: unlimited
- Adjustable scale interval “d”: 10, 20, 50 kg
- Approved scale interval “e”: 20 kg
- Max. vehicle speed for Weigh-in-Motion: 5 km/h
- Min. vehicle speed for Weigh-in-Motion: 1 km/h
- Accuracy class of Weigh-in-Motion according to OIML R134 (not verified): ± 2 %
- Accuracy class of static weighing according to Council Directive 90/384/EEC and OIML R76
- Weigh pad dimensions: 760 x 580 x 20 mm
- Weigh pad weight: 23.6 kg
- EC type-approval certificate (issued by CMI - notified body 1383): TCM 128/04-4103+R2
High Speed System HSW-2.0

for Automatic Dynamic

Weighing vehicles in Motion

Weighing vehicles at high speeds is an excellent tool for monitoring the load of roads, highways and highway bridges. The system HSW-2.0 from TENZOVÁHY is suitable not only for basic statistics, but especially for the pre-selection of overloaded trucks on traffic flow.

The device is able, even at high vehicle speeds on the highway to determine the weight of each axle, axle group and the whole vehicle, with an accuracy of 5-10 %.

Main advantages

The Systems ascertains:

- Total vehicle length
- Wheel load, Axle load, other weight parameters
- Number of axles
- Total vehicle length
- Speed of vehicles
- Intervals between vehicles
- Date and time of vehicle’s passage
- Driving direction, Number of vehicles per period
- Automatic detection and recognition of a registration plate
- Comprehensive record of vehicle weight vehicle incl. video data
- Access to the data with protected by passwords of different access levels

Product description

The vehicles are weighed in motion when crossing the Low-Profile Tensometric Weighing System. The width of platforms embedded into the road, depends on size of the lane. While the vehicle is crossing the weighing zone, its weight is being established together with creating two pictures: an image of the front and side of the vehicle by an overview colour camera and a detail of the front of the vehicle by an IR camera for ANPR (Automatic Number Plate Recognition).

The data from the Weighing System and from cameras is being processed by an evaluation unit placed in a roadside cabinet. The output a data record of the vehicle weighing is being sent into the Station Server. If the weight parameters of vehicle are exceeded, it is directed to the 2nd stage of the Weighing Station by Variable Message Signs (or police instructions).

Technical specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Number of detected and analysed lanes</td>
<td>1 to 4</td>
</tr>
<tr>
<td>Number of overview cameras / IR cameras for ANPR in 1 lane</td>
<td>1 / 1</td>
</tr>
<tr>
<td>Reliability of registration plate recognition at any light conditions</td>
<td>&gt; 90 %</td>
</tr>
<tr>
<td>Reliability of registration plate (licence number) recognition at good light conditions</td>
<td>&gt; 95 %</td>
</tr>
<tr>
<td>Weighing capacity range (per axle)</td>
<td>800 - 20,000 kg</td>
</tr>
<tr>
<td>Safe overloading (per axle)</td>
<td>30,000 kg</td>
</tr>
<tr>
<td>Gross Vehicle Weight</td>
<td>up to 320,000 kg</td>
</tr>
<tr>
<td>Measurement accuracy of weight parameters of the vehicles – in accordance with COST 323</td>
<td>A(5) or B(7)</td>
</tr>
<tr>
<td>Measurement accuracy of total vehicle weight expressed in %</td>
<td>better than 5 %</td>
</tr>
<tr>
<td>Measurement accuracy of axle weight expressed in %</td>
<td>better than 11 %</td>
</tr>
<tr>
<td>Measurement range (vehicle speed)</td>
<td>10 - 160 km/h</td>
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<tr>
<td>Measurement accuracy of speed and axle base of the vehicle</td>
<td>± 3 %</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>-30°C – +70°C</td>
</tr>
</tbody>
</table>
Advanced functionality for your Weighing Systems

Automated & permanent Functionality
Weighing Systems work automatically and continuously even in extreme climatic conditions. They are able to function absolutely unattended of operator.

On-line data
Weighing Systems are seamlessly integrated into the Information System of every enterprise or transport infrastructure. Weighing data can be saved on a remote cloud storage.

Smart City concept
Harmonization and integration with GIS (Geographic Information System) using map data the weights become part of the concept of smart cities. Systems can work with tolling systems in different countries. They can provide valuable data for online maps overloaded sites.

Advanced diagnostics
Advanced diagnostics reveals minor defects each component weights that may not have at that moment a major influence on the required transmission of weighing. Preventive servicing can prevent potential shutdown systems. We guarantee 100% operability

Optional Accessories

Prefabricated concrete base for VM-1.2
with preinstalled frame and heating cable speeds up the installation, enables several relocations to new sites. It contains a sloped bottom for outlet rainfalls.

Base frame with an Automatic heating control for VM-1.2
Heating cable for reliable operation in frosty winters. Electronics controls the temperature in frame and starts heating if the temperature falls down to zero degrees.

Set of signalling devices for VM-1.2
— Red & Green light
— Acoustic horn
— Info board
— Pillar, anchor and bolts
— Signalling devices are controlled from PC

Automatic barrier for VM-1.2
— Remote controlled
— Beam length up to 4 m, lift in 3.5 s
— Anchor plate included

External display for VM-1.2
High luminance display with character height 4.5 cm. Placed in stainless steel cover for outdoor usage

Set for automatic weighing in both directions (on unmanned sites) for VM-1.2
material is selected by driver on keyboard and vehicle is then weighed.
— RFID Technology
— Two terminals with keyboard and chip card reader
— Metal cover
— Mounting brackets on pillar

Video Camera supervision set
Video Camera stakes several pictures in the moment of weighing – front face of vehicle and loaded material

ANPR (Automated Number Plate Recognition) System
License plate is being read and inserted directly into weighing record, high reliability even in bad visibility conditions (fog, night..) Set includes IR cameras with IR LED illumination and ANPR Software

“Scales for Trade Expedition” Software
For trade weighing has been developed for control of material in diverse business environments and offers:
— Weighing tickets
— Automatic reporting of weighed material
— Invoice generation
— Comprehensive outputs for company accounting
— Data for the supply system

Vehicle weighing can be also fully automated with chip card terminals on unmanned sites and under supervision of up to four cameras.

“Scales for Law Enforcement” Software
For Law Enforcement at vehicle weighing stations, border crossings and toll sites we provide the Automatic Analysis of vehicle load according to national limits. Advanced features like:
— Vehicle classification (category)
— Law compliance checking
— Fines calculation
— Load Equivalency Factors (LEF)

are implemented in this user-friendly software without any additional costs for the user. Data management is included.
Our Service

We will advise you when you are choosing the appropriate weighing system. We will prepare solution including the necessary project documentation for construction.

Even after delivery and commissioning we still care for our clients. We will arrange for official verification and operator training.

After the warranty period we are ready to take care of the supplied equipment. Our customers have access to helpdesk. Your request will be solved either by remote diagnostics or timely intervention at the point of weighing.

OEM Programme

Are you an implementation company whose delivery to the customer includes weighing systems?

Our products can also be integrated into larger projects. In consultation with you we will prepare all the project documentation including consultancy for the installation of our equipment. During delivery and implementation we will provide support or direct on-site supervision at the customer's premises.

Throughout the life of the product we provide the latest versions of software and diagnostic tools.