

# Fabryka Wag Kalisto



*...balanced solutions*





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Fabryka Wag Kalisto is a member of the Polish (SPWAG) and the European Association of Scale Manufacturers (CECIP) established in France. We are represented in Lithuania, Latvia, Russia, Estonia and Romania. Since 2005 the Company has been the fastest growing scale manufacturer in Central and Eastern Europe. Continuous development focused on the provision of the highest quality, shortest delivery times and reasonable prices has been rewarding us with plenty of satisfied customers.



Production of weighbridge platforms

From the beginning, Fabryka Wag Kalisto has been using highest quality German electronic systems in stainless steel cases and proven load cells manufactured by Zemic. You can meet us at various trade fairs and exhibitions in Poland and abroad. In 2009 you are invited to visit our stands at the agricultural fairs and exhibitions at Minikowo and Bednary.



Production of Rhewa indicators

In 2008 five employees of Fabryka Wag Kalisto became authorised to apply the EC conformity assessment procedure which enables us to issue verification certificates for platform scales and weighbridges in compliance with current regulations in the European Union.

**GENERAL INFORMATION**

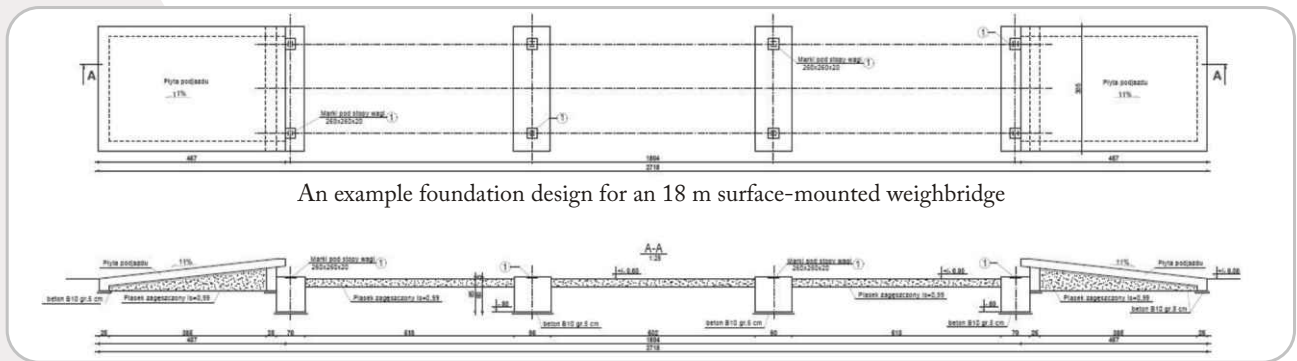
Polish weighbridges, or truck scales, produced in the 21st century are characterised by state-of-the-art standards of manufacture and the leading companies are setting development trends for the whole industry. Fabryka Wag Kalisto offers steel or concrete weighbridges incorporating world-class load cells and stainless steel weighbridge terminals.



Weighbridges manufactured by Fabryka Wag Kalisto

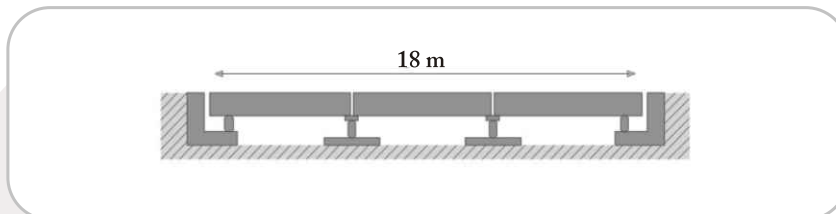
**FOUNDATION DESIGN**

The use of rugged reinforcement in the foundations for our weighbridges ensures a very high durability. Fabryka Wag Kalisto employs own construction teams, however if the investors prefer to perform foundation works on their own we will provide the foundation plan and design at no extra charge. In the last three years we have sited more than half of our weighbridges in the 'portable' version where no foundation works were required.

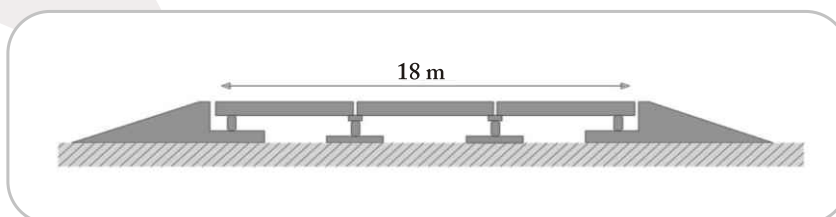


An example foundation design for an 18 m surface-mounted weighbridge

**Weighbridge installation types:**



Pit mounted



Surface mounted



**STEEL PLATFORM**

The most important component of a weighbridge is the weighing platform. Fabryka Wag Kalisto offers steel and concrete platforms. The steel platform has a relatively low mass (18 m platform weighs approx. 10 t) and – thanks to a unique design – it provides a high load-bearing capacity (up to 200 t). The weighing platform of 14-, 16- and 18-metre weighbridges is made using cold-bended steel profiles. The cable guides are installed along the platform to make sure that the cables connecting load cells with the weight indicator are properly protected.

Weighbridge type	Weighing capacity	Platform size	Number of load cells
TM 30/7	30 t	7 x 3 m	4 or 6
TM 40/9	40 t	9 x 3 m	4 or 6
TM 50/14	50 t	14 x 3 m	6 or 8
TM 60/16	60 t	16 x 3 m	6 or 8
TM 60/18	60 t	18 x 3 m	6 or 8

A weighbridge consists of two or three platforms. Customers choose surface-mounted weighbridges because of the ease of dismantling and moving. Fabryka Wag Kalisto uses a proprietary installation method of the steel weighbridges on hardened surface which does not require pouring of costly concrete foundations. The load cells are installed on steel spacers fixed to the ground with special anchor bolts, preventing any movement of the weighbridge. An essential component of the surface-mounted weighbridges is the ramp. Fabryka Wag Kalisto supplies concrete ramps – erected directly at the site, as well as pre-cast concrete ramps and steel plate ramps.



Steel components of weighbridges

**CONCRETE PLATFORM**

Reinforced concrete platforms provide an alternative to steel platforms. They are made from B-50 grade concrete, reinforced with steel bars. For concrete weighbridges Fabryka Wag Kalisto suggests the use of a 15-cm lean concrete screed to level out and harden the surface on which the pre-cast supports and weighing platforms are then installed. The assembly of a concrete weighbridge takes two days and the individual components fit like Lego® bricks. The pre-cast decks contain encased steel sockets to install the load cells.

Weighbridge type	Weighing capacity	Platform size	Number of load cells
WS 40/12	40 t	12 x 3 m	6
WS 50/14	50 t	14 x 3 m	6
WS 60/16	60 t	16 x 3 m	6 or 8
WS 60/18	60 t	18 x 3 m	8
WS 60/24	60 t	24 x 3 m	8 or 10



Assembly and installation phases of a concrete weighbridge

The advantages of a concrete platform weighbridge are the possibility to site it without a building permit and the ease of access to each load cell. The photographs above show subsequent phases of the assembly and installation of a pre-cast concrete weighbridge. The neat surface finish of galvanised steel elements and short installation times (up to 21 days) keep this product on a steadily rising sales curve. The use of unique design with Zemic HM9B load cells enable the weighbridge to be mounted flush with the roadway. Thanks to ball joint sets neither front nor side impacts cause any dislocation of the weighbridge.

### WEIGHBRIDGE INDICATORS

The most popular measuring instrument used to display the readings of weighbridges is Rhewa 82 Basic\* indicator. Its strengths lie in the affordable price, user-friendliness, the possibility to use with computer software and to work in aggressive environment.

For those companies that want to take advantage of the available range of compatible accessories for their weighbridges (such as remote operated barriers, card readers, traffic lights etc.) we recommend Rhewa 82 Comfort\*.



RHEWA 82 COMFORT indicator

### WEIGHBRIDGE LOAD CELLS

Load cells are used to measure the load in all electronic industrial scales. Fabryka Wag Kalisto is a distributor of state-of-the-art load cells manufactured by ZEMIC. The remarkable reliability of ZEMIC HM9B shear beam load cells proven worldwide and their solidity (resistance to overload and side impact) make a good recommendation for this product. Thanks to the use of the load cells in our weighbridges no buffers are necessary in the support structure to control the movement of the platform when the weighing is in progress. When HM9B load cells are used the weighbridge may become a part of a road and even transverse movement will not affect it. For investors who prefer to use another supplier of load cells Fabryka Wag Kalisto will suggest alternative solutions.



Zemic BM14G load cell



Zemic HM9B load cell



Installation of an HM9B load cell at a platform



Zemic HM9B ball joint assembly



**LARGE DISPLAYS**

The measured weight is displayed on the indicator. However, it can be additionally shown on a large display unit in oversized digits. Fabryka Wag Kalisto installs those extra displays at the weighbridge so that the result could be easily read by the weighed vehicle's driver. We offer a range of large displays in powder-coated steel housings and – for the first time in Europe – in stainless steel housings.

In 2009 a new model of a large display – Kalisto Pro – will be launched in response to our Customer's suggestions as regards the digit size and the visibility of readings.



Examples of large display units

**WAGA AND WAGA PRO DEDICATED SOFTWARE**

Waga is a computer programme designed to be used with Rhewa indicators. Its features include printing weight tickets based on the data collected from the indicator or on manually typed in results. Thanks to an extensive data base the programme offers a variety of analyses, statistics and summary reports for drivers, vehicles, companies and weighed goods. A more sophisticated version of the programme, called Waga Pro, provides remote control of a barrier, traffic lights, a transponder card reader and a CCTV camera. Waga Pro software also features an invoicing module that enables printing invoices and bills immediately after the weighing.



Fabryka Wag Kalisto computer software screenshots

The flexibility of Waga Pro consists in its unrestricted parameter configuration to suit the Customer's needs. It works perfectly in all branches of industry. For example, the programme can issue waste delivery receipts for landfill operators and scrap yards. Programmable parameters (such as pollution, loss, initial and final humidity) enable the determination of the actual weight. At the same time Waga Pro does not affect other Windows applications or the stability of the operating system.

- Waga Pro computer programme is designed to the specific requirements of
- scrap yards
  - landfill sites
  - grain handlers



#### THERMAL PRINTER

A thermal printer installed right next to the indicator is an alternative to printing weight tickets on a computer printer. Thermal printers can also print entry and exit tickets (including date, time, weight and company name).



#### CARD READER

We recommend to supplement your weighbridge system with a transponder card reader to make the operation fully automatic. Drivers with transponder cards will move the truck onto the weighbridge and place the card in front of the reader. The weighing result will be automatically recorded in the dedicated software – Waga Pro – and stored.



#### TRAFFIC CONTROL LIGHTS

One of the ways to control vehicle traffic on a weighbridge is to install traffic lights. The lights, connected – via a controller – with Waga Pro computer software, guarantee an unobstructed traffic flow.



#### BARRIER

Another way to control traffic is to install a remote-operated barrier, integrated with the computer.



#### CCTV CAMERA

Waga Pro computer software also features the option to use a camera for recording weighed vehicles' registration plates and monitoring the position of the vehicle on the weighbridge. All recorded data is fed into the computer and stored.



#### OFFICE MODULE

The weighbridge system can be further extended with an optional office module where the indicator and the computer equipment can be installed. On the wall a large display for the readings can be mounted.



#### GUIDE RAILS

For surface mounted weighbridges sometimes the Customers want to install guide rails to clearly mark out the limits of the platform. These guide rails assist the drivers when moving the vehicle up the ramp.

**AXLE WEIGHING SCALES**

The cheapest way to weigh trucks with the revenue weight of up to 60 t is to use axle scales (axle weighers). Our axle weighing scales, equipped with Kafka printers, can remember and add up the weighing results for each axle and then produce a report. Axle weighing scales are manufactured in two versions: static and dynamic. The static version requires the vehicle to stop with each axle on the weighing platform and to press a button on the indicator unit. The dynamic version enables weighing of all vehicle's axles without the need to stop it.

Axle scale type	Max. axle load	Platform size	Weighing method
WO 15 L	15 t/axle	3 x 0.8 m	Manual (Static)
WO 15 XL	15 t/axle	3 x 1.5 m	Manual (Static)
WOD 15 L	15 t/axle	3 x 0.8 m	Automatic (In motion)
WOD 15 XL	15 t/axle	3 x 1.5 m	Automatic (In motion)

The readout error for static weighing is 5 kg/axle and 1% of the total weight of the vehicle for dynamic weighing. Each axle scale sold by Fabryka Wag Kalisto is equipped with a Kafka thermal printer to print the weight tickets with the user's name, date, individual and total axle weights. The axle scale can be connected to a computer and the dedicated Waga Pro software to generate various statistical reports. The filters incorporated in the software register the signals from load cells and the weighing results are automatically archived.

WO axle scales are pit-mounted using a shallow foundation pit. The price (PLN 24,000) includes the printer, as well as the cost of transport, installation on site and verification.

An axle weighing scale seems to be a perfect solution for farmers and companies with limited space available on the vehicle manoeuvre / handling area.



Axle scales can be installed in any chosen location



An axle on the weighing platform



Pit-mounted axle scale



**PLATFORM SCALES**

Platform scales are made of stainless steel (HM and HN series) or CRP coated steel (TM series). All weighing heads of our scales are equipped with an RS 232 interface to feed the output into a computer or a printer. The weight indicator can be mounted on the wall or a support. Platform scales are often placed on the ground in a special frame. The TM series platforms are coated with four layers of chlorinated rubber paint (CRP) to prevent corrosion.



HM-series platform scale



TM-series scale on a frame

CRP steel platform scales	Weighing capacity	Accuracy	Platform size
TM 1000 S	1 t	0,5 kg	1 x 1 m
TM 2000 SM	2 t	1 kg	1,2 x 1,2 m
TM 4000 L	4 t	2 kg	3 x 2 m
TM 4000 XL	4 t	2 kg	4,5 x 2 m
TM 6000 L	6 t	2 kg	3 x 2 m
TM 6000 XL	6 t	2 kg	4,5 x 2 m
TM 6000 XXL	6 t	2 kg	6 x 2 m
TM 15000 XXL	15 t	5 kg	6 x 2,5 m



TM 15000 XXL with entry/exit ramps

The platform dimensions, the weighing capacity and the colour can be tailored to your needs at no extra charge. For example, the cost of a custom platform scale of 1.2 x 1.1 m and the capacity of 1.8 t, finished in green, is the same as of the standard TM 2000 SM model. The use of a hinged pan and IP 68 class load cells in stainless steel platform scales enables easy access for cleaning and maintenance purposes and makes the scales suitable for operation in harsh and chemically aggressive environments. The measuring instruments are contained in acid-resistant steel housing.

Stainless steel platform scales	Weighing capacity	Accuracy	Platform size
HM 1000 S	1 t	0,5 kg	1 x 1 m
HM 2000 SM	2 t	1 kg	1,2 x 1,2 m
HM 3000 M	3 t	1 kg	1,5 x 1,5 m

### DRIVE-THROUGH SCALES

A drive-through scale is a type of platform scale with two ramps for vehicle entry and exit. The ramps are designed to take as little space as possible and – at the same time – to ensure an easy access to the weighing platform. The measuring instruments are IP 68 rated and the RS 232 port facilitates the connection of any external device (a factory standard for platform scales) and link the scales with sophisticated computer software despite unfavourable ambient conditions.

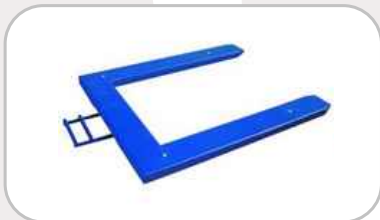


Drive-through scale platform

Drive-through scale type	Weighing capacity	Accuracy	Platform size	Material
HN 1000 SN	1 t	0,5 kg	1,2 x 1,0 m	Stainless steel. Indicator on the cable or a support
HN 3000 SN	3 t	1 kg	1,2 x 1,0 m	
HN 1000 SM	1 t	0,5 kg	1,2 x 1,2 m	
HN 3000 SM	3 t	1 kg	1,2 x 1,2 m	
HN 3000 MN	3 t	1 kg	1,5 x 1,2 m	
HN 5000 MN	5 t	2 kg	1,5 x 1,2 m	

### PALLET AND LOAD BAR SCALES

The easiest method to weigh palletized goods in a warehouse is to use a trade verified pallet scale available in stainless steel or powder-coated versions.



Pallet scale



Load bar scale



Stainless steel pallet scale

Load bar scales can be used to weigh long objects, such as boards or pipes. The weigh bars are connected with a cable (max. distance 10 m). With a proper arrangement of the bars this type of scale can weigh long objects of up to 3 t.

Pallet scale type	Weighing capacity	Accuracy	Platform size	Material
WP 500	500 kg	0,2 kg	For U-shaped Euro pallets	Powder-coated steel
WP 1000	1 t	0,5 kg		
WP 3000	3 t	1 kg		
WP 500 H	500 kg	0,2 kg		Stainless steel
WP 1000 H	1 t	0,5 kg		
WP 3000 H	3 t	1 kg		



### RHEWA INDICATORS

The indicators described below – in combination with our load cells – provide a proven and flexible solution for a variety of scales and weighbridges offered by Fabryka Wag Kalisto. For verified scales we recommend Rhewa indicators.



Rhewa 82 Basic

RHEWA 82 Basic indicator	
Housing	Stainless steel
Protection degree	IP 67
Accuracy class	III
Display	Backlit LCD (h=20 mm)
Operating temperature range	-10°C - 40°C
Power supply	230 VAC
Power consumption	5 W
Dimensions	310 x 173 x 85 mm
Weight	2 kg
Basic features	Tare weighing, zero setting, animal weighing, 1 x RS 232 interface
Applications	Platform scales, pallet scales, load bar scales and weighbridges

RHEWA 82 Comfort indicator	
Housing	Stainless steel
Protection degree	IP 67
Accuracy class	III
Display	Backlit LCD (h=20 mm)
Operating temperature range	-10°C - 40°C
Power supply	230 VAC
Power consumption	5 W
Dimensions	310 x 173 x 85 mm
Weight	2 kg
Basic features	Unit counter/adder, alibi memory, numerical keypad, upgradeable for analogue outputs, 2 x RS 232 interface
Applications	Axle weighing scales, weighbridges with accessory equipment, silo weighing



Rhewa 82 Comfort

**LOAD CELLS**

Each electronic scale manufactured by Fabryka Wag Kalisto incorporates load cells for measuring weight. We are a distributor of high-class ZEMIC load cells (USA).

Model	Load capacity	Parameters	Applications
L6D	2.5 – 50 kg	IP 65, C3	For use in verified electronic scales of all kinds.
L6N	3 – 100 kg	IP 65, C3	
H8C	500 – 10,000 kg	IP 67, C3	
B3G	50 – 10,000 kg	IP 67, C3	
BM14G	10 – 50 t	IP 68, C3	
HM9B	10 – 50 t	IP 68, C3	
HM9-401	10 – 50 t	IP 68, C3	
H8C load cell foot			
JB-8 adder box			



	H8C load cell	HM9B load cell
Accuracy class (OIML R60)	C3	C3
Sensitivity	3.0 ± 0.003 mV/V	2.0 ± 0.002 mV/V
Measurement capacity	500 – 10,000 kg	10,000 – 50,000 kg
Load cell interval	3000	3000
Safe overload	150 %	150 %
Input resistance	350 ± 3.5	700 ± 7
Output resistance	350 ± 3.5	700 ± 7
Cable length	as required	as required
Operating temperatures	-35°C – 65°C	-35°C – 65°C
Material	steel	steel
Protection degree	IP 67	IP 68



### LIVESTOCK SCALES

Cattle and pig breeders are more and more interested in our livestock scales, equipped with special filters to ensure reliable weighing of animals moving about on the scale platform. Thanks to a variety of designs Customers can choose a product to suit their needs as regards the platform size and the cage height. Our livestock scales are made in two versions: painted and stainless steel.



Livestock scale

Lives stock scale type	Platform size	Cage height	Material
TI 3000 M	1,2 x 0,8 m	1,2 m	Painted steel
TI 3000 L	2,0 x 1,0 m	1,2 m	
TI 3000 XL	2,5 x 1,0 m	1,8 m	
HI 3000M	1,2 x 0,8 m	1,2 m	Stainless steel
HI 3000L	2,0 x 1,0 m	1,2 m	
HI 3000XL	2,5 x 1,0 m	1,8 m	

### CRANE SCALES

Each crane scale is remote controlled.  
The scales can also be battery powered (LCD display type) or mains powered (LED display type).



Crane scale

Crane scale type	Weighing capacity	Accuracy	Description	Power supply
WH 1000	1 t	0,5 kg	Crane scale with remote-controlled tare weighing and backlighting	Batteries + mains (LCD version)
WH 3000	3 t	1 kg		
WH 5000	5 t	2 kg		Mains (LED version)
WH 10000	10 t	5 kg		
WH 20000	20 t	10 kg		

### CONVEYOR SCALES

Conveyor belt scales provide a perfect solution for mining companies and handlers of materials transported with belt conveyors. The weighing results can be stored and archived and the data can be used for statistical analyses of material output for a given period.



Conveyor belt scale

Conveyor scale type	Weighing capacity	Belt width	Recorded measurements
WT 500	4000 t/h	500 mm	Current results displayed on the indicator + print out
WT 650		650 mm	
WT 800		800 mm	
WT 1000		1000 mm	



**SILO WEIGHING**

Nearly any silo or large-capacity container can be retro-fitted with load cells which – when connected to a weighing terminal – will make an electronic scale.



Location of load cells

Load cells with their fittings are called load cell assemblies. The difference between individual assembly units lies in the type of load cell used and the method in which they are mounted on the silo or container.

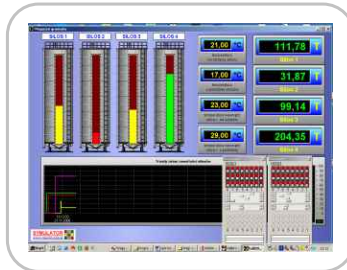


HM-9 assembly unit



BM14G assembly unit

Silos computer programme is an optional feature of our silo weighing systems. Its graphic user interface shows the current filling ratio. It is also possible to visualise the changes in content of individual silos in time.



Silo software screenshot

**BATCHING AND FORMULATION**

Wherever the process requires weighing of a few or a few dozen ingredients in containers we suggest to use an integrated batching system. The basic version makes use of relays to control the automated systems. In a more sophisticated solution a formulation programme is used with a controller enabling automatic weighing and batching of any number of ingredients from 16 silos. The system operates in a two-stage process, performing a preliminary and a precise weighing. Formulation is possible thanks to a special computer software connected with the batching unit by means of a cable or using a GSM network.

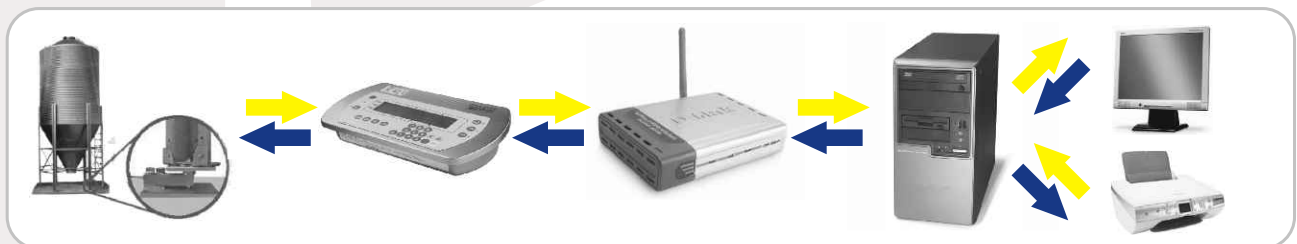


Diagram of a GSM-based connection between the silo weighing system and the computer

**ELECTRONIFICATION OF WEIGHBRIDGES**

Every mechanical weighbridge can be upgraded to a load cell-based electronic scale. Growing competition can make such an upgrade an advantage to both the company and its customers.

**VERIFICATION OF WEIGHBRIDGES**

A verification certificate means that the measuring instrument complies with metrological requirements specified in relevant regulations. The initial verification of a scale or weighbridge is valid for 36 months from the first day of December of the year of verification. Therefore, the validity of a verification certificate for a weighbridge installed in January 2009 will expire on 1 December 2012. Fabryka Wag Kalisto verifies both our own scales and weighbridges and third-party products.

- For 2009 we offer the following verification service packages:
- standard verification
  - verification with painting
  - verification with computerisation
  - verification with warranty extension

## Fabryka Wag Kalisto



Address:  
Fabryka Wag Kalisto Hubert Grupa  
ul. Szymborska 144 A  
88-100 Inowrocław  
POLAND  
NIP: 556-242-82-95

[kalisto@kalisto.biz](mailto:kalisto@kalisto.biz)  
[www.kalisto.biz](http://www.kalisto.biz)

*...balanced solutions*