

AUTOMATED CONTROL SYSTEM: FLOW WEIGHING

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Introduction

Most industrial companies in Russia and other countries whether large or medium-sized businesses that operate in mining, products storage or processing constantly face inventory stealage. This problem occurs due to the lack of independent automation control systems and inefficient documents flow. Stealage affects the business effectiveness and competitiveness.

The automated control system 'Flow weighing' became a solution to the problem.

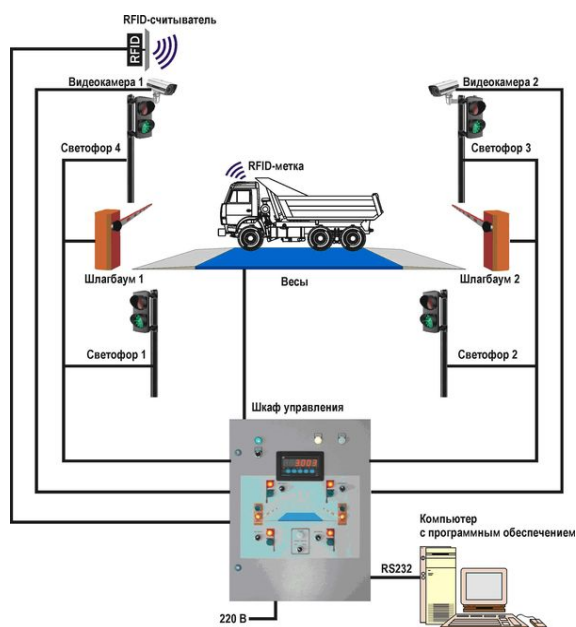


Figure 1

It's a software and hardware package, which operates truck weighing facilities or rail weight bridges. It serves as an access control system (ACS) at the company's weighing facilities. The availability of such a system enables optimization of accounting at weighing facilities, improvement of the weighing capacity and mitigation of theft within the enterprise. The system has a module structure with individual functional components. It may have various packages, i.e. its price varies from company's size and freight flow. Thus the company chooses the best solution on its own. To date, according to data available on the Internet, the cost of the minimum package is about 212 thousand rubles.

The following strategic objectives can be achieved thanks to the said above system integration:

1) Complete elimination of the human error in production and, therefore, elimination of any possible fraud or theft. It is automated control which satisfies

this requirement. When a vehicle comes on a weighing unit, the system automatically resets it. Next it checks availability of a proper document in the analytical accounting system and if everything is right it opens the traffic control barrier, lights the traffic signal and allows the entry, and then autonomously fills in the document with weight figures, and sends it back to the accounting system.

2) Automation of workflow and business processes associated with road and rail scales. The system integrates easily and instantly sends the data in the accounting system, and any other account, whether SAP, 1C, VAN, etc. Export data only takes a few minutes and eliminates the possibility of manipulation of the balance sheet, invoices and other documents in the enterprise.

3) Handy control. The system was successfully tested in many regions of Russia and abroad including regions where there was a shortage of skilled personnel. That is to control the "flow weighing" you do not need to hire highly skilled staff; after commissioning at the very beginning the system will carry out all procedures automatically without any outside interference.

4) The system enables connection of separate geographically distant objects into one infrastructure, so it perfectly fits large enterprises that have an extensive network. The "Flow weighing" also has a remote control which is another advantage of such a system.

5) The system can operate any software. The "flow weighing" is successfully operated at grain elevators, feed-milling plants, poultry farms and other food productions, as well as by transportation and logistics companies or centers, in trading and steel making, gas and coal mining and in oil refining. For example, at the refinery in Komsomolsk-on-Amur where there are weighing facilities, dosing equipment, etc. the system is smoothly being adapted and integrated with the existing process control systems.

6) APCS "flow weighing" provides the interconnection and control algorithm of the accounting system between enterprise systems, video analytics, hardware equipment (weight controllers) and the ACS

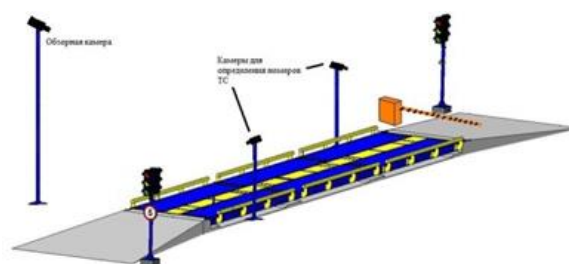


Figure 2

7) features intelligent video analytics and surveillance: vehicle number recognition, as well as the possibility of full or partial staffing RF RFID-tagged (both active and passive). An important advantage of passive tags - practically unlimited service life and low cost. However active tags give more opportunities. They allow, for example, automatically control the vehicle and eliminate the possibility of fraud and its substitution with a cargo arriving at the subject. This is true for ports, elevators (silos), sugar mills and many other enterprises in various industries. In addition POS-equipment can also be equipped installed: touch terminals, thermal printers, barcode scanners, etc.

8) The economic benefits of ACS "flow weighing" for static weighing up to 3% of the volume of material resources, receive and ship now. Pay off this software and hardware capable of the term of even a single day, and up to 3 months! If the integration of industrial scales, controllers, video surveillance, point weight control, automation car scales are implemented and work successfully, the economic effect of the operating system for the first six months is about 6.57 million rubles.

Now we analyze the system step by step from the moment of entry into the company until the date of departure from the company.



Figure 3

1. Entry of the vehicle to an object equipped with mobile security room -KPP, equipped with video surveillance systems with different architecture and class. Recognition of TA state identification number: CU number is compared with the accounting or operational document.

2. In the territory of the main entrance is a room controller for recording transactions, checks the validity of the accompanying documents (bargaining 12, Waybill, power of attorney), checking identity card delivery driver, the registration of the balance. The guard conducts inspections, estimates the number / quality of cargo and compares the visual ratio of the load to the stated in the documents. Manager indicates the place of unloading.

3. Then a vehicle comes on the weighing unit where human influence on readings is eliminated. REDD operatorship to a minimum. Automatic fixing position of the vehicle on the platform scale, with locking capability of weighing at the wrong placement of the car and with the optical tip the driver. Registration in the ACS electronic card (EIC) of the vehicle weight on the platform at the time of weighing and automated comparison of vehicle number and date of weighing by EPA with the number and date in the EP, alarm for non-compliance numbers or dates and entering the date and time of weighing in EP. The program then writes the electronic document reading scales

4. After performing a loading or unloading at the place, a specific controller for a given vehicle.

5. After performing loading or unloading the vehicle is re-weighing procedure. When re-weighing system verifies performance and then allows or forbids leaving the vehicle with the site.

Conclusion

This system will reduce the cost of production, reduce fraud and theft of documents from the manufacturing facility. Operational control entering / leaving the vehicle at the company's territory excludes the possibility of the passage of transport without fixing this event.

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