


The Siemens logo, consisting of the word "SIEMENS" in a bold, blue, sans-serif font.

*Ingenuity for life*

A photograph showing three industrial check weighers in a factory setting. Each unit has a Siemens monitor and control panel. They are processing bags of colorful vegetables (peppers and tomatoes) on a conveyor belt. The brand name "RMA" is visible on the side of the machines.

## Content counts! Exact weighing for fruit and vegetable packaging

### Check weighing in packaging process increases efficiency

It's become an indispensable part of supermarkets – packaged fruit and vegetables offering a great advantage for the end user by providing pre-weighed package sizes. Especially tomatoes, Germany's favorite vegetable, can be obtained commercially in all imaginable varieties and packaging units. A Dutch company, grows tomatoes and peppers and as well as packing them ready for marketing. The company was not able to conduct final check weighing at the end of the packaging process until now. A custom weighing solution in an integrated control environment has changed all that.

Previously goods were packed and immediately prepared for transport. Final check weighing did not take place. This resulted in irregularities in the packaging weight, a disadvantage for the company since the packages often contain more vegetables than the amount required by the package size.

#### **The task: packed and weighed especially fast**

The plan was to install a check weigher at the end of the packaging process to eliminate this uncertainty factor. A requirement was that the weight control should focus not only on accuracy, but also work very quickly throughout the entire packaging process.

The Dutch company RMA Techniek was selected for implementing the weighing solution. As a plant builder and specialist for weighing equipment especially in the food industry, RMA Techniek accompanied the entire project from design to commissioning of the check weigher.

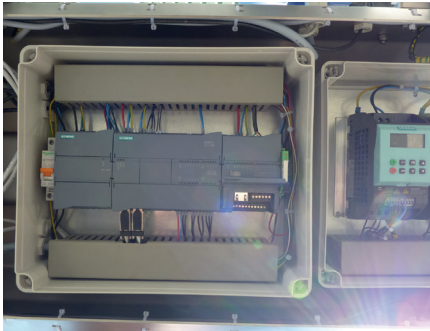
When designing washing, weighing and sorting systems for fruit and vegetable processing, for example, the machine builder often has to take highly individual, customer-specific demands into account. The vegetable grower also had special requirements

for its check weigher, namely to weigh the packaged products to an accuracy within two grams, even at a measuring rate of one second. Speed plays a very important role here, since the upstream packaging machine feeds the packing units to the check weigher correspondingly fast. Depending on the product, there may be between 60 and 100 packages per minute traveling across the conveyor. The typical rate is around 60 packages per minute.

Another demand was that it should be possible to weigh different types and shapes of packages containing a variety of products. All product packages that exceed the specified target weight must be sorted out, unpacked and their contents repacked.

#### **The solution: Implementation of customer requirements in a flexible control environment**

A total of three check weighers were put into operation. The core element of the weight measurement for each weigher is the Siemens SIWAREX WP231 weighing electronics connected to a SIMATIC S7-1215C controller. With a resolution of up to +/- four million parts and a sampling rate of 10 ms/second, the weighing module was the right choice for the company's high demands for speed and accuracy.



For the check weighers three Siwarex WP231 were used, connected to a Simatic S7-1200 controller and a Sinamics G110 frequency converter

A Siemens SINAMICS G110 was connected directly as a frequency converter.

The weighing process can be controlled and monitored, and parameters can be edited with the Siemens KP700 Comfort HMI panel.

All system components were connected and configured directly through TIA Portal. This also enables quick and easy adaptation and expansion of the weighing application should it become necessary

For data analysis and improved traceability, all measurement results are collected in a central memory.

The main challenges for the check weighers were fast and accurate and weighing. But the plant also had to operate stably enough for the packaging to be transported safely and smoothly through the weighing process. Especially with vegetables such as tomatoes, the products might otherwise be damaged and would no longer be suitable for sale. The solution here was to use two separate conveyors, one for weighing and forwarding, another for feeding the reject process. The conveyors are controlled simultaneously by default, but can also be addressed and controlled separately when needed.

#### **The benefits: Cost savings thanks to check weighing**

The use of new check weighers has brought considerable cost savings for the vegetable supplier. Now, no more packages are sold weighing more than the specified packaging weight. Packages above the setpoint are immedi-

ately sorted out and the sorting and packaging process is repeated for their contents. Strict compliance with weight requirements saves money.

RMA Techniek is very satisfied with this solution. Owner Michel Remijn: "The Siemens standard components combined with our plant allows us to offer customized solutions for the food industry. The use of TIA Portal significantly simplifies the design, construction and configuration of our system."



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#### **SIWAREX WP231**

Through its integration in SIMATIC S7-1200, the SIWAREX WP231 electronic weighing module provides uniform mounting technology and integrated communication. Stand-alone operation without a SIMATIC CPU is also possible.

Commissioning of the electronic weighing module using SIWATOOL or directly via a connected HMI panel is quick and easy. In addition to extensive diagnostic features, the SIWAREX WP231 provides a legal-for-trade display and can even be used for applications in Zone 2 hazardous areas.



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