

No more missing candies with vision sensor control

Have you ever bought a package of candies? The answer will be probably “Yes, sure! Everybody likes candies!”. But have you ever counted the number of candies inside the package? Probably no... especially if they are a lot! Someone else is supposed to do so in place of you.

Object counting is a common issue in packaging industry. The right amount of candies must be included in the package, the right numbers of chocolates must be on the tray as well as the right number of bottles must be present in the carton box. Moreover, counting is needed not only in packaging industry but also in many different manufacturing sectors such as automotive (e.g. count the number of balls inside a ball-bearing), pharmaceutical (e.g. count the number of pills) or healthcare (e.g. count the number of vials in a rack).

Typically this kind of application are solved by using several photoelectric sensors. Each sensor checks the presence of a single item. If all the sensors return a positive feedback, the global quality control is okay. This type of approach is effective, indeed. But let's also have a look to its implementation. First of all, as many sensors as the number of items to detect are needed. Then, they must be mounted on the machine and configured very carefully (each sensor must be fixed, orientated and tuned in order to check a specific position). Then they have to be electrically connected and a logical controller (i.e. PLC) must be added in order to manage all the results.

Datalogic DataVS2 vision sensor represents the ideal solution for this kind of application. The device integrates in a very compact housing all the elements needed for the quality control. The camera acquires an image which is elaborated by the algorithms afterwards. Some different approaches can be followed according to the characteristics of the items that must be detected.

In the Leaf machines, one brightness tool has been used in order to check each position. This choice was due to the following consideration: when the candy is present, the hole is full and appears quite bright. Otherwise, when the candy is missing, the hole is empty and appears darker. The algorithms evaluate the average light intensity inside the ROIs (Region Of Interest). According to the minimum and maximum acceptance thresholds set by the user, each tool returns a positive or a negative result. Thanks to the logical operators available on DataVS2, it has been also possible to add some logic in order to combine all the data coming from the single tools. In the end, the vision sensor activates one and only one digital output with no need of external PLC. This has been appreciated very much by the customer since it has simplified a lot the electrical connections.

DataVS2 has been chosen also thanks to its flexibility and ease of use. The vision sensor does not require a very accurate mounting (it works properly as long as all the items are within its field of view). Moreover it allows to manage different formats via software with no need to change its mechanical positioning. This represents a big advantage compared to photoelectric sensor approach that requires a specific setup for each format. Furthermore the different configurations are stored in the embedded memory and can be selected automatically through a digital pulse protocol. Thus, the operator can change the running control in an easy and quick way.

All these characteristics make DataVS2 a very flexible and powerful product able to solve many

different manufacturing needs with the same device.