



Gocator® | Potato Sorting

THE APPLICATION

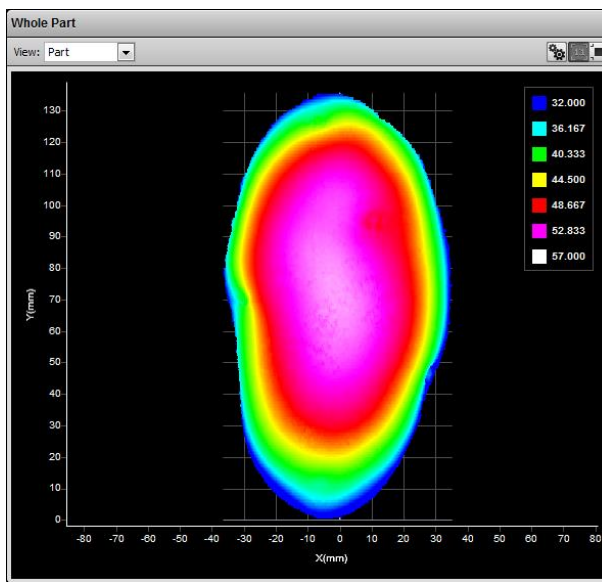
Potatoes, like most produce, grow in a variety of shapes and sizes. Before processing they must be sorted into categories by shape. For example, large long potatoes go to french fry and chip makers, smaller ones make side dishes or are mashed. In addition to shape there may be a need to sort out potatoes with blemishes and other visual defects.

In a packaging plant potatoes are first washed clean from dirt and then singulated onto a grooved conveyor system so that they can be individually inspected. Factors influencing the sorting decision typically depend on the variety of potato, the intended use of the potatoes in production, the grading rules currently in effect and the daily price list of the sizes and grades.

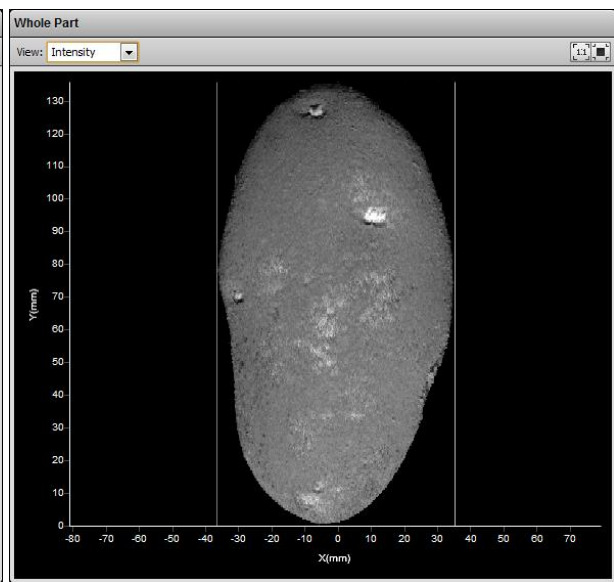
Profitability of the plant is highly dependent on throughput volume. Any sensor technology must reliably operate at fast scan rates, with minimum maintenance and complexity of components.

This application is well suited for a laser-line based 3D sensor. With a compact and pre-calibrated smart sensor using only a single light source, it's possible to get volumetric measurements of each potato for simple sizing without the need for a PC. In systems that also require inspection for visual defects the sensor can deliver pixel-by-pixel matched and calibrated 3D and 2D data in a single scan at very high accuracy to be sent to a PC for image processing.





3D Colour Height Map ...



... with matching 2D intensity image.

THE IMPLEMENTATION

The Gocator is mounted above each conveyor line scanning the top surface of the potato as it is transported under the sensor. For strict sizing applications the Gocator's built-in measurement tools can solve the application quickly and efficiently without any custom software programming. The built-in tools are configured through a standard web browser and the sensor supports several industrial PLC protocols to deliver measurements such as length, width, height and volume directly to the factory control system. The PLC will then calculate the sorting decision and control the timing of deflectors downstream from the scanning zone to push the potatoes into the correct bins.

The Gocator sensors are connected through a Master network controller which provides power, synchronization, encoder triggering, laser safety and data, all in a single cable.

For grading applications that require image processing to detect visual defects the Gocator supports 3rd party processing tools such as LabVIEW, Halcon, Common Vision Blox and HexSight. Additionally, an open source Software Development Kit (SDK) is available for engineers who want to implement their own algorithms. The SDK provides the low level networking layer, sensor configuration and control, as well as asynchronous data protocol parsing. It lets the user focus on proprietary image processing algorithms.

THE BENEFITS

Volume throughput is critical in the potato packaging plant. Manual inspection by human operators is slow, inconsistent and expensive over time. Automatic mechanical systems using weigh scales are slow and require constant maintenance. Systems using traditional 2D vision require on-site calibration, external light sources and a multitude of hardware components and cabling. Instead, the Gocator is a sensor with great focus on ease-of-use in all aspects of the product, software, hardware and cabling.

The Gocator offers a compact and reliable solution to:

- increase volume throughput with high scan rates
- automate potato sizing without the need for a PC
- automate potato grading with a single sensor delivering both 3D and 2D data