

Identification of foreign objects using hyperspectral camera technology

Challenge. Foreign objects such as plastic, glass, stones, or by-products from the process sometimes end up in the process/product. Currently, visual/manual inspection or traditional color camera technology (and X-ray) are being used for quality assurance and to detect foreign materials. The problem with this is that many types of materials are impossible or hard to reliably detect. Leading to some foreign contaminants remaining in the food product and risk being sent to the consumer.

Our solution. By applying hyperspectral camera technology in-line in the production process, the unique spectral fingerprint of the material in the process can be analyzed at high speeds and be classified based on its chemical composition. Foreign materials can be detected and instruct further processing or removal.

Benefits. This solution can be integrated with sorting equipment to enable automated and continuous quality inspection and removal of foreign materials in real time. The method is fast for processes with high through-put, is non-destructive and completely harmless to staff. Through improved quality inspection, the quality of the final product is improved.

A complete toolbox.

The powerful and flexible analysis software enables a wide range of applications such as sorting, process monitoring, quality analysis and detection of foreign objects.

The suite takes you from idea to solution by creating value in R&D, application development and in online processes.

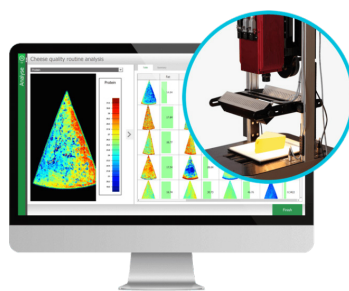
evince.

Exploratory analysis for R&D applications.



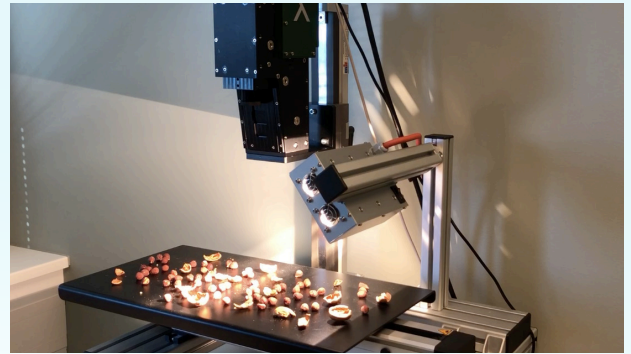
breeze.

Modeling and routine analysis for application development or in lab.



breeze runtime.

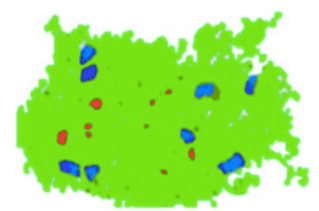
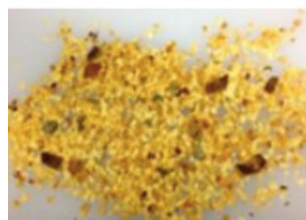
Realtime analysis for sorting and monitoring online in process.



Industrial near-infrared camera.

Sample	Group	Image	Area	Nut type	Nut type
MS001 (G)	Group		246.3 mm²		Shell
MS002 (G)	Group		257.3 mm²		Shell
MS003 (G)	Group		285.4 mm²		Shell
MS004 (G)	Group		433.2 mm²		Walnut
MS005 (G)	Group		282 mm²		Walnut
MS006 (G)	Group		284.2 mm²		Walnut
MS007 (G)	Group		276.7 mm²		Shell
MS008 (G)	Group		98.8 mm²		Shell
MS009 (G)	Group		246.8 mm²		Shell
MS010 (G)	Group		127.8 mm²		Hazelnut
MS011 (G)	Group		153.1 mm²		Hazelnut
MS012 (G)	Group		198.4 mm²		Hazelnut
MS013 (G)	Group		224.2 mm²		Shell
MS014 (G)	Group		247.6 mm²		Shell

Screen capture from Breeze software.



Example: Detection of stones and shell.

