

CASE STUDY

Electronic sorters secure gluten-free grains

In recent years, the demand for Cimbria SEA electronic sorters for gluten-free grains has increased. Due to the growing number of people suffering from gluten sensitivity and celiac disease, the gluten-free industry is becoming increasingly important on a global scale as use of electronic sorting machines in the cleaning process guarantees healthy products.

Gluten-free products have a tolerance close to zero, which is why grains need to be processed to separate any grain containing gluten. Even the most sophisticated mechanical cleaners cannot ensure the separation of all the grains with gluten, which may be very similar in terms of weight, dimension and shape.

Full-Colour technology is nowadays applied in the gluten-free industry and SEA CHROMEX has become increasingly popular in the modern cleaning process. After the pre-cleaning process, grains are checked by our 'Full-Colour' sorters in order to separate the gluten grains.

This challenging application leads us to utilise the latest inspection devices, combined with the most sophisticated software to assure the highest efficiency and performance in the separation. The basic version of SEA CHROMEX makes use of Full-Colour RGB 4096-pixel cameras that ensure the highest optical resolution in the market of 0.06 mm. The combination of real Full-Colour technology with infrared cameras (NIR and InGaAs) and shape-

sizing systems optimise the separation of gluten grains and other foreign bodies.

The set-up of SEA CHROMEX is realised through photographic acquisition, comparing a grain to a user-defined accept or reject, identifying it as a real defect or as an accepted element. For this challenging application, it is extremely important to create multiple filters through the HSI (hue, saturation, intensity) and shape-sizing systems to identify all the smallest colour and shape differences.

For this purpose, the EXAGON graphic interface allows user-friendly programming of the SEA CHROMEX, with the chance to use the sorting recipe on multiple sorting units and to acquire real-time statistics.

SEA CHROMEX is one of the few electronic sorters on the market that can recognise similar grains of different nature, such as distinguishing an oat from a barley grain. This can be done with extremely high efficiency when real RGB Full-Colour technology is combined with InGaAs and, if necessary, NIR vision systems.

Many gluten-free producers already know that SEA CHROMEX is the ideal solution to guarantee the highest purity of final products to meet the strictest food hygiene and health requirements. Our customers in Italy, Denmark, France, Spain, Germany, US, Canada

and in many other countries already benefit from SEA CHROMEX, producing results representing the highest purity and food-safety of the final products.

Besides the separation of grains with gluten, SEA CHROMEX guarantees the most efficient removal of other contaminants such as fusarium, ergot, foreign seeds, vetch, etc. Grains that have not been hulled are sorted from the hulled grains (oat from groats or similar kinds of separations).

Allergenic grains can also be separated thanks to SEA CHROMEX technology and the combination of ultimate RGB Full-Colour with InGaAs and NIR technologies. In gluten-free applications, as in any other grain cleaning process, it is very important to obtain a highly concentrated reject. This is why CIMBRIA has focused on and developed a very precise ejection system that provides the highest reject concentration.

All the models are available in



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- Celiac Disease Foundation website – USA).

single pass, reject resort or reverse sorting. SEA CHROMEX is available in versions from 0.5 to seven chutes and divided into one, two, three or even four independent sections in order to meet the production needs and expectations of the customer concerned.

The design features of the sorters make them ideal for installation in any grain cleaning system. The exclusive system of optical boxes, including conditioning, tightness under pressure and particular attention to mechanical details, makes SEA CHROMEX the ideal sorter to be installed even in a harsh working environment.

At the Agritechnica exhibition in Hannover, the world's

largest trade fair for agricultural machinery & equipment (2,803 exhibitors and 450,000 visitors), CIMBRIA SEA colour sorting technology proved to be the most complete in the world. At present, none of our competitors worldwide can offer such high optical resolution and combination of real Full-Colour technology with NIR and InGaAs cameras.

In 2018, CIMBRIA SEA will continue to exhibit passion and dedication as it strives to focus on the research and development of new industrial solutions dedicated to gluten-free seeds, grains and food applications.

What is celiac disease?

Celiac disease is an autoimmune disorder that can occur in genetically predisposed individuals where the ingestion of gluten leads to damage in the small intestine. When people with celiac disease eat gluten, their body mounts an immune response that attacks the small intestine. These attacks lead to damage to the villi, small finger-like projections that line the small intestine and which promote nutrient absorption. When the villi are damaged, nutrients cannot be absorbed properly into the body (Celiac Disease Foundation website - USA).

What is Gluten?

Gluten is the general name for the proteins found in wheat (wheat-berries, durum, emmer, semolina, spelt, graham, KAMUT® Khorasan wheat and einkorn), rye, barley and triticale – a cross between wheat and rye. Gluten helps foods maintain their shape, acting as a 'glue' that holds food together (Celiac Disease Foundation website – USA).