



DigiEye - a reliable tool for the creation of accurate visual specifications



In a Campden BRI facilitated project, one of Britain's major supermarket chains, with the cooperation and full support of their relevant suppliers, initiated an exercise using the DigiEye Imaging System, to establish a set of agreed quality specifications for specific visual characteristics of their range of poultry products.

THE COLOUR OF MEAT - A KEY ATTRIBUTE

Colour is arguably the most important quality parameter for meat and poultry products as it influences the actual purchase of the meat. **If the colour is not right the consumer will not buy it.** Some consumer studies indicate it is **THE** most important quality attribute.

The consumer will buy meat with colour matching their expectations; for Red meat that will be a fresh bright red, with myoglobin pigment - a well oxygenated piece of meat.



If meat with more maturity is required the consumer would look for a darker colour.

In the US, where corn-fed birds are more prominent, the consumer would expect to see yellower chicken meat in the pack. In Britain we incline toward bluish-white to yellow birds.

And for different meats, it's different expectations, for example, cured meats such as bacon and ham, a nice pink colour is expected - and definitely not grey.



VISUAL STANDARDS NEEDED

In April 2011 Campden BRI were approached by one of their members, a major British supermarket chain, for advice for a reliable method of creating sets of definitive visual specifications for their range of poultry products to ensure their products remain attractive and appealing.

The project, which was facilitated by Campden BRI, required the visual specifications to be agreed by their suppliers and made available as colour accurate prints, offering consistent and reliable visual identification for the production line operatives within the supply-chain.

Visual specifications were required for a range of differing but specific visual characteristics of poultry. The retailer was fully aware of the impact the product colour and appearance has upon the ultimate decision of the consumer to make a purchase.

Product which has a colour, or the presence of specific defects, which does not meet the visual expectation of the consumer and is consequently rejected by them, will result to a loss on revenue and an increase in waste.

CAMPDEN BRI

Campden BRI is the UK's largest independent membership based organisation carrying out research and development for the food and drinks industry worldwide.



COOPERATION & CONSENSUS

Consequently the retailer and their suppliers were invited to Campden BRI for a workshop. The suppliers bringing with them the range of product produced and packed for that retailer, such as legs, breasts and whole birds.

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COOPERATION & CONSENSUS (continued)

Each of the various visual quality attributes of the different types of poultry products were discussed openly and equitably, and using actual example of those products, tolerance limits were established as being acceptable for visual appearance and unacceptable.

Primarily the products were categorized with simple 'PASS' or 'FAIL' but in some cases, a third 'borderline' category was used on a whole range of given visual characteristics.

The visual characteristics discussed and categorized included:

- Blood Spots
- Haemorrhaging
- Trimmed fat
- Flesh colour
- Amount of feathers remaining

DEFINITIVE VISUAL STANDARDS

Once examples of the various characteristics were defined, images were created and placed on a scale defined by the agreed PASS/FAIL criteria. To do this Campden BRI photographed the images using the DigiEye Digital Imaging System.

Products were imaged within DigiEye's totally enclosed cube, which is specifically designed to eliminate the detrimental effects, when measuring colour, of ambient light. The lighting within the cube is totally consistent.

When creating colour and visual quality specifications, consistency is vital. However many of the visual quality specifications used in the Food industry are subjective and inconsistent effected as they are by many variables; camera quality, photographer, type and evenness of the illumination, effect of ambient light, viewing angle, product type and also the quality of the printer profile.

The high resolution images of the various poultry products produced by DigiEye gave a range of photographs which were consistent and captured with precision. These were then printed on a calibrated printer giving the retailer & their suppliers colour accurate and faithful reproductions of the appearance of the original product.

VISUAL QUALITY STANDARDS

This visual tolerance scale of colour accurate images produced using the DigiEye System is in use in the UK.

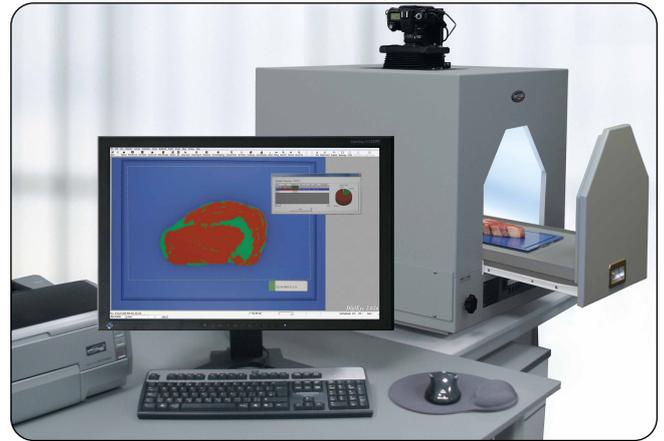
The retailer and their suppliers continue to work to the agreed and clearly defined tolerance standards to the benefit of those businesses, ensuring their poultry products maintain high quality standards and meet the visual expectations of their consumers.



These tolerance visuals are proving to be particularly useful for those processors on the production line for whom English is not their first language, ensuring the quality control is simple and clear.

CONTROL OF VISUAL QUALITY

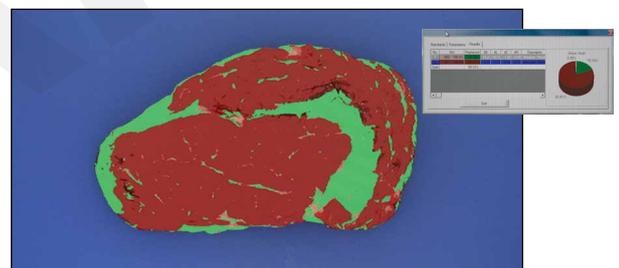
In addition to providing accurate and reliable Photographic Standards, DigiEye has applications such as Background Removal, Filters and Workflow, to help producers meet the visual expectations of the consumer.



This piece of steak, imaged in the DigiEye System, can be measured for colour and quantified for comparison against a pre-agreed standard.



Additionally the amount of visible fat can be 'Colour Sorted' and displayed as a percentage of the total area.



Colorimeter data and the relevant image can be saved, exported or sent electronically anywhere in the world.

MEAT COLOUR & QUALITY

The consumer, rightly or wrongly, will link the colour of the meat or the poultry with perception of quality and freshness. However there are major quality defects which can be detectable by variations in colour.

These include those caused by extreme changes in pH/temperature such as Pale Soft Exudative (PSE) and Dark Firm Dry (DFD) both of which lessen consumer acceptability, reduce yield, increase the potential for spoilage and reduce shelf life - all with obvious adverse influences upon profitability for the retailer and supply-chain.

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