Automatic grading of pork bellies for Poitrine (Bacon)

Summary

When producing cured products, selecting the right raw materials is of vital importance for the efficiency of the production as well as for the quality of the finished product.

This Application Brief outlines how a French MeatMaster™ customer has automated the selecting and sorting of pork bellies used for French Bacon, Poitrines. Also the quality of the incoming products, bought from various vendors, can now be evaluated.

Application

Poitrine is the French word for Bacon; a cured but raw product. The raw pork bellies are salted and smoked to enhance the flavour. In order to optimise the curing time and to produce various qualities, the bellies are sorted as they come into the plant. This is traditionally done manually by visual inspection according to size, shape and thickness of fat layer.

The customer has implemented automatic sorting, based on measurements by the FOSS MeatMaster™ with additional FOSS software for measuring sizes. This software option is called Morphometry (morphology refers to shape, size and form).
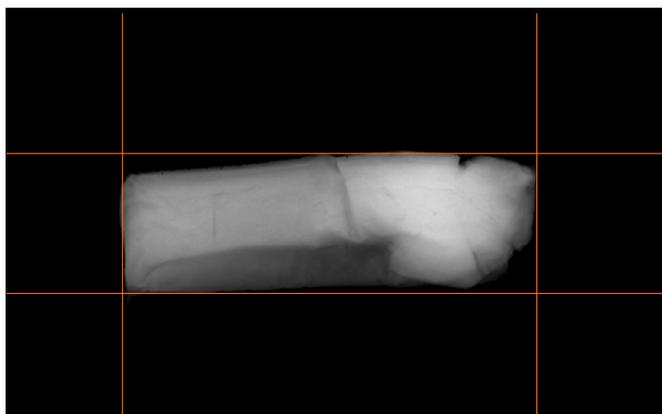
Example of morphometry performed on a pork belly using a FOSS MeatMaster

Weight	3.357kg
Fat	28.7%
Avg. Length	49.9cm
Avg. Width	12.8cm
Avg. Thickness	3.47cm
Max. Thickness	8.61cm
Thickness variation	2.30 cm
SD / Thickness	0.66

The individual pieces are measured by the MeatMaster™ which is capable of measuring up to 1500 bellies per hour, equalling about 5,000 – 5,500 kg. The bellies are placed along the conveyor, 20 cm apart. Sorting information is created by the Morphometry software according to a protocol defined by the customer.

Example of sorting criteria:

1. Pieces with foreign objects (metal and bone)
2. Fat content > than 35%
3. Mean thickness < 3 cm AND width < 18 cm AND fat < 22%
4. Mean thickness < 3 cm OR width < 18 cm
5. Mean thickness > 3 cm AND width > 18 cm AND fat < 30%
6. Fat content between 30% and 35%

Different sorting criteria can be used for different products.

The actual sorting is performed by an automated sorting system based on the information received from the MeatMaster™:

Conclusion

The implementation of this system has eliminated the manual labour involved in the sorting. It has also enhanced the consistency of the sorting by taking out the human factor.

The sorting is traditionally based on size, thickness and weight, but now it is also based on fat content. This enables the salting and curing processes to be more accurately applied, leading to more consistent products and more consistent quality.

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