

## MeatMaster™ II

### Grading of Hams or Other Whole Muscle Products



When producing whole muscle products such as cured or cooked hams, cold cuts etc. the selection of the right raw material is of vital importance to fulfil the final product specification, increase yield and reduce rework.

Important information for the segregation is to know the intramuscular fat and fat marbling of the muscle. Depending on the product respectively type of muscle, this can be obtained by measuring the total fat content of the muscle (measured by MeatMaster™ II) or a combination of total fat content measurement and a visual assessment of the fat layer thickness.

This Application Brief outlines how the MeastMaster II can be used for grading any kind of boneless muscles and the benefits this will have for ham or other type of meat producers using whole muscles as incoming raw materials.

### Production Process

Producers of whole muscle products such as dry hams, cooked hams and cold cuts are often experiencing that the fat content of the raw materials vary significantly. Such variation has an impact on the final product quality and the yield of the production process.

The traditional process is that after the whole muscle products are cut and/or trimmed according to the final product specification, they are sorted based on a visual inspection and/or a weight classification. Then follows a drying process or another process before the final products is reached. The final product quality can first be seen when slicing the finished product.

The major challenge for these types of producers is to secure a consistent raw material quality as this is fundamental for obtaining the specified quality and for being able to apply a standardised process which secures the maximum yield and leads to a minimum of rework.

A way to reduce the number of final products not fulfilling the specified quantity and to increase the yield is to have a good raw meat segregation, where the incoming raw material is segregated according to weight and fat, possibly combined with an inspection of the thickness of fat layer.

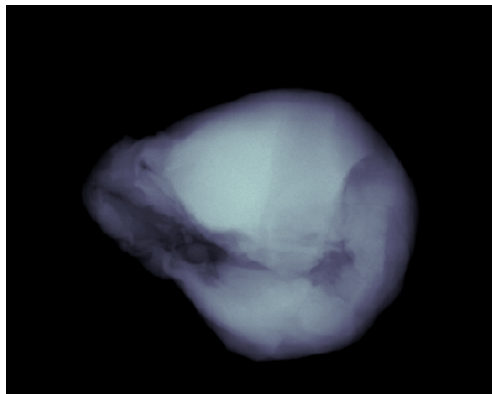
## Benefits of using MeatMaster II

The MeatMaster II has proven to be a beneficial solution for producers producing whole muscle products. With MeatMaster II it is possible to sort raw materials into different categories giving the possibility to address the optimal processing process for each category. Ultimately, this leads to a minimum of faulty final products.

A visual grading of the raw muscles only gives the possibility to grade the muscles according to weight and the thickness of the fat layer. Using MeatMaster II gives the ability also to include the fat from the intramuscular fat and fat marbling when grading whole muscles according to fat content.

The major benefits for producers of whole muscle products are:

- Increased yield as the number of faulty products is reduced significantly
- More uniform products



*Fig. 1 Image of a pork ham without bone as it appears on touch screen of the MeatMaster II*

## Test Results

### Example of Achieved Accuracy

30 pork hams with skin, but without bone were each measured three times on MeatMaster II.

The hams had an average length of 55 cm (22 inches), an average height of 20 cm (8 inches), a weight between 11 and 13.5 kg and a fat content between 18 and 28 % absolute.

The fat calibration was adjusted by FoodScan™ results based on homogenized samples of the hams.

The weight calibration was corrected with results from a scale weighing the entire ham without bone.

The MeatMaster II accuracy for fat and weight was registered as follows:

	Fat (% absolute)	Weight (% relative)
Accuracy	0.70 %	0.24 %
Repeatability	0.38 %	0.12 %

## Capacity

The capacity is mainly determined by the speed version of the MeatMaster II, the length of the ham and the gap between the hams. A certain gap between the hams is needed to keep the scan of the individual hams separate, but also to respect the requirements of the downstream sorting/grading system.

For a MeatMaster II speed version 375 mm/sec. a capacity of 1280 hams per hour can be achieved considering a safety margin of 5 %. The calculation is based on a length for the entire ham of 600 mm and a gap between the hams of 400 mm resulting in a total belt length of 1000 mm per ham.

**Note: The stated performance in this application note has been achieved in a case study using boneless pork hams with skin. Fat and weight accuracy as well as capacity need to be evaluated on project to project basis due to local conditions.**

## Conclusion

The sorting of raw materials for whole muscle products is traditionally based on weight, a visual assessment of fat content and - depending on the muscle part - an assessment of the thickness of the fat layer. With MeatMaster II it is possible to do a grading based on the entire fat content and the weight of the muscle by using an objective and reliable measuring method. Such information enables the customer to gain a better use of raw materials, to increase the yields of the entire process and to ensure a more uniform product quality.

## Dedicated Analytical Solutions

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