

POSTER SUMMARY

HOW IMAGE PROCESSING TECHNIQUES CAN IMPROVE SUGAR PAN YIELD

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Abstract

The crystallisation process is a very important step in determining overall sugar quality. A close monitoring of the boiling and the centrifuging processes using advanced image processing techniques can significantly contribute to improving pan yield. At the pan level, an on-line pan High Definition Video microscope delivers real time statistical information (MA, CV, number of fines from 4 μm minimum) to allow the operator an accurate characterisation of the pan operation and to establish the best possible sequences to produce stable massecuite with highest yield. At the centrifugals outputs, an on-line colorimeter also equipped with a high resolution digital camera analyses the beet or cane sugar colour and automatically detects sugar nonconformities. The measured dry or wet sugar colour is used to optimise the centrifugal washing time, and the out of specification automatic detection avoids contaminating the silo or the dryer.

Benefits that can be achieved by using this equipment:

- reduction in energy consumption by reducing the steam and electricity usage.
- improvement of the massecuite quality and reduction in strike time by optimising the boiling operation.
- increase in centrifugal station throughput by reducing the amount of remelted sugar and increasing both quality and quantity of the massecuite.
- increase in overall pan floor extraction with an enhancement of food safety.
- improvement in operator training and feedback.

These benefits already mark a big step forward in improving the sugar pan yield and lay the foundations for even more significant advances in the future, when full customised automation will be achieved.

Keywords: crystallisation, colour measurement, on-line monitoring, pan HD video microscope, process optimization

