

Abstract to the presentation "Adding value to grain through high-speed grain quality sorting" at 2008 IGQTC given by Bo Löfqvist, PhD and Founder of BoMill AB :

Today it is a well known fact that the quality of a lot of grain is an average figure only and there, inside any lot, is a very substantial variation in the quality from kernel to kernel. In a batch of Malting Barley that has been downgraded due to too high proteins, there are for example a large percentage of kernels, which are low enough in their content of protein to classify them as Malting Barley kernels of prime quality. In the same way we know that a batch of Durum Wheat with a vitreousness of 70 holds a majority of HVK kernels (kernels with a vitreosity above 90%) and that only a smaller proportion of real low grade kernels, often with a vitreosity below 30, are the reason for the downgrading of the entire lot to a lot with 70% vitreosity.

This and a great number of other examples of the kernel to kernel variation in quality in normal batches of grain are the background for the development of the TriQ sorting technology. The development work was started in 2001 and the key element was of course to develop a high speed detecting system, but it was equally important to develop a high-speed positioning system for single kernels. The results of that development work will be presented. The present status is that there now are full scale TriQ sorters available to the market. The smallest module - TriQ20 - has a capacity of 2 tons per hour and is stackable to sorters with a capacities of up to 24 tons per hour. Each 2 t/h module is measuring the quality of the endosperm in 15 000- 20 000 individual kernels per second and distributes these kernels one by one into one of three fractions. The average quality of the kernels to be collected in either one of these three fractions are preset or fixed to the desired values at the start of the sorter. The limits for the sorting can, however, also easily be adjusted during operation. BoMill is today strongly focusing on a small number of applications, which are picked out to give the sorted grain and thereby the customer a high added value. Pioneer companies in Australia and Scandinavia have already bought and installed TriQ sorters for : recovery of Biscuit Wheat from feed wheat ; upgrading of Durum Wheat by sorting out admixed barley and bread wheat kernels ; and for sorting downgraded Malting Barley into a prime and a feed fraction. The added values obtained from sortings on these early installations show a pay off time for the investment well below 1-2 years based on one or two shifts operation.

Exploiting the values hidden in the present average figures for grain qualities has just started. The number of future applications are legio. We have for ex. from batches of normal Danish Malting Barley sorted out fractions that, after malting, differ with a factor of 15 in filtering speed in the brew house ! Our goal is to apply the single kernel perspective to future grain handling and thereby offer new commercial values to the grain traders and the processing of grain. The near future will tell if we are successful or not, but a success for certain includes to bring not only pioneers to look at the natural variation in quality from one kernel to the other in any standard lot of grain not as a nuisance but as an asset full of new potentials.