



Fine Grind

What if you could get higher efficiency while maintaining throughput with a simple equipment addition?

Higher efficiency or higher capacity? Why choose?

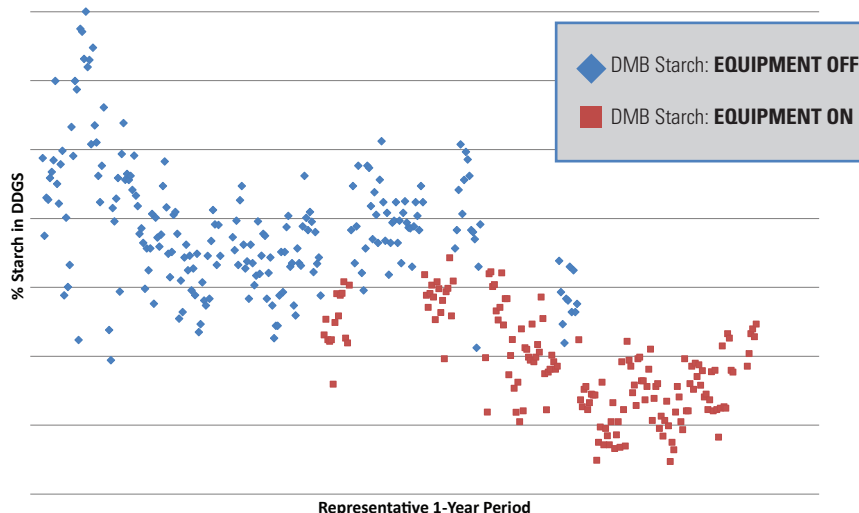
Plant management is faced with the dilemma of comparing the cost of incomplete fermentation with the reward of more ethanol production. ICM's new Fine Grind solution helps you have it both ways.

Benefits of Fine Grind Include:

- **Ethanol yield increase** – ICM R&D studies have demonstrated an increase in ethanol production levels between 1.3% and 2.0%, with potential for even more. For a 100 MGY plant running at nameplate rate, assuming a modest \$2.25/gal. ethanol price, this could result in \$2.9 million to \$4.5 million annually in increased revenue*.
- **Reduced enzyme use** – More available starch provides opportunity for more efficient enzyme use.
- **Decreased centrifuge and dryer load** – Passing unfermented starch through the process results in residual starch in whole stillage, which means more starch in wet cake or dried distillers grains. Fermenting additional starch made available by Fine Grind removes load from centrifuges and dryers, and also has the potential to increase bulk density of your DDGS, thus allowing more weight (product) per rail car or trailer.
- **Platform technology investment** – ICM's Fine Grind technology offers tremendous value in itself, and also is the only Fine Grind system that positions your plant for the next technological innovation to come. ICM has plans beyond Fine Grind, and we are happy to share this information with interested customers.

ICM Test Data - Residual Starch*

Representative Decline in Milled Feed as a Component of DDGS
With and Without a Fine Grind Process



the energy of innovation™

**For general information purposes only. Includes summary projected data not based on historic performance at a particular plant. The performance and results shown is not guaranteed for any particular project.*



Not all Fine Grind Systems are Equal.

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Do you have the next step in mind?

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Contact us for a quote!

Learn more about this and other services ICM offers to meet your plant's needs!

Call our Customer Service department today.

877.456.8588

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All ethanol is not created equally

The effectiveness of your grind and cook processes has a direct relationship with the amount of sugars made available for fermentation, and therefore with final ethanol yield potential.

Starch that is not made available to yeast can pass through fermentation untouched, exiting the plant as lost potential as a component of distillers grain. These residual starches are not only lost ethanol potential, but they also add increased load on downstream equipment such as your centrifuges and dryers.

ICM has put our team to the task of increasing the fermentation efficiency, and one of our answers involves increasing the effectiveness of pre-fermentation processes. Our Fine Grind system provides more thorough shearing of the ground grain particles, making starch more available for conversion to sugars.

At the microscopic level, not all particles within the slurry are equal. Some are large particles comprised entirely of starch that simply need to be broken into smaller pieces for effective conversion. Others are particles of fiber that should remain large enough for separation equipment on the back side of the plant.

There are also combinations of starches bound to proteins, fibers, and/or fats. These particles must be rolled or sheared to allow the starch to be freed.

These microscopic challenges respond well to a fine grind process like ICM's Fine Grind technology that doesn't necessarily drive toward uniform particle size but instead focuses on freeing starch while maintaining fiber particle size.



Want to know your specific opportunity?

ICM has identified pre-screening criteria that can be plugged into our economic model to give realistic expectations for increased production. Every plant has unique opportunities. Let ICM help you see where you can most benefit from the implementation of ICM's Fine Grind system.



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