



Dry Corn Fractionation

Increases in efficiency, capacity, and valuable co-product streams lead to additional plant revenue

As the corn-to-ethanol industry matures, it is becoming increasingly difficult to secure funding for new facilities, and lenders are requiring that projects employ creative new solutions that go beyond the traditional model. A changing economic outlook is also prompting existing plants to explore innovative means of revenue diversification to protect their facility from challenging margins.

ICM's Dry Fractionation system offers a solution. Today, it creates new financial opportunity, reduces common expenses, and opens the door for the integration of even more revenue-generating solutions. As key technology necessary for cellulosic ethanol production from corn, Dry Fractionation is also the first step to a new generation of biofuels.

New revenue streams, increased production, decreased resource consumption

With tight margins, it is especially critical for ethanol producers to increase revenue and decrease expenses wherever possible. As many plants are looking to new technology to enhance financial performance, ICM is leading the way by offering profitable solutions. Our new dry fractionation process, designed specifically for the ethanol industry, has the ability to increase capacity and efficiency, as well as produce new and higher-value co-products. Dry Fractionation, the first step in our Total Kernel Optimization (TKO) technology package, can help your plant become among the most profitable and efficient in the industry.

As ICM focuses on building a strong future for our industry by evaluating and developing new technology, many of the most exciting possibilities are dependent upon the dry fractionation process. These opportunities will improve the bottom line in existing plants. Dry fractionation provides a unique model as project groups attempt to differentiate their proposed plant in a market where obtaining financing is difficult.

A bridge to cellulosic ethanol

Though commercially feasible cellulosic ethanol is still a few years away, integrating Dry Fractionation equipment today will position your plant to become one of tomorrow's first producers of cellulosic biofuels.

The bran produced through fractionation is today's most promising feedstock for near-term cellulosic ethanol success. Unlike corn stover, switchgrass, and other proposed cellulosic feedstocks, the bran is always readily available at the plant, and it requires no complex harvesting, transportation, or storage logistics. Those ethanol producers who integrate dry fractionation will have a head-start when cellulosic technology is ready for implementation. ICM's model includes a cellulosic facility operating alongside a traditional plant, sharing energy and infrastructure while enjoying a position as one of few early producers supplying fuel to help meet the mandated market of 16 billion additional gallons of cellulosic biofuels by 2022.





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Find out what adding Dry Fractionation can do for your bottom line

Learn more about this promising technology as well as the 30-plus other products and services ICM has developed to meet your plant's needs! Call our Customer Service department today.

877.456.8588

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Additional revenue through new co-product streams

After cleaning and conditioning, our dry fractionation process uses mechanical separation to break the corn kernel into purified fractions: endosperm, bran, and germ. Adding revenue to every gallon of ethanol production, markets include:

- **Endosperm**
 - » Increased ethanol capacity
 - » Food-grade snack grits
 - » High-protein, low-fiber, low-oil DDG competes against soybean meal
- **Germ**
 - » Food-grade corn oil extraction
 - » Feed-grade spent germ
- **Bran**
 - » Feed-grade product
 - » Gasification feed stock for steam production

Guaranteed increase in ethanol production capacity

Fractionation reduces the volume of relatively non-fermentable high-fiber and germ co-products, creating more capacity in fermentation vessels and increasing throughput. For example, a 110 MGY plant employing dry fractionation will be guaranteed at a new rate of 130 MGY.

Decreased enzyme usage

The absence of non-fermentable materials makes the cook and liquefaction process more efficient, resulting in increased enzymatic activity and a 20-25% reduction in enzyme usage.

Reduced natural gas consumption

Typically an ethanol facility's second-largest expense, natural gas, can be reduced by millions of dollars by integrating dry fractionation and gasification. DDG drying typically represents a large part of gas consumption; removing the bulk of the solids handled by the system reduces the dryer load by 50%. Additionally, utilizing the bran as a fuel via gasification eliminates approximately 40% of the entire plant's natural gas usage. This reduction lowers your plant's CO₂ footprint and also allows ICM to lower our natural gas usage guarantee. Further reductions are possible through gasification or combustion of bran and syrup.

A platform for emerging technologies

Dry fractionation puts plants in a position to capitalize on existing and near-term technological innovations that rely on corn fractions. A dry fractionation system is also essential for the implementation of promising emerging technologies, including:

- Food-grade protein extraction from germ
- Single cell protein
- Cellulosic fiber conversion



the **energy** of innovation™

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