Industry Trends: Renewable Chemical & New Products from Existing Ethanol Platforms

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FQPT Technologies

GREENFIELD PLANT
2017

MSC™
2009

CST™
2016

SGT™
2010

TSC™
2011

FLEX PLANT™
2015

BOS™
2011

MSC MAX™
2017

FBP™
2014

ENERGY  ETHANOL  FIBER  OIL  PROTEIN
Diversification Platform – FQPT Technologies

Typical ethanol process:
- Grain → Milling → Liquefaction → Fermentation → Distillation → Separation and Drying

Clean Sugar Technology™
- Crude Dextrose → Separation and Purification
- Refined Dextrose
- C6 Sugars

MSC™ Separation Technology
- Whole Stillage
  - Paddle Screens: Cake, Wet Pearl/Dried/Pellets
  - Pressure Screens: Fine Fiber, Blow-Down Decanters, Fiber Cake, Rotary Dryers
- Centrate
  - Clarifiers, Clarified Stillage, Evps, Syrup
  - Backset, Protein Decanter, Protein Cake, Ring Dryer

Products:
- Still Pro Fiber™
- High Protein DDGS
- Corn Oil
- Still Pro 50™
Diversification through Renewable chemicals

Glucose
Fructose
Maltodextrin

via
Fermentation or Catalysis (by others)

CST® Process
Sugars from the Dry Grind Process

Figure 1: The Emerging Biorenewable Chemical Industry circa 2013. Source: ICIS
Clean sugar from an dry grind plant today

Installed First Full Scale
Clean Sugar Technology™

- 25,000 bu/day (635 MT/day) Corn Capacity
- Start-Up: Aug 2016
- Generates aqueous clean glucose stream in a traditional dry grind process, which is fed directly to downstream Biochemical process

FQPT does not make the chemical, we make the chemical at a lower cost, through the FQPT Clean Sugar Technology
Diversifying through protein

The **best** opportunity for ethanol plants to is diversify revenue through new co-products...high protein and other differentiated products

- Protein Co-Products are Marketed Driven Revenue **NOT** Legisllated Revenue
- Staggering increase in world demand for high-value proteins tied to the global increase in animal meat consumption – global protein demand 10 - 20MMT/yr
- Protein market 2015 value = **$7.7B**, growing to **$10.1B** in 2020
- Endless market opportunity not tied to ethanol or corn/DDGS
- Move away from energy based markets to a more discipline protein market
Product diversification pathway – protein and fiber

Maximized Stillage Coproducts™ System

- Whole Stillage
  - Paddle Screens: Cake → Fiber
  - Pressure Screens: Fine Fiber → Blow-Down Decanters: Fiber Cake → Rotary Dryers
  - Centrate: Clarifiers: Clarified Stillage → Evaps: Syrup
  - Backset: Protein Decanter: Protein Cake → Ring Dryer

- Still Pro Fiber™
- High Protein DDGS
- Corn Oil
- Still Pro 50™
Diversification – do nothing is **NOT** an option

- What is it
- Why is it important
- What is the right strategy
- How to effectively
Why FQPT?

Fluid Quip Process Technologies was founded on extensive experience and knowhow within the corn wet milling and ethanol production industries. FQPT’s engineering and technical leadership team has been developing new technologies and process solutions applicable to the biofuels and biochemical industries for more than 25 years.

Let’s get started

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