



SUMMARY

SYNGENTA®

Industry

Agriculture, Chemicals,
Biotechnology

Business Value

- Operational Intelligence
- Inter-Enterprise Collaboration
- Remote Monitoring & Diagnostics
- Process Efficiency
- Sustainability
- Customer Trust

PI System™ Components

- Connected Services
Licensing Agreement
- PI Server™
 - Data Archive
 - Event Frames
 - Asset Framework (AF)
- PI DataLink™
- PI ProcessBook™
- PI Manual Logger™ (PI ML)
- PI Vision™

Building Customer Relationships Based on Data and Trust

How can genetic biotechnology, an ethanol plant and operational data benefit an entire community? Syngenta is a global company with more than 29,000 employees in 90 countries and revenues of over \$14 billion USD. By delivering seeds, seed care, and lawn and garden products, its mission is to bring plant potential to life, supporting a sustainable transformation in farming productivity and communities.

Through genetic biotechnology, Syngenta develops seeds with traits such as insect resistance or water optimization that adapt to growers' needs. How does Syngenta technology connect back to an ethanol plant? Enogen® technology is the first deregulated corn output trait, meaning that its benefit is realized when the grain is used at its end destination – in this case, at ethanol plants. Enogen corn expresses the alpha-amylase enzyme in the grain itself.

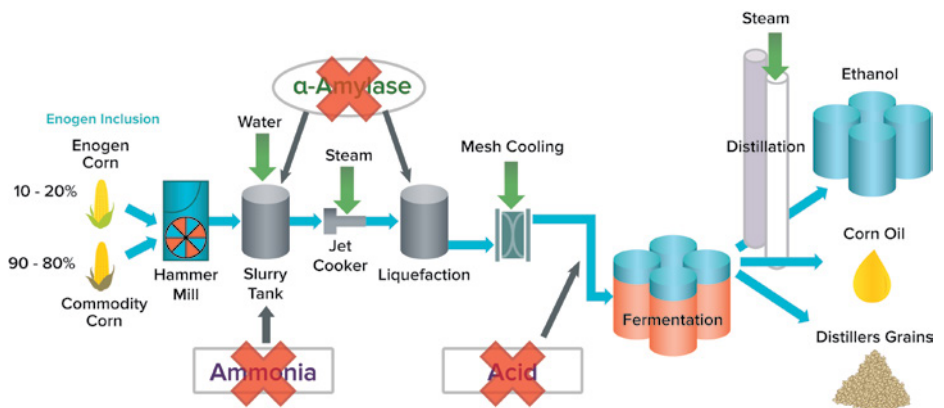


Figure 1. Enogen Impact: Dry Grind Ethanol. The PI System provides the ability to monitor, analyze, measure, and visualize the operational impact of using Enogen. Enogen reduces energy, water, and chemical costs by incorporating amylase into corn feeding ethanol distillation process.

Traditionally, ethanol plants purchase and add chemical alpha-amylase to break down complex corn sugars to create a slurry that runs through the distillation process. Higher slurry viscosities increase energy and water use and over time, wear on plant equipment. Syngenta developed Enogen for the dry grind ethanol industry to improve alpha-amylase delivery and efficacy, reducing water, energy, and chemical costs. Their challenge was to develop a way to demonstrate that investing in Enogen technology would increase plant efficiency and yield while reducing overall costs.

Enter a Connected Services agreement from OSIsoft. While Syngenta delivers Enogen, their key product is ethanol plant efficiency. Syngenta engaged OSIsoft to deploy the PI System so they could access and analyze plant data to quantify operational benefits of Enogen corn. During initial trials, Syngenta worked with plants to agree on data definitions, financial models, and the financial value of operational KPIs. They modeled plant data with Asset Framework; used PI System Tools such as PI DataLink, PI ProcessBook, and PI Vision¹; and used Event Frames to validate data, record operational baselines, and calculate operational improvements linked with Enogen.

Ethanol Plant Improvements by the Numbers

In a **100-million gallon plant**, Enogen corn-enabled efficiency improvements can save:

- More than **68 million gallons** of water
- Nearly **10 million KWh** of electricity
- More than **350 billion BTUs** of natural gas while reducing carbon dioxide emissions by more than **100 million pounds**

Syngenta AG. Enogen Technology: Better Profit Potential. Better Efficiency. Syngenta.com. Apr. 2013. Print brochure. 25 Nov. 2014. <www3.syngenta.com/country/us/en/agriculture/seeds/corn/enogen/Documents/enogen_trifold_FINAL.pdf>

The OSIsoft Connected Services is a subscription-based Licensing Agreement that supports a commercial agreement between businesses. Service providers, OEMs and consultants can amplify the benefits of their services by connecting to their customers' PI System data in real-time. Syngenta recognizes that ethanol production strengthens local economies, provides jobs in rural areas and is an essential part of the U.S. energy equation. For Syngenta, the Connected Services helped establish a business relationship with ethanol plants based on trust. By using their customers' own data and KPIs, Syngenta can demonstrate that Enogen technology drives significant enhancements in process efficiency while increasing yield and throughput. Furthermore, the benefits extend beyond the ethanol plants; local seed resellers and growers also benefit, strengthening local economies even further. Finally, the flexibility of the Connected Services allows Syngenta to expand its data services as more ethanol plants adopt Enogen technology. The PI System is a key to Enogen's role in Syngenta's "Good Growth" plan and reaching 2020 revenue goals. For more information, please visit: www.osisoft.com/templates/item-abstract.aspx?id=10970.

¹ PI Coresight was renamed to PI Vision in 2017

Sather, Mark. *Enogen® from Syngenta® Our Path to Connected Services*. OSIsoft.com. 26 March 2014. Web. 22 April 2014. <<http://www.osisoft.com/Templates/item-abstract.aspx?id=10970>>.

[With Connected Services] “we have developed a full partnership with us as a supplier and our ethanol plants as consumers. Our partnership is built on data, and our partnership is built on trust.”

– Mark Sather, PMP
Enogen Project Lead