



**HONEYWELL
FORGE**

PROCESS SOLUTIONS

Advanced Process Control Benefits
Hankinson Ethanol Plant

Case Study

“The Hankinson plant saw a total value of control improvement of almost \$800,000 in a payback period of about eight months.”

- Hankinson Plant, Hankinson, North Dakota

BACKGROUND

Hankinson Renewable Energy, LLC, is one of the Midwest's largest ethanol plants, located in Hankinson, North Dakota.

The Hankinson plant was designed by ICM Inc., of Colwich, Kansas. ICM also supplies licenses for more than 100 plants nation-wide.

CHALLENGE

ICM Inc. supplies process licenses for grain ethanol plants, which are identified by generation

- 1st Generation plants use corn or grain sorghum as feedstock
- Generation 1.5 plans use add-on kernel husk as feedstock
- 2nd Generation plants will use multi-cellulose materials as feedstock (beginning in 2014)

After suffering through a drought during much of 2012, the Hankinson

plant was challenged with high prices or feedstock unavailability since much of the corn crop was lost.

The advantages of APC technology could help to make huge improvements

SOLUTION

Honeywell Forge Advanced Process Control's Multi variable control Online Modeller automatic step testing and identification software tools, and Honeywell Forge Advanced Process Control operator interfaces.

Project steps included:

- Kick off and pre-testing
- Preliminary design
- Step testing and model identification
- Commissioning
- As-built documentation



The Hankinson plant is at the generation 1.5 stage, which means it can use add-ons like kernel husks as additional feedstock.

RESULTS

The Hankinson plant saw control improvements in the following areas:

Thermal Oxidizers/HRSGs:

- Gas/steam ratio of TO1 reduced 1 percent
- Gas/steam ratio of TO2 reduced 5.6 percent

Dryers

- Product moisture increased 0.67 percent, variability reduced 20 percent
- Gas usage reduced 4.45 percent, production increased 6.38 percent

Centrifuges:

- Amps variability reduced 56 percent
- Centrate variability reduced 31 percent

From an economic benefit perspective, the Hankinson plant experienced the following:

- Natural Gas Cost Reduction \$116,055*
- Selling more water as DDGS \$675,248

Total value of control improvement: \$791,303

Payback period – eight months.

*Gas usage reduction in spite of 6.38 percent production rate increase.

The Hankinson Honeywell Forge Advanced Process Control (APC) project was intended to improve control and reduce variability, lower energy usage, and increase dried distiller's grain with solubles (DDGS) moisture closer to spec limit.

ABOUT HONEYWELL FORGE ADVANCED PROCESS CONTROL'S MULTI VARIABLE CONTROLLER

Multivariable Controller is an integrated component of Honeywell Forge Advanced Process Control for advanced control and optimization. It includes the tools necessary to design, implement and maintain multiple in- put/multiple-output (MIMO) Honeywell Forge Advanced Process Control applications. It has the unique ability to maintain superior process control even with significant model mismatches that result from underlying process changes.

Multivariable Controller utilizes a dynamic process control model to drive maximum value by predicting future process behavior. It delivers optimal process control response by using the minimum manipulated variable movement necessary to bring all variables within limits or to set points. With Multivariable Controller, users not only benefit from project payback periods of less than a year but also from sustained benefits that exceed the industry norm.

For more information

To learn more about Honeywell Forge Advanced Process Control, visit our website hwl.co/advancedprocesscontrol or contact your Honeywell account manager

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