ETHANOL PRODUCTION

SUMMARY

Goals:

- Consistent starch cooking
- Reduce enzyme usage
- Decrease cook times
- Higher ethanol yield per bushel

Accomplishments:

- Installed K500 Hydroheater (Jetcooker™)
- Accurate temperature control
- Reduced enzyme usage
- Decreased cook times
- Increased ethanol yield

Need more information about Hydro-Thermal products?
Go to www.hydro-thermal.com or contact us at info@hydro-thermal.com

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HH-030 RevC/2015

A major engineering firm that designs ethanol plants was looking to replace an alternative method of heating that was inconsistently cooking the starch in the liquefaction state (primary starch conversion process). This alternative method increased enzyme usage, lengthened cook times, lowered ethanol yield per bushel, and had poor energy efficiencies.

CONDITIONS

Fluid:	Up to 39% dry milled corn starch
Flow Rate:	Varies; 100-1600 GPM [.4-6 m^3/hr]
Inlet Temperature:	Varies; 80-180˚F [27-82˚C]
Discharge Temperature:	200-300˚F [93-149˚C]
Temperature Rise per Pass:	Min: 20°F (11°C), Max: 220°F (122°C)
Steam Supply Pressure:	Varies; 15-70 PSIG [1-4.8 barg]

SOLUTION

A K500 Hydroheater®, also known as the JetCooker™, was installed to optimize starch conversion by controlling both temperature and mechanical shear precisely in a continuous process with variable flow rates. The device allows the user to adjust the liquid pressure drop across the Hydroheater. This allows the operator to maintain a consistent mechanical shear for optimum starch/steam interface even at flow rate changes as extreme as a 2:1 turndown ratio while holding the temperature set-point to within +/-1°F. [0.5°C]

Having standardized on the K500 Series, the company has produced hundreds of millions gallons of ethanol in the U.S. alone, with a Hydroheater at the heart of each production plant.