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INDUSTRY FOOD PROCESSING

APPLICATION STARCH COOKING FOR HIGH FRUCTOSE CORN SYRUP

COMPANY *Major U.S. Producer of High Fructose Corn Syrup*

OBJECTIVE *Provide efficient and reliable method to cook corn starch in liquefaction stage for high fructose corn syrup production.*

DESIGN CONDITIONS

Fluid:	38% Corn Starch Slurry
Flow Rate:	1,050 GPM
Inlet Temperature:	125 Degrees F
Discharge Temperature:	225 Degrees F
Steam Supply Pressure:	150 PSIG
Hydroheater® Model:	K415AS

PROBLEM

A major U.S. high fructose corn syrup producer was experiencing difficulties cooking corn starch in the liquefaction stage with a competitive jet cooker. The competitive jet cooker was unable to provide completely cooked starch and required a static mixer downstream. In addition, the competitive unit was unable to operate under the varying production rates dictated by seasonal demands without hammer and instability.

SOLUTION

The solution to the problem was to install an automatic Hydroheater. The Hydroheater is the only jet cooking device which provides a fully adjustable mechanical shear force to insure a complete cook-out of starch. In addition, internal modulation of steam in the Hydroheater provides for unlimited steam flow turndown enabling the Hydroheater to operate smoothly over varying slurry flow rates and temperature requirements. For this reason, the Hydroheater has been the jet cooker of choice for this application used throughout the world. The simple geometry of the Hydroheater allows it to operate day in, day out without plugging or fouling. The adjustable combining tube enables the user to fine tune the amount of mechanical shear force at the slurry inlet to ensure a uniform cook. In addition to smooth, hammer-free operation, internal modulation of steam assures precise temperature control of the cooked starch.

RESULT

Installation of the Hydroheater has proven the inherent advantages of its design. The cook is complete and uniform with a homogeneous solution provided for saccharification. The static mixer has been eliminated from the system. The plant is now able to operate under variable

production demands while maintaining a consistently high quality cook from the Hydroheater. Downtime has not been required for cleaning the Hydroheater due to its self-cleaning design.

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