



GLOBAL ETHANOL

COMPANY BACKGROUND

Global Ethanol produces four primary products: fuel grade denatured ethyl alcohol, or ethanol; Distillers Dried Grains with Solubles (DDGS) for the feed market; Wet Distillers Grains with Solubles (WDGS); and corn oil that can be sold as a feed ingredient or further processed into bio-diesel.

Global Ethanol employs over 50 people at two locations, including Lakota, Iowa. Production at Lakota requires approximately 34 million bushels of corn annually. At the two production sites, over 160 million gallons of ethanol are manufactured.



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PROJECT BACKGROUND

The intern focused on several project areas to improve process efficiency and optimize resource allocation. These included dryer optimization, energy and water recovery opportunities, and water conservation.

INCENTIVES TO CHANGE

Global Ethanol is positioning itself to be a global leader in the renewable fuels industry through operational excellence, strategic capacity expansion, technology enhancements, pre-eminent risk management, marketing and distribution capabilities.

RESULTS

Dryer Instrumentation: Dryers are the largest single use gas consumer at Global Ethanol. Repair or calibration of all instruments associated with dryer operation can improve efficiency between 1 and 5 percent.

Hydroheater Control: Steam injection is used to heat cook slurry and break down carbohydrates. Process modifications can reduce steam injection and reduce enzyme requirements, lower energy demand for the dryers, and conserve water.

Tank Level Control: Overflow of a process tank can result in product losses. Installation of make-up water flow controls would result in significant savings.

Stack Economizer: Energy and water can be recovered by installing a condensing economizer on the TO stack.

Lighting Controls: Sensors and controls to regulate lighting when an area is not occupied will save electricity.

Mechanical Insulation: Removable insulation pads on steam piping will substantially reduce heat losses.

Heat Exchangers: Replacing the direct steam injection system with heat exchangers will reduce boiler pre-heating requirements as hot condensate is returned to the deaerator.

PROJECT	ANNUAL COST SAVINGS	ENVIRONMENTAL RESULTS	STATUS
DRYER INSTRUMENTATION	\$86,000	11,168 MMBTU	IN PROGRESS
HYDROHEATER CONTROL	\$670,000	41,558 MMBTU 5.25 MGAL WATER	RECOMMENDED
TANK LEVEL CONTROL	\$250,000	**	RECOMMENDED
STACK ECONOMIZER	\$280,000	36,364 MMBTU 30 MGAL WATER	NOT RECOMMENDED AT THIS TIME
LIGHTING CONTROLS	\$600	15,000 KWH	IMPLEMENTED
MECHANICAL INSULATION	TBD	TBD	IN PROGRESS
HEAT EXCHANGERS	\$480,000	62,338 MMBTU	RECOMMENDED

**Savings are realized from avoided costs of land application.



Air Pollutants Diverted in Tons

	Total for all sectors
SO2	2.98
CO	5.5
NOX	3.2
VOC	6.78
PM	0.298

Green House Gases Diverted in Tons (CO2 Equivalent)

	Total for all sectors
CO2	1067
CH4	1760
N2O	4.47
CFCS	13.42