How to Avoid Project Failure
Hurst Boiler & Welding Co., Inc.

Presenter

Gene Zebley
Biomass Energy System
Sales Manager

Technology: Close-coupled Gasification

Feedstocks: Over 2,000 types of solid fuels

Output: Thermal Gas, Steam, Hot Water

Size Range: 3-300 mmBTU

Commercial Status: Incorporated 1967, 350 employees

Projects Installed: >1,000

Target Market: Industrial, Institutional, HVAC

Competitors: Messersmith, Chiptech, AFS

- System Application Analysis
- Fuel Analysis
- Emission Permitting
- Power Purchase Agreement
- Incentives
- ROI Analysis

DUE DILIGENCE!!!!!

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STEAM PLANT DATA SHEET

SECTION I. EXISTING STEAM/HOT WATER SYSTEM DATA

Number of boilers: _____ Number normally on line: _____ Current load: _____

How is the steam or hot water utilized by your firm?

_____

_____

	Rating: BHP or lbs/hr	Operating % of Rating	Operating Pressure	Type: Water or Fire Tube	Mfg.	Hrs. On Line / Day
Boiler #1						
Boiler #2						
Boiler #3						
Boiler #4						

Boiler(s) operate _____ days/week _____ months/year.

Total steam consumption (lbs/hr): Peak _____, Average _____, Minimum

What is the plant's operating schedule? _____ hours/day, _____ days/week, _____ weeks/year.

Boiler fuel: ☐ Natural Gas ☐ #2 Oil ☐ #6 Oil ☐ Biomass ☐ Other Please list:

BTU content: _____ Cost per unit ($): _____ Quantity/year or month:

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If utilizing multiple fuels, please indicate approx. ratio of fuels used: _____

Please indicate TOTAL fuel consumption.

Do you anticipate any major changes in steam consumption? ☐ Yes ☐ No

Please explain:

If you have waste biomass fuel, please complete the next section.

SECTION II LOW VALUE OR SURPLUS BIOMASS FUEL

Is low value or surplus biomass fuel available or produced? ☐ Yes ☐ No

How much waste fuel is available? _____ Tons per _____.

How much of this amount is over and above what is currently being utilized? _____ Tons per _____.

Please describe the fuel:

_____

Heating value of fuel: _____ BTU/lb. Moisture content (wet basis) of waste fuel: _____ % M.C.

If this fuel is sold, what is its value? $ _____ per ton.

If this fuel is sent out for disposal, what are the tipping fees paid? $ _____ per ton.

If you want us to evaluate your plant's cogeneration potential, please complete the next section.

SECTION III COGENERATION (Please attach a copy of a recent, typical electric bill.)

Voltage: _____ Hertz: _____ Peak demand: _____ KW Average demand: _____ KW

Average demand during non-operating hours: _____ KW

Name of local utility:

Electric bill is $_____ per _____. (month/year)

Average cost per KWH is $0._____ per KWH. Average cost per KW (demand) is $0._____ per KWH.

Average number of KWH's purchased per month: _____ KWH

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MATERIAL Distillers Grain

LABORATORY NO. 429,528

PER POUND BASIS	AS ANALYZED	DRY BASIS	ASH & MOISTURE FREE	AS RECEIVED
MOISTURE	10.94	0.00	0.00	10.94
VOLATILE	74.44	83.58	86.96	74.44
FIXED CARBON	11.16	12.53	13.04	11.16
ASH	3.46	3.89	0.00	3.46
SULFUR	0.66	0.74	0.77	0.66
BTU	8,425	9,460	9,843	8,425

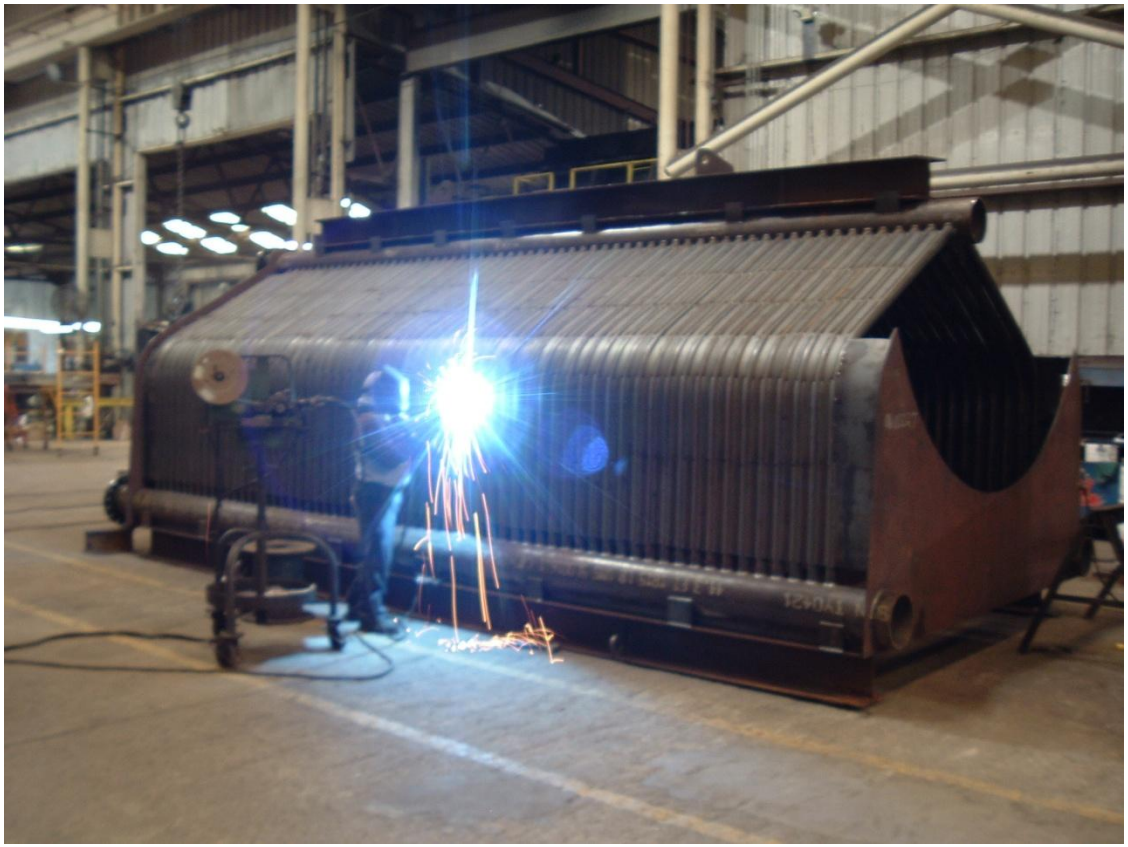
The New Federal MACT Rules

<10 mmBTU input
Regulated locally, requires basic mechanical particulate collection and intermittent system tuning and reporting

>10 mmBTU - <30 mmBTU input
Federally regulated, Maximum particulate emission of 0.07 lb/mmBTU input

>30 mmBTU input
Federally regulated, Maximum particulate emission of 0.03-0.025 lbs/mmBTU input

If the project survives the evaluation of incentive opportunities and the final ROI analysis of the project……it's time to get to work.



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ST Paper

Oconto Falls, Wisconsin

Role of Firm	Design & build project, Boilers, Fuel storage system & Emissions Equipment
Project Owner	ST Group
Project Reference	Mark Burgess 1-920-846-0563 Ext 212
Duration of Project	Spring 2007 – fall 2008 Start- up
Project Cost	n/a
Project Financing	n/a
Performance Results	n/a

Project Description: The Plant was operating with outdated Natural gas fried boilers. Also the disposal of their paper byproducts were becoming very costly due to transportation & landfill costs, Hurst designed a steam plant to burn excess paper sludge & Wood Construction to help lower overhead cost. With this in mind the company also received a grant from focus on Energy from the state of Wisconsin for a total of $237,500.

The system utilizes a "state of the art" control system that will allow the boiler to automatically feed, fire and de-ash, without the operator ever leaving the control room.

The following components were provided:

- 1-1500 Hp biomass fired steam boilers
- Combustion furnace with Reciprocating grate stoker
- 50,000 Lb/Hr Deaerator system with 2 pumps
- 2- 6 Section walking floor system. 3 sections for sludge, 3 sections for construction debris
- Dry Electrostatic Preciprortator
- Hurst Biomaster control system
- 2 water cooled Ignition arches
- Site work included the supervision of the above listed Equipment.

Hurst BOILER

Provided by Gene Zebley (229) 346-3972 (229) 319-1885 gzebley@hurstboiler.com

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Moose River Lumber Co

Moose River, Maine

Role of Firm	Design & build projects, boilers & turbine equipment
Project Owner	Moose River Lumber Co.
Project Reference	Charlie Lumbert, Owner (207) 668-4193
Duration of Project	The boiler was sold summer of 2007 & commissioned spring of 2008
Project Cost	n/a
Fuel	Wet (50% MC) woody biomass
Performance Results	As specified.

Project Description

Moose River is a large saw mill that was operating a fuel oil boiler while generating tons of waste wood, until the company noticed the potential payback of a biomass system. In the summer of 2007, Moose River purchased a new biomass boiler to displace around 500,000 gallons of fuel annually. The return on this investment is expected to be less than three years. This is what caught the eye of Moose River's owner, Charlie Lumbert.

The following components were provided:

- S 600 bhp, 450 psi design pressure biomass fired steam boiler
- Gasification unit with automatic deashing reciprocating grate stoker
- Multi-cyclone fly-ash arrestor
- 25,000 lb/hr deaerator system with four (4) pumps
- Hurst BioMaster control system (UL Listed)
- Turbine & associated equipment will be provided by Thermal Systems, Inc.
- Six (6) section walking floor system with screener & conveyor
- Sire work included installation supervision of the equipment listed above

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Hanes Wear

Dos Rios, Dominican Republic

Role of Firm	Design & build projects, boilers, fuel storage system & emissions equipment
Project Owner	Intrinergy
Project Reference	Dale Coy (336) 519-2581
Duration of Project	Jan 2008 – Feb 2009 Start- up
Project Cost	n/a
Fuel	Mixed woody biomass, rice hulls, RFD
Performance Results	As specified.

Project Description

Hurst updated the steam plant from existing natural gas boilers to biomass boilers that fire rice hulls. This system provides combined heat & power to the facility. The system utilizes a "state of the art" control system that will allow the boiler to automatically feed, fire and de-ash, without the operator ever leaving the control room.

The following components were provided:

- Two (2) 1200 bhp, 450 PSI design pressure biomass fired steam boilers
- Gasification unit with flaking grate stoker
- Heavy duty ash conveyor with a common ash discharge conveyor
- 80,000 Lb/Hr deaerator system with 4 pumps
- Two (2) 6 section walking floor systems with oversize screener & conveyors
- Power generation equipment (provided by end user)
- Multi cyclone Fly ash Arrestors as primary pollution equipment
- Hurst BioMaster Control System (UL Listed)
- Feedwater Economizers
- Superheated steam
- Extended waterwalls for dry fuel combustion
- Site work included installation supervision of the above listed equipment

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In conclusion, successful biomass energy projects do exist. It requires hard work, good engineering and very good communications. If all the parts come together then this could be the result…….

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