



"RENTECH Boilers for people who know and care."®

Packaged Boiler Systems. . .

Proposal to

Worley Parsons

Attn: Jared Foster

For

The supply of

*One (1) 24,000 lb/hr Boiler
(20,000#/hr net)*

150 psig operation @ 460°F ±10°F SH

Rentech Proposal No. DTB-HK-6709-0

June 8, 2009



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General Design Parameters

The boiler systems described in this proposal have been designed for the following parameter:

Steam Conditions

Capacity	24,000 lbs/hr (20,000#/hr net)
Steam Pressure:.....	150 PSIG
Steam Temperature:.....	460 ±10 deg F.
Steam Purity:.....	1.0 PPM TDS
Feedwater Temperature:.....	228°

Fuels Fired:

Primary Fuels:..... Propane

Unit Design Pressures

Boiler:..... 250 PSIG

Technical Discussion

To meet your process and mechanical requirements, we are pleased to offer one (1) shop assembled, D-Style watertube boiler. The boiler will have a design pressure of 250 Psig and will generate 24000 lbs/hr of superheated steam at 460°F± 10° F at an operating pressure of 150 Psig with feedwater supplied at 228°F, and firing the indicated fuels.

The membrane wall construction of the furnace minimizes the need for refractory and refractory seals. By eliminating the refractory front and rear walls, faster start-up times are possible without costly refractory damage. This design is ideal for boilers that operate under adverse conditions such frequent start and stop operation. The design can also significantly reduce maintenance costs and extend the life expectancy of the unit.

The proposed boiler has been carefully designed for your specific application with regard to:

- Membrane wall construction
- Conservative furnace size to assure long equipment life
- Tube thickness Convection (0.120" min. wall)
- Tube thickness Membrane (0.135" min. wall)
- Boiler design for low maintenance and long life expectancy



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Scope of Supply

Each Boiler furnished by Rentech will be equipped as follows:

Scope of Supply	Included	Not Included	Option
Packaged Boiler	X		
Steam Trim			
Safety Valves	X		
Main Steam Stop Valve	X		
Main Steam Non-Return Valve	X		
Water Column w/ gauge glass	X		
Auxiliary low water cutout	X		
Steam Gauge	X		
Continuous Blowdown Stop & Control valves	X		
Blowoff Valves	X		
Chemical Feed Stop & Check	X		
Vent	X		
Feedwater Trim			
Stop Valve	X		
Check Valve	X		
Flow Control Valve	X		
Feedwater control valve bypass	X		
Super heater Assembly			
Integral Convection-type superheater rated for 460°F ± 10°F.	X		
Interconnecting superheater piping from boiler outlet to superheater inlet.	X		
Safety valve, vent valve and drain valve.	X		
Burner Assembly :			
Burner Register and Windbox	X		
Fuel Trains	X		
Flame Safety (Burner Management) System	X		
Combustion Control System with 3 element feedwater control (Utilizing AB compactlogix)	X		
Fan Assembly:			
Electric Motor	X		
Fan Silencer	X		
Structural Support with outlet duct	X		
Economizer Assembly			
Breeching into economizer	X		
Structural Support	X		
Outlet Transition to stub stack	X		
Feedwater piping w/ 3-valve bypass	X		
Deaerator Assembly:			
One (1) 100% capacity feedwater pump	X		
Two (2) Feedwater pumps	X		
Platforms and ladders.		X	
Trim including safety valve and gauge	X		



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Stack Assembly	Included	Not Include	Option
30" diameter by 40 ft. high economizer top mounted stack, fabricated of 1/4" carbon steel plate.	X		
All necessary nuts, bolts and gaskets as required for flanged bolt field erection.	X		
Platforms & ladders to access EPA ports.	X		
Auxiliary's)			
SCR system (AFCU, vaporization skid, storage etc. to be by others)		X	
Chemical Dosing System		X	
Blowdown Tank		X	
Special Tools		X	
Spare parts		X	
Gas PRV	X		
Insulation of Ducts, Stack, drum heads		X	
Commissioning Spares	X		
Motor controls & Starters		X	
Miscellaneous			
Freight To Jobsite		X	
Field Engineering Service (per diem)		X	
Equipment off loading or Installation		X	
Interconnecting Piping, Wiring & Tubing between skid mounted equipment		X	

Terminal Points

The terminal points list is intended to define the limits of the scope of supply included in this proposal. Rentech will furnish the equipment and materials inside these terminal points as defined further in this proposal.

Steam

- At the outlet of the superheater outlet.

Water

- At the inlet of the FW control valve station. (piping between deaerator and FW control valve station by others)

Fuel

- Inlet to burner main gas fuel train

Electrical

- Inlet to miscellaneous connections for electrical equipment..

Structural

- Foundations and anchor bolts provided by others.



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Exhaust Gas

- Stack outlet

Combustion Air

- Forced draft fan inlet

Instrument Air

- Inlet to miscellaneous connections for control equipment.

Predicted Performance

The performance of each packaged boiler is as detailed below:

Fuel Fired		Propane
DESCRIPTION	UNITS	
System Performance		
Steam Flow	Lb/hr	20,000 (net)
Steam Pressure	PSIG	150
Steam Purity @ Drum Outlet	PPM TDS	1
Steam Temperature (100% - 25% MCR)	°F	460
System Efficiency	%	83.5
Emissions		
NOx	PPM @ 3% O2	9
CO	PPM @ 3% O2	50
VOC	PPM @ 3% O2	3
PM10	lb/mmbtu	0.005

Notes:

1. System performance guarantees are at 100% MCR only.
2. Feedwater temperature to boiler is 228°F.
3. Ambient temperature is 80°F.
4. The blowdown rate is as defined in the attached Predicted Operating Performance Tables.
5. Feedwater analysis must meet suggested Water Quality Limits per latest edition of ASME.
6. Boiler performance will be measured by a performance test based upon the principles of ASME PTC 4.1. Testing is to be by others.
7. The steam conditions are at the Rentech terminal points.
8. Emission guarantees are from 25% to 100% MCR. Refer to the attached burner proposal for other qualifications that apply to the above emission guarantees.

ASME Heating Surface

Convection Heating Surface	2160 sq. ft.
Radiant Heating Surface	684 sq. ft.
Total Heating Surface	2844 sq. ft.
Furnace Volume	1100 cu. ft



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COMMERCIAL INFORMATION

Price, FCA manufacturing plant Abilene, Texas

Capacity / Operating Pressure	Qty	Budget Price
24,000 lbs/hr @ 150psig	1	\$1,575,000.00

Refer to attached project notes and clarifications. Prices quoted do not include applicable taxes. Pricing is valid for 30 days from the date of this proposal.

Terms of Payment

- 10% With receipt of Purchase Order
- 10% Upon submittal of General Arrangement Drawings
- 30% Upon receipt of boiler tubes
- 20% Upon receipt of drum cylinders
- 10% Upon stabbing first tube
- 20% Upon shipment

Payment Terms: Net 30 from receipt of invoice.

Warranty: 12 months from acceptance, not to exceed 18 months from shipment
The design and workmanship of the membrane water cooled furnace front wall will be warranted for five (5) years from date of acceptance.

Shipment:

The following preliminary schedule is provided in full accordance with your specifications:

- Submittal of General Arrangement drawing with loadings and anchor bolt locations, ASME Code Calculations 8 weeks after receipt of purchase order. Drawings will consist of one set of prints and one diskette containing the drawings, in AutoCAD Release 12.
- Remaining submittal drawings submitted approximately 8-10 weeks after receipt of purchase order.
- Return of approved drawings 2 weeks after receipt of drawings.

- Shipment 36 weeks after drawing approval with authorization to purchase major materials upon receipt of purchase order
- The equipment as offered will be shipped FCA rail Natchez Adams County, Mississippi (subject to clearance availability).



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Approximate Unit Dimensions and Weight

Height to Steam Outlet	13'-4"
Width	11'-2"
Length Including Burner Windbox	25'-6"
Boiler Dry Weight, lbs.	56,000

Thank you for your interest in doing business with RENTTECH BOILER SYSTEMS, INC. We look forward to providing a prompt response to all of your questions, attention to all details, and a top quality boiler package. Please do not hesitate to contact myself if you have any questions, or concerns.

Sincerely,

Harry Kumpula
Rentech Boiler Systems Inc.