2004 DTE Energy Conference and Exhibition

February 18, 2004

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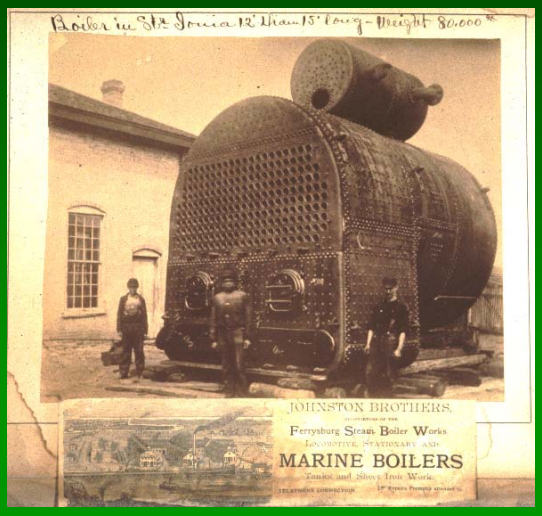
Johnston Boiler Company

Presentation Overview

- Description of Companies and Product Lines
- Stickle Deaerators
- Johnston Boiler Company
  - 3 and 4- Pass Water Backed Firetube Boilers
  - Waste Heat Boilers
  - Combined Waste Heat and Fired Boilers
- Johnston Burner Company
  - Standard Burners
  - Low NO_x (30 ppm)
  - Ultra Low NOx (Under 10 ppm)
  - Demonstrations and Installations
- Summary

Johnston Boiler Company

A New Company with nearly 140 Years of Experience



Johnston Boiler Company

We have built boilers for 140 years and Burners for 60 years

Johnston Boiler Company

Company Overview

Energy Solutions Group

Johnston Boiler Company
Fire-tube Boilers

Stickle Deaerators
Deaerators and
Heat Recovery Systems

Johnston Burner Company
Burners for New and
Retorfit Boilers

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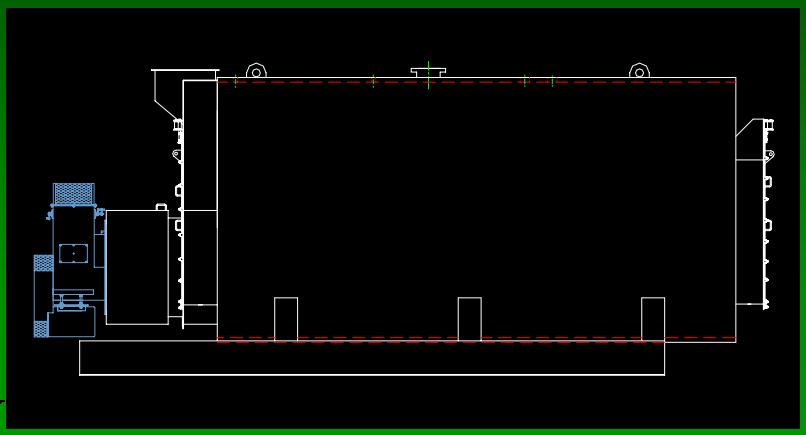
- Water Backed Design – 3 and 4 Pass Boilers



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Johnston 3 and 4 Pass Firetube Boilers

- Reputation as the best and most efficient firetube boiler on the market
- Each boiler is built to fit the individual application
- 50 hp to 2500 hp
- Section IV Heaters up to 160 psi Water and 15 psi Steam
- Section I Steam Generation up to 450 psi Saturated Steam

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Johnston 3 and 4 Pass Firetube Boilers Continued

- 15 Year Warrantee on the Tube Sheets and Flue boxes
- Generous tube sheet ligament distances
- 100% penetration welds
- Water backed design for all boiler sizes
- Boilers can be customized to meet individual needs

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Johnston's Approach to Heat Recovery

- Waste Heat Recovery Units
  - Industrial turbines up to 25 MW
  - Other industrial process waste heat applications
- Fire Tube Boilers
  - Single Pass
  - XID tubes
  - Combined Waste Heat and Fresh Air Fired

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Waste Heat/Fresh Air Fired Boiler

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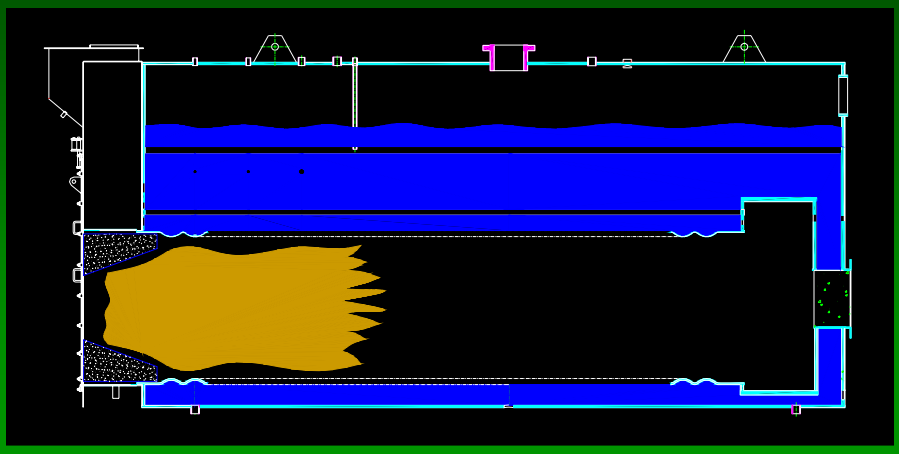
Waste Heat/Fresh Air Fired Boiler Design



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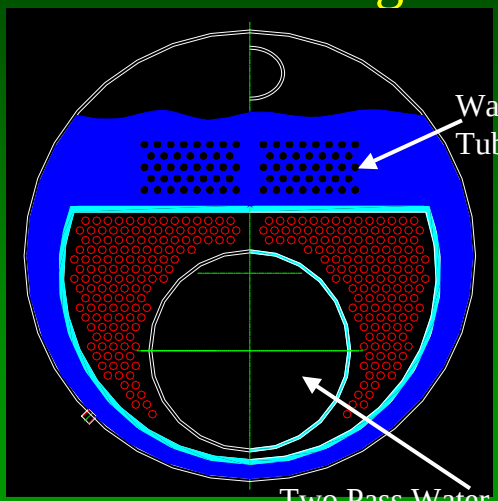
Waste Heat/Fresh Air Fired Boiler Design



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Waste Heat/Fresh Air Fired Boiler Design

- Firetube Boiler Section
  - 2-Pass Boiler with XID Tubes
  - 900 hp or 31,050 Lbm Stm/hr
- Waste Heat Section
  - 9744 Lbm/hr Waste Gas Flow Rate
  - Inlet Temp 1022 °F
  - Outlet Temp 384 °F
  - Generates 1000 Lb Stm/hr

One Boiler Shell Contains Both Boiler Surfaces

Design Pressure 200 psi and Operates at 140 psi

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Stickle Deaerators

- Spray and tray designs
- Continuous blowdown heat recovery
- High pressure condensate recovery
- Intermittent blowoff
- Vented receivers

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Johnston Burner Company

- In the burner business for 40 years
- Supply burners on Johnston Boiler Products
- Formed as a new company in Sept 2001
- Committed to supply new and retrofit burners
  - All boilers up to ~200 MBtu/hr
  - Gas and Oil
  - Low NOx

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Johnston Burner Products

- "A" Burner
  - Gas and Oil Burner
  - Standard emissions
  - Low NOx Option uses FGR
- "AR" Burner
  - Gas and Oil Burner
  - Standard emissions
  - Low NOx Option uses FGR
- "S" Burner
  - Gas and Oil Burner
  - Standard emissions
  - Low NOx Option uses FGR
  - 1800 hp to 2500 hp
- "J" Burner
  - Gas and Oil burner
  - Standard emissions
  - No Low NOx version
  - 50 hp to 200 hp
- "FIR" Burner
  - Gas only
  - Low NOx – Under 9 PPM
  - No External FGR is used

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Johnston's FIR Burner

- The FIR Burner was chosen to address the Under 20 PPM to Under 9 PPM NO_x requirement
- Gas only applications
- Targeted towards the non-attainment areas like California, Texas, and isolated areas on the east cost
- New and retrofit burner sales

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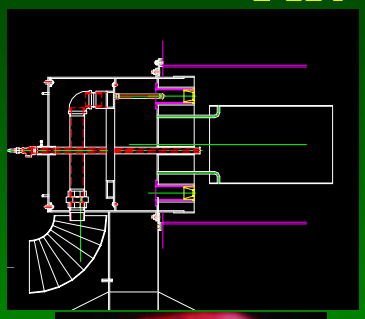
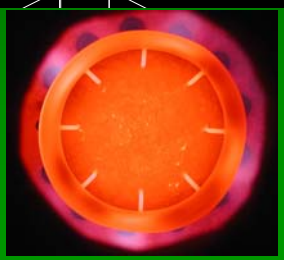
FIR BURNER





- Burner was developed at the Gas Technology Institute
- Licensed Technology to Johnston Boiler Co.
- Funded by SMP, GRI, SoCalGas, and DOE
- Retrofit or new
- Premixed staged combustion
- Forced internal recirculation
- Lowest cost premium

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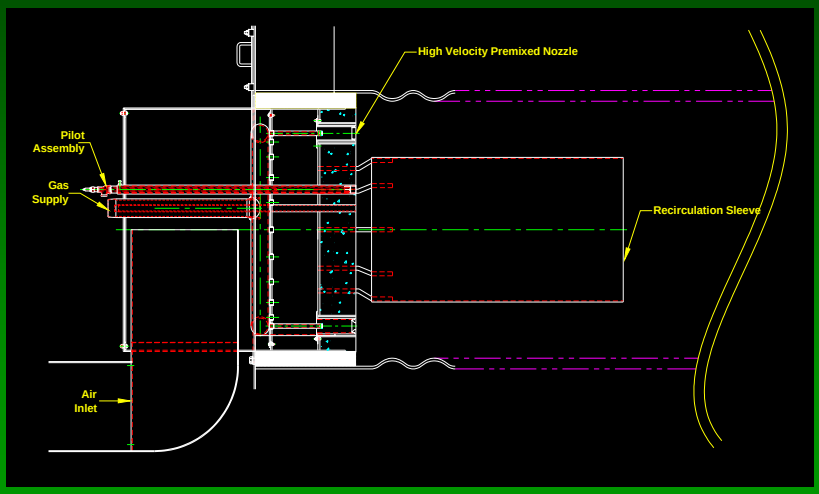
FIR Burner Cross Section



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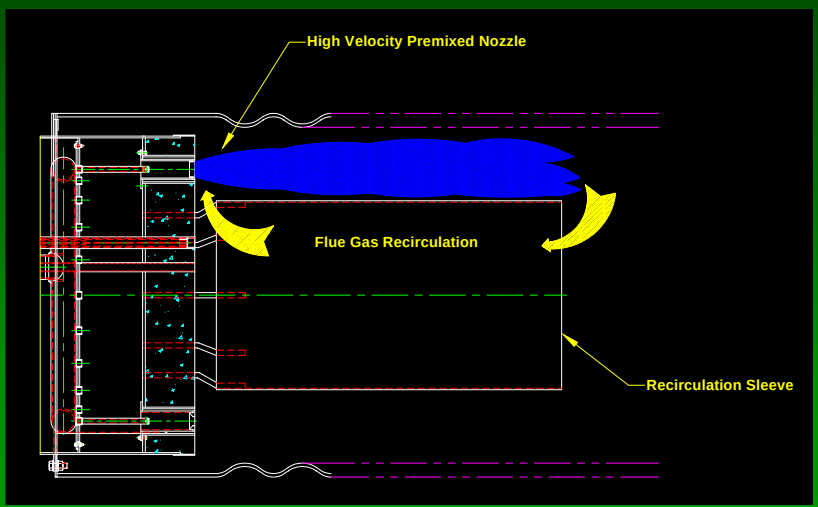
FIR Burner Mechanics



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Fullerton College

- Two 10.5 million Btu/h (250 hp) boilers used for heating applications
- 15 psig steam design
- Natural gas firing
- Requires under 12 vppm NOx

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Fullerton College

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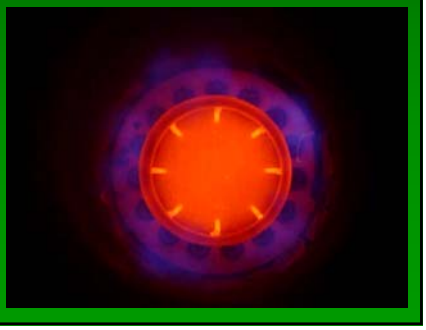
Fullerton College

- Load Requirements
  - Seasonal heating winter the highest and summer non-existent
  - Early morning largest day load
  - Load tapers off in the afternoon and evening



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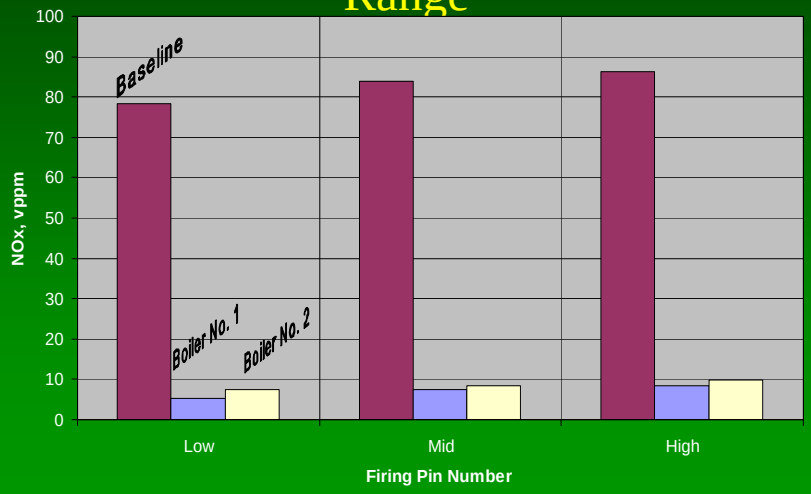
Fullerton College
NOx Emissions Over the Firing Range



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Excess Oxygen Over the Firing Range

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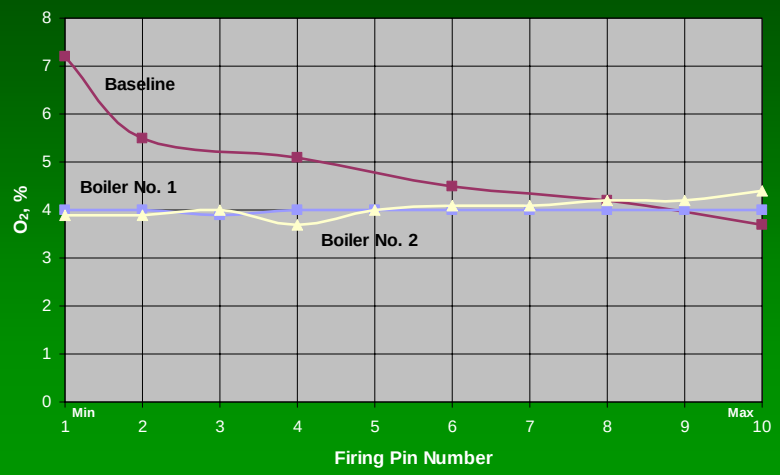
Stack Temperature Comparison



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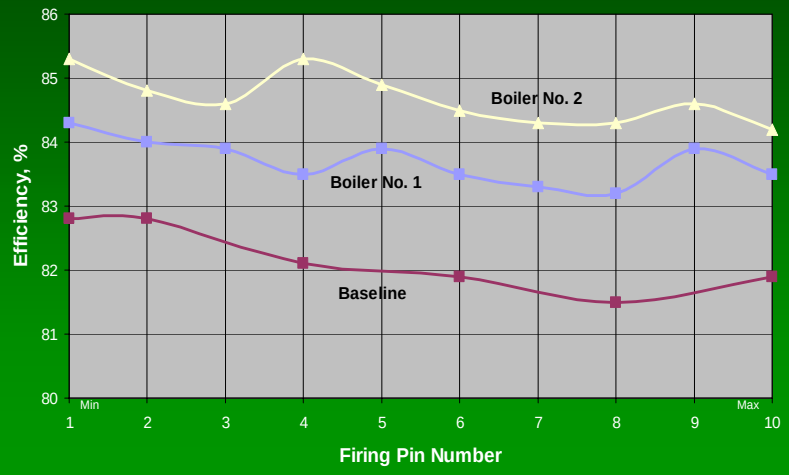
Efficiency Over the Firing Range



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Predictive Cost Savings

Existing Efficiency	Proposed Efficiency									
	78	79	80	81	82	83	84	85	86	87
65	16.67	17.72	18.75	19.75	20.73	21.69	22.62	23.53	24.42	25.29
66	15.38	16.46	17.50	18.52	19.51	20.48	21.43	22.35	23.26	24.14
67	14.10	15.19	16.25	17.28	18.29	19.28	20.24	21.18	22.09	22.99
68	12.82	13.92	15.00	16.05	17.07	18.07	19.05	20.00	20.93	21.84
69	11.54	12.66	13.75	14.81	15.85	16.87	17.86	18.82	19.77	20.69
70	10.26	11.39	12.50	13.58	14.63	15.66	16.67	17.65	18.60	19.54
71	8.97	10.13	11.25	12.35	13.41	14.46	15.48	16.47	17.44	18.39
72	7.69	8.86	10.00	11.11	12.20	13.25	14.29	15.29	16.28	17.24
73	6.41	7.59	8.75	9.88	10.98	12.05	13.10	14.12	15.12	16.09
74	5.13	6.33	7.50	8.64	9.76	10.84	11.90	12.94	13.95	14.94
75	3.85	5.06	6.25	7.41	8.54	9.64	10.71	11.76	12.79	13.79
76	2.56	3.80	5.00	6.17	7.32	8.43	9.52	10.59	11.63	12.64
77	1.28	2.53	3.75	4.94	6.10	7.23	8.33	9.41	10.47	11.49
78		1.27	2.50	3.70	4.88	6.02	7.14	8.24	9.30	10.34
79			1.25	2.47	3.66	4.82	5.95	7.06	8.14	9.20
80				1.23	2.44	3.61	4.76	5.88	6.98	8.05
81					1.22	2.41	3.57	4.71	5.81	6.90
82						1.20	2.38	3.53	4.65	5.75
83							1.19	2.35	3.49	4.60
84								1.18	2.33	3.45
85									1.16	2.30
86										1.15

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Fullerton Summary

- The FIR burner is an efficient solution for firetube boiler low NOx applications (under 10 vppm)
  - Simple controls
  - Standard boiler packages
- The FIR burner optimizes energy use
  - No external FGR
  - No need for large hp fans to push extra FGR or Excess Air

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Firetube Boiler Installations

- FIR burners are installed on several different firetube boilers
  - 4 million Btu/h (100 hp) Kewanee
  - 10.5 million Btu/h (250 hp) Johnston 4-pass
  - 15 million Btu/h (350 hp) Johnston 4-pass
  - 21 million Btu/h (500 hp) Williams & Davis
- Johnston Boiler Company and GTI and committed to move the FIR Burner and all of its benefits into the firetube market place

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Firetube Boiler Installations

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Summary

- The Johnston Companies Supply all Boiler Room Products and Services
- We understand needs for steam and hot water production
- System efficiency is our priority
- We have burner products for your needs – standard firing or ultra low NOx
- We are committed to stay at the front of technology introduction

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