MIURA

Modular Boiler Steam Solutions

Miura America Co., Ltd.

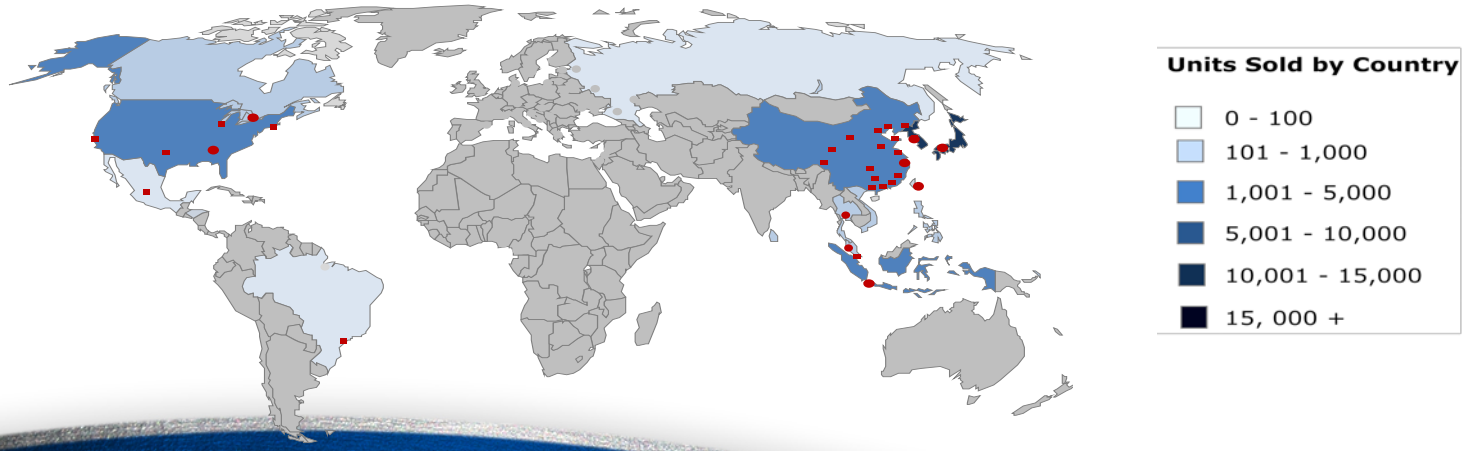
- Headquarters: Rockmart, Georgia
- Two Manufacturing Facilities
- 9 U.S. Sales & Service Offices
  - Atlanta
  - Chicago
  - Dallas
  - New York
  - Virginia
  - Los Angeles
  - Orange County
  - San Francisco
  - Utah

Four International Offices

- Mexico City
- Guadalajara
- Sao Paulo
- Toronto

Global

- Worldwide Headquarters: Matsuyama, Japan
- Sales & Service Offices: 15+ Countries
- Over 140,000 boilers in operation
- One of the Largest Boiler Manufacturers in the World
- Founded in 1927
- American Operations Founded in 1987



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Driving Forces Behind the Design

- Limited Natural Resources
  - Natural gas prices 2 to 4 times greater than the U.S.
- Limited Space
  - Nearly 50% of U.S. population in a space the size of California
  - One square foot in Tokyo can be as much as $80,000

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Driving Forces Behind the Design

- Physical Footprint:
  - Reduced space requirements
  - Reduced energy plant construction costs

- Energy Footprint:
  - Reduced energy consumption / wasted energy
  - Reduced potential energy

- Environmental Footprint
  - Reduced consumption of natural resources
  - Reduced harmful emissions
  - Reduced carbon footprint

Available Models:

Miura Gas-Fired/
Low Nox LX Series
High Pressure Steam Boiler

Miura Gas/Oil-Fired
EX Series
High Pressure Steam Boiler

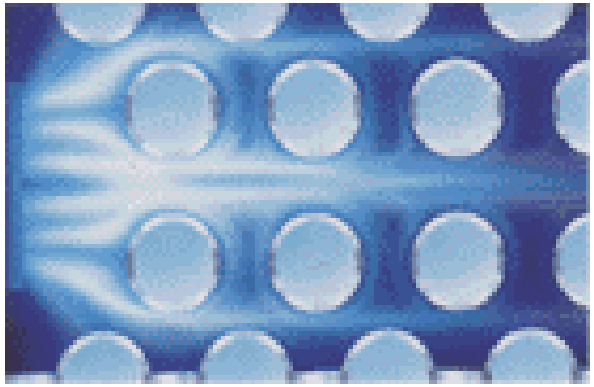
LX Series

- Gas Only – Natural Gas / Propane
- 50, 100, 150, 200, 250, 300 BHP Models
- Steam in 5 min. from Cold Start
- Naturally Low NOx Design
- Vertical Water Tube
- Horizontal Flame Path
- 70-150 PSI Standard Operating Pressure
- Low and high pressure options available
- Also Available in Hot Water Version

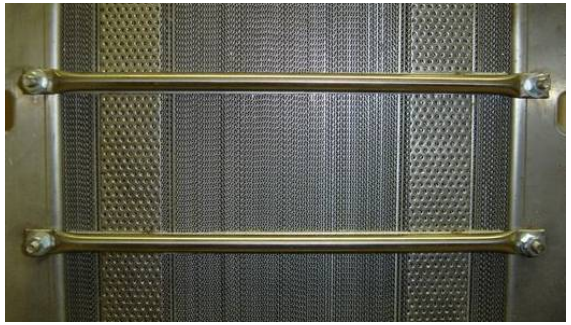
New LX-300

LX Series

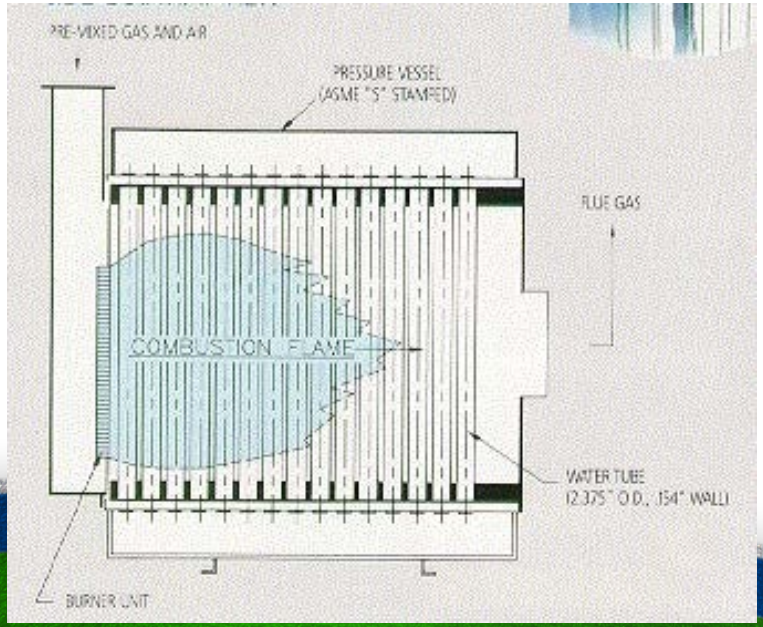
- Patented Self-Quenching Burner Design
  - Flame Temp ~ 2,200 ºF
- Flame in Direct Contact w/ Water Tubes (Non Furnace Style)
- Low NOx Leader: 20 ppm standard
  - 12 & 9 ppm models available



Top View - Detail View



Burner Element – Detail View



Boiler Vessel – Side View

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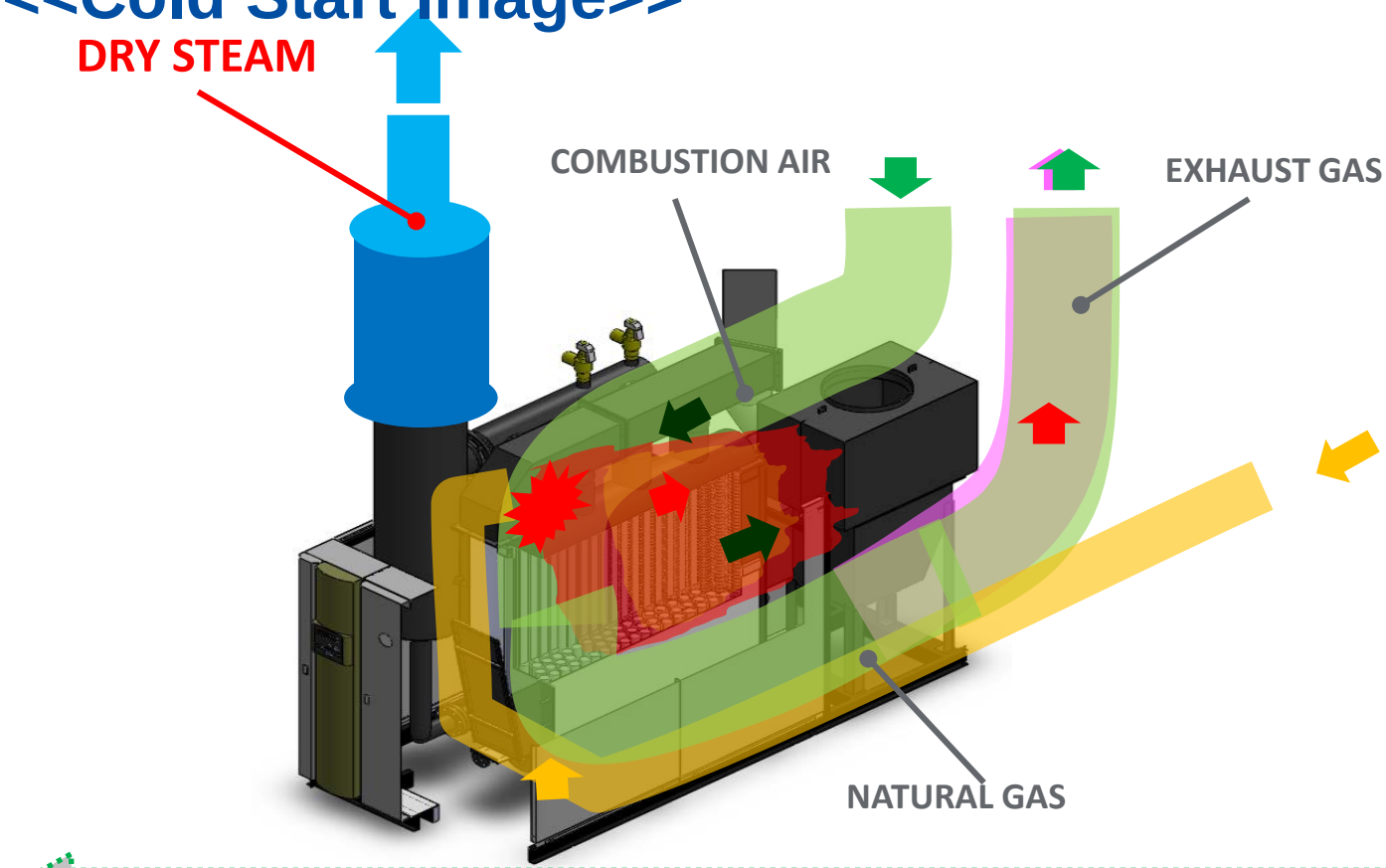
<<Cold Start Image>>



SW-On ⇒ Max Steam Output 3min

Pre-Purge 12 Sec → Ignition 16Sec → Low Fire 6 Sec → Low ⇒ High Fire 8 Sec → High Fire → PV-Evaporation 2 min → Steam Output Start → MAX Steam Output

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EX Series

- **Dual Fuel** – Natural Gas, Propane, & Oil
- 100, 150, 200, 250, 300 BHP Models
- Steam in 5mins From Cold Start
- Vertical Water Tube
- Vertical Flame Path (top down)
- 70-150 PSI Standard Operating Pressure
- High Pressure Option Available
- Also Available in Hot Water version
- Now can also burn Bio-Gas

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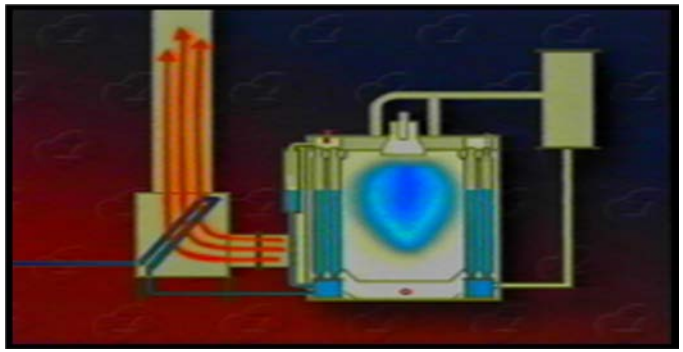
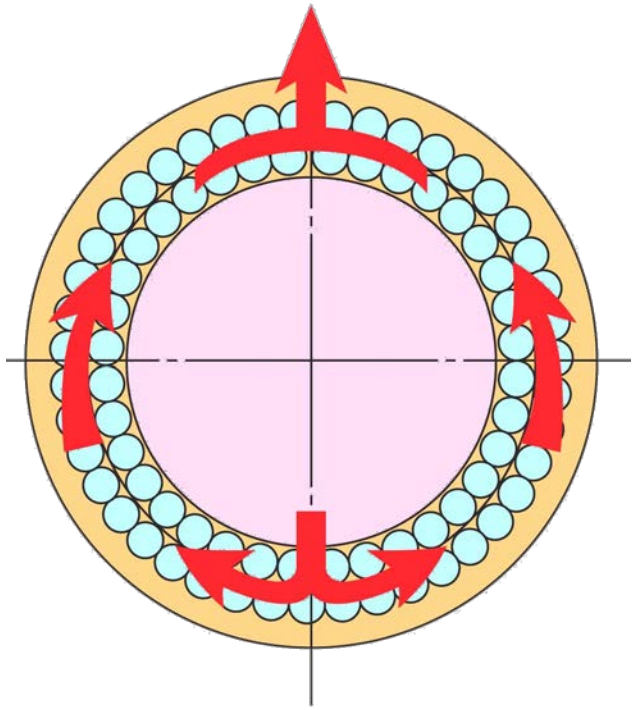
EX Series

- Miura's First Innovation
- Dual Fuel (gas & oil)
- Vertical Flame Path



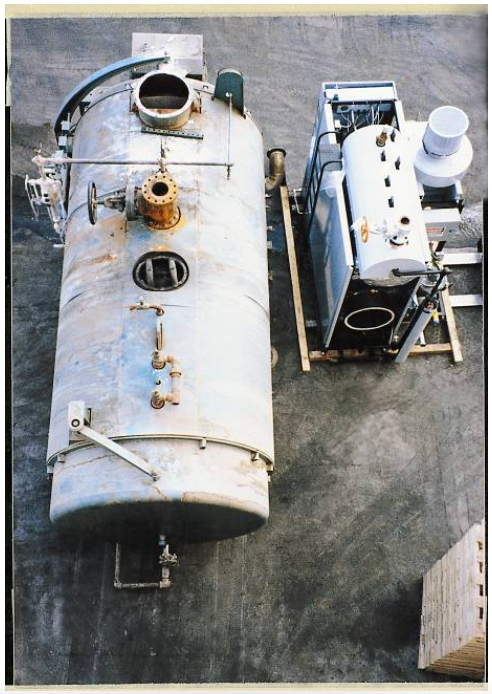
Floating Header Design – Side View

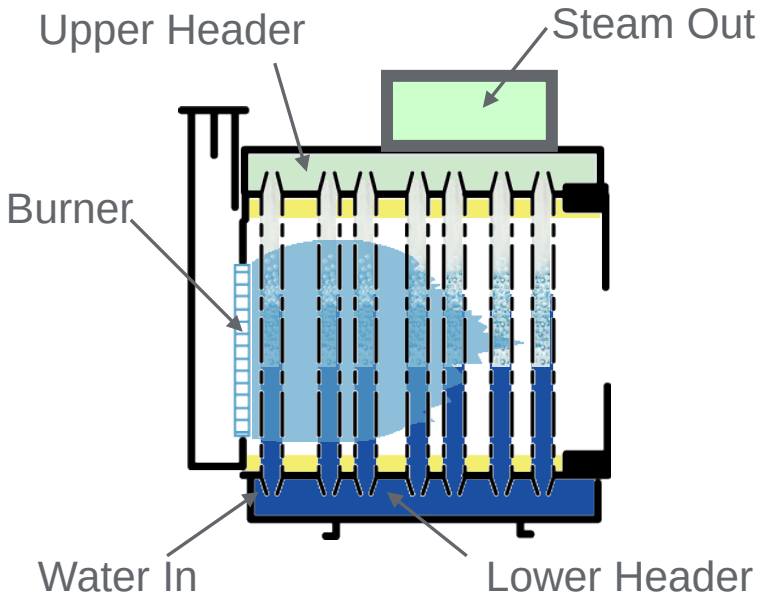


Combustion Path – Top View

Boiler Construction (EX & LX)

"Floating Header" design eliminates thermal stresses because tubes can expand.

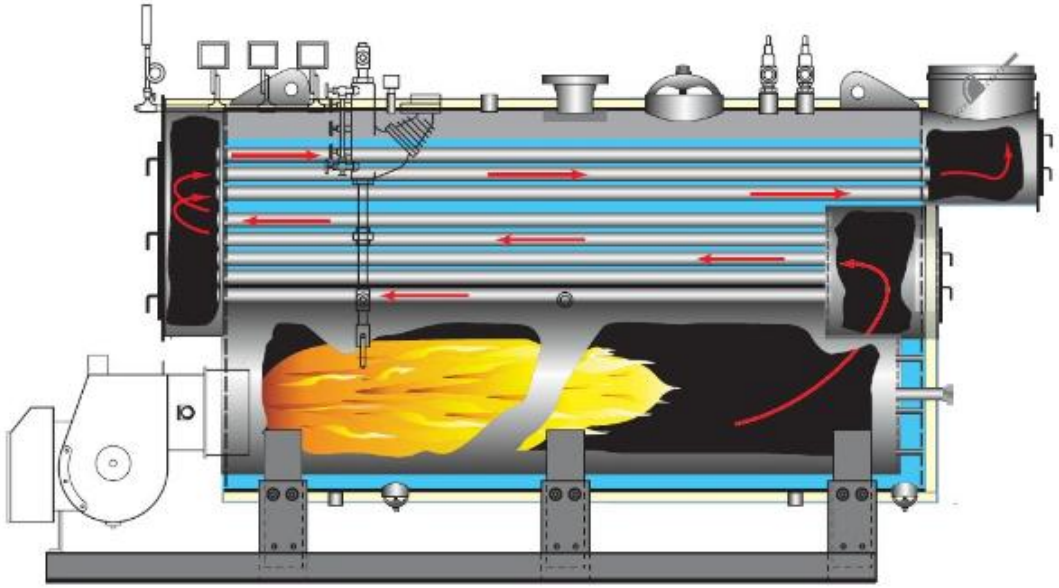




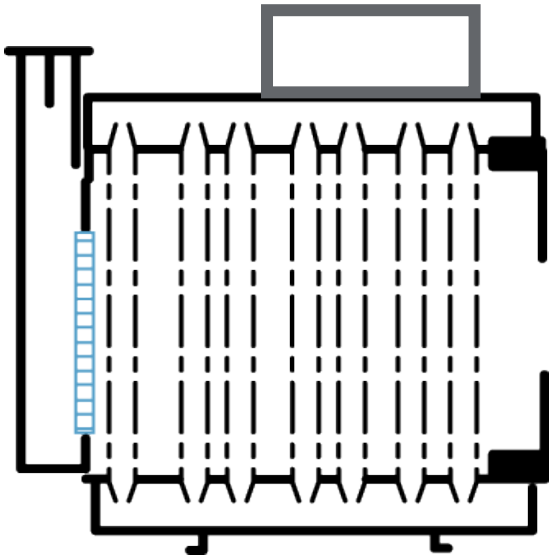
Boiler Vessel – Side View

Boiler Construction (EX & LX)

Fire-Tube Boiler

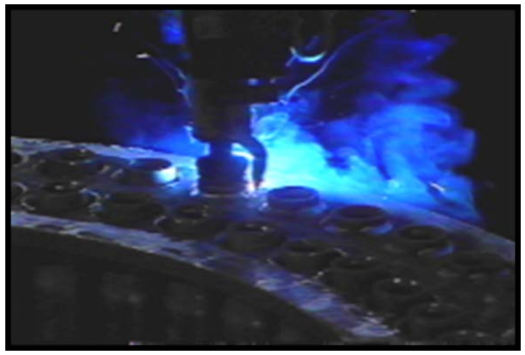


Miura Water Tube Boiler

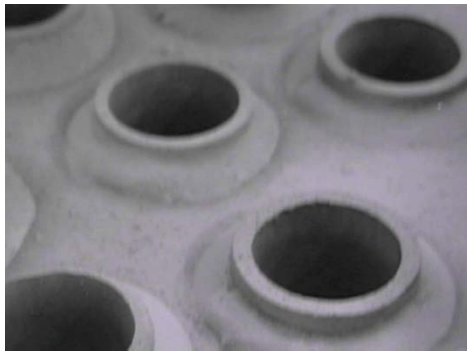


Boiler Construction (EX & LX)

- Fully welded tube to tube-sheet construction
  - X-ray Tested
  - Dye Penetrant Tested
  - Hydrostatic Tested
  - Post Weld Heat Treated

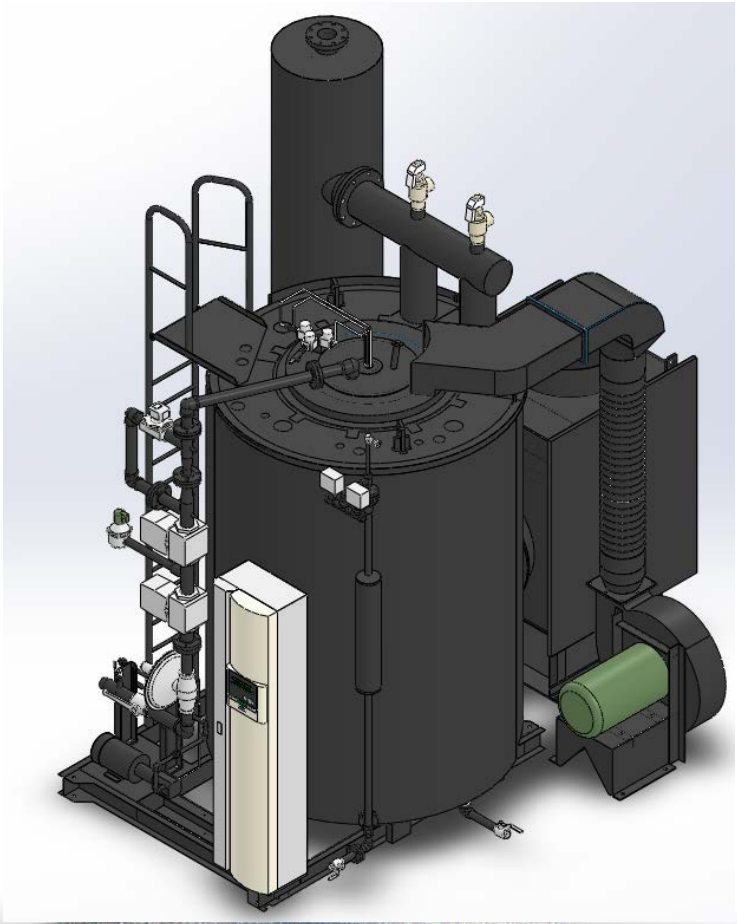


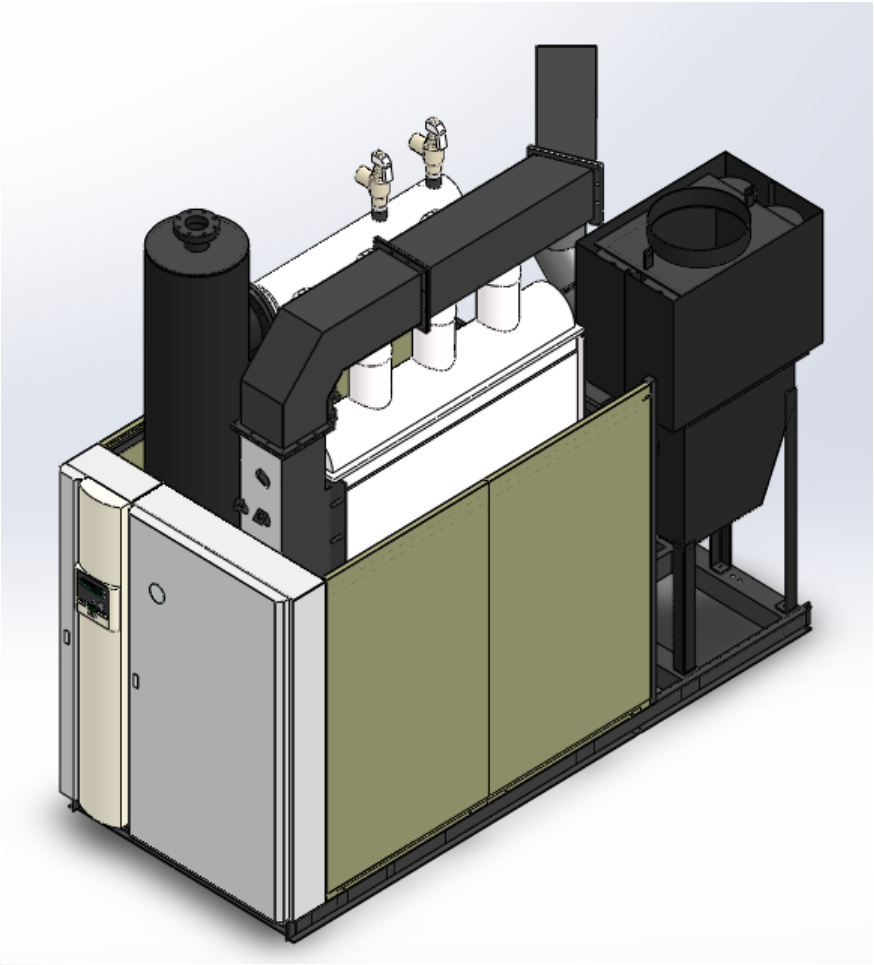
- Water tubes have swaged ends for close proximity



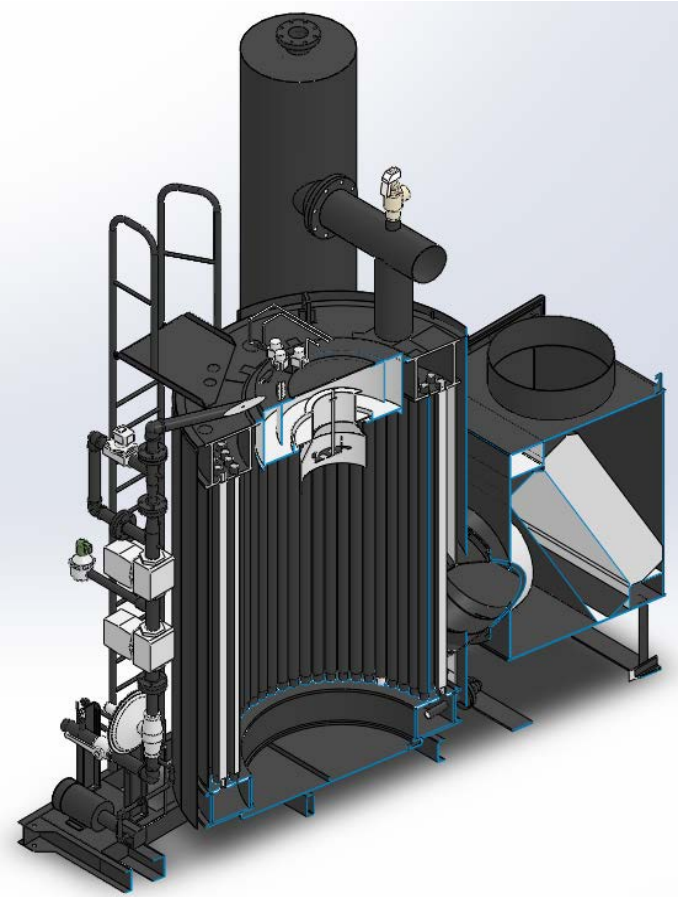
- Robotic welds

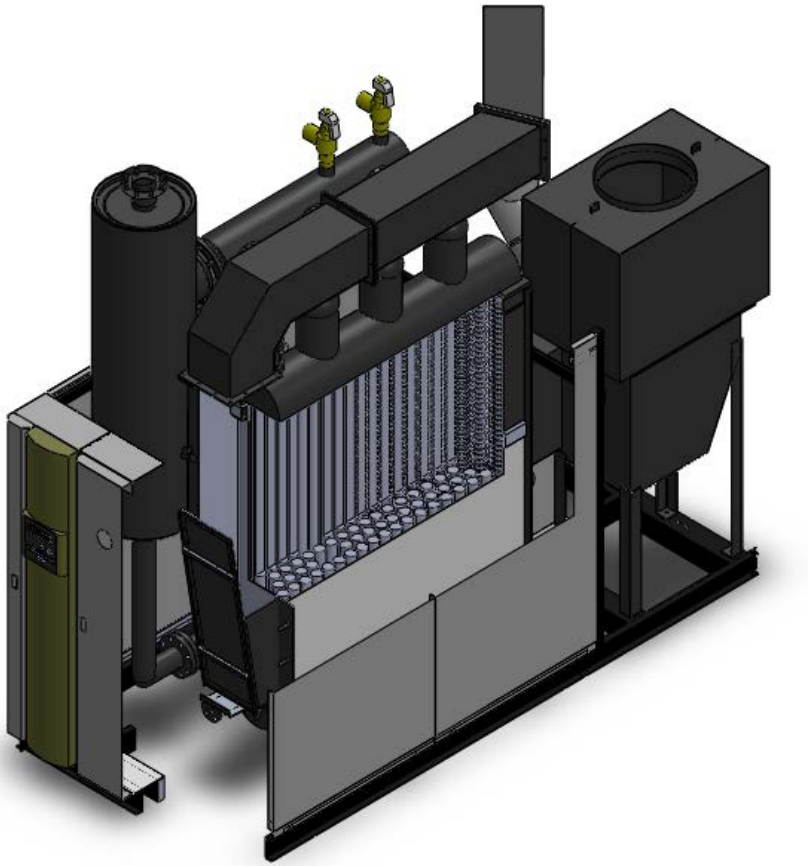
Miura Boilers





Miura Boilers (cutaway)

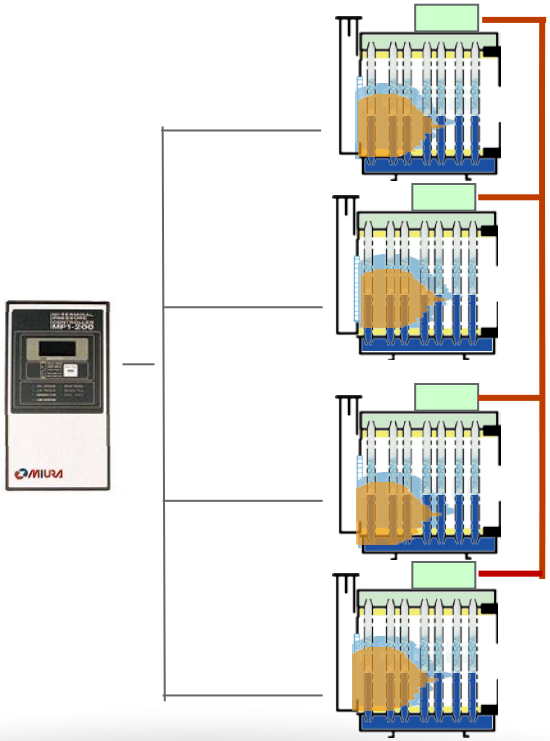




M.I. Systems

Multiple Installations

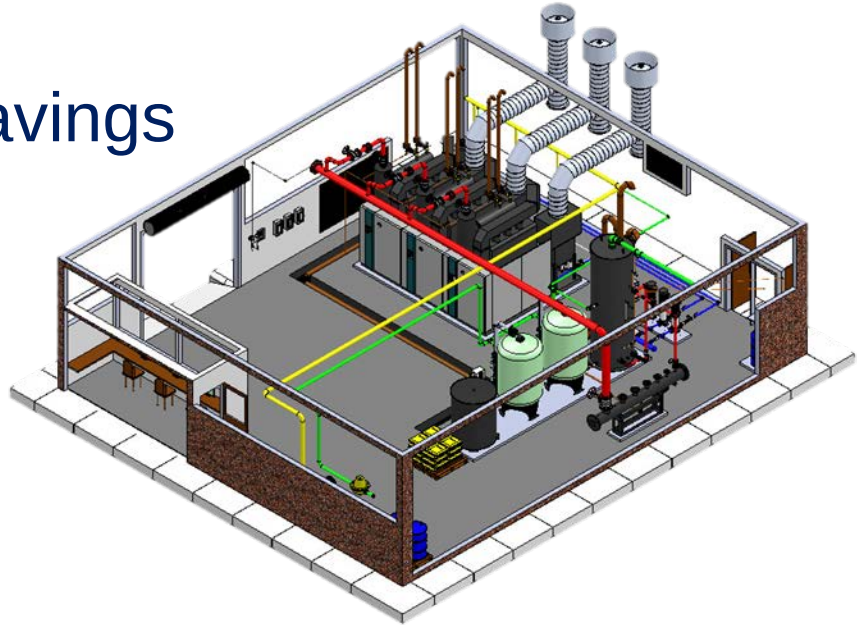
Low Water Content → Fast Response → Modular System



- Senses Steam Demand and Responds Immediately
- Rotates boilers to balance load
- Controls back-up boilers
- Programming modes match your load requirements
- Maintains 82 to 83% efficiency across all loads
- Extremely high turndown

M.I. System Advantages

- Modularity / Flexibility
- Risk Reduction (N+1 and Safe Design)
- Load Matching
- Small Footprint / Space Savings
- High Efficiency
- Quick Startup
- Emission Permitting
- Single Source Provider
- Engineering Support



Miura Boiler Room

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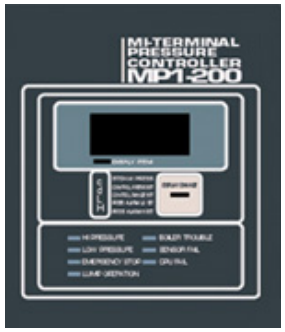
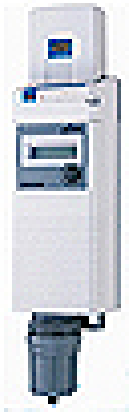
Boiler Ancillaries

- M.I. Controls – MP1/MT1
- Chemicals – Boilermate
- Water Softener – MW/MS
- Hardness Montoring – Colormetry
- Steam Headers
- Hotwell
- More to come…





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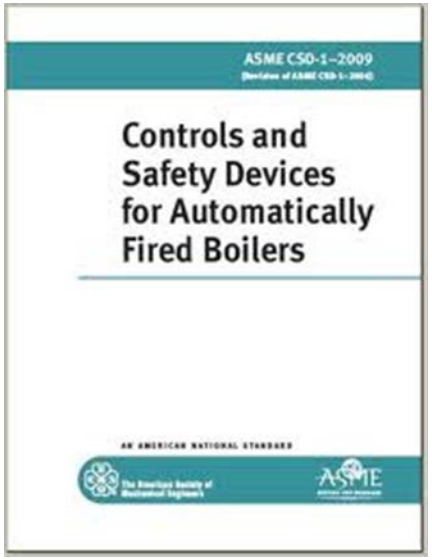
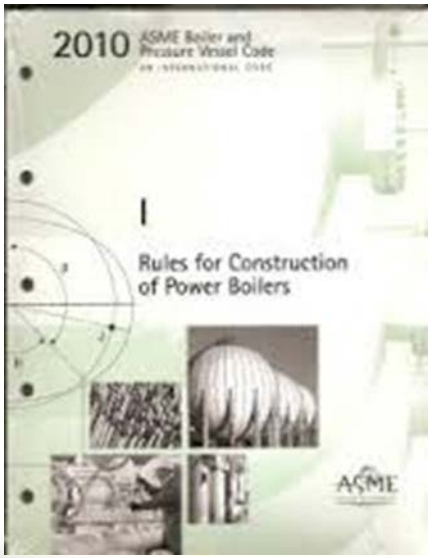
Codes / Regulations:

1) ASME Boiler & Pressure Vessel Code
   - Section 1: Power Boilers
   - REQUIREMENT BY MARKET AND/OR LAW
   - STAMPED ON THE BOILER
2) ASME CSD-1
   - Controls and Safety Devices for Automatically Fired Boilers
   - Miura meets the intent
   - NO CERTIFICATION AVAILABLE
   - Letter available per customer
3) Underwriter's Laboratory (UL)
   - Package system approval
   - Specific to Miura products (EX, LX, BL)
   - Pay to update our files & test
   - STICKER ON THE BOILER
4) ASME B31.1: Power Piping
   - Boiler and Non-Boiler External Piping





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Common Boiler Questions:

1) What materials do we use?
   - All Carbon Steel
   - Water tubes are SA-178A, wall thickness 0.125

2) What is your burner controller?
   - Miura BL Controller
   - Circuit Board (not PLC)

3) What is your flame safeguard?
   - Miura ZUV-II Ultraviolet flame scanner
   - Miura BL Controller

4) What safety interlocks do you have?
   - Gas Pressure (High and Low – Dungs or Antunes)
   - Air Pressure (Dungs or Antunes)
   - Air Damper Micro-Switch (Honeywell)
   - Purge Time Confirmation (Miura BL)
   - Low Water Cut-off (L, L2 Conductance Probes - Miura)
   - Steam Pressure (BL, Backup, High Limit, & Safety Relief Valve – Miura, Honeywell, and Kunkle)

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Specific ASME BPVC, Section 1 Topics:

1) Why no gauge glass?
   - PG-60.1 Water Level Indicators: "…Boilers not having a fixed water level, such as forced-flow steam generators and high-temperature water boilers of the forced circulation type, are not required to have a gage glass."
2) Why do we include the first steam valve?
   - PG 58.3.1: "…The steam piping connected to the boiler drum or to the superheater outlet header shall extend up to and including the first stop valve in each connections…"
   - PG 58.3 Boiler External Piping: "…The following defines the Code Jurisdictional Limits of the boiler external piping systems, …The materials, design, fabrication, installation, and testing shall be in accordance with ASME B31.1, Power Piping."

3) Only one feed water pumps is required.
   - PG-61.1.1: "Except as provided for in PG-61.2 and PG-61.4, boilers having more than 500 ft2 of water-heating surface shall have at least two means of feeding water."
   - PG-61.2: "Except as provided for in PG-61.1, a boiler fired by gaseous, liquid, or solid fuel in suspension, or heated by combustion turbine engine exhaust, may be equipped with a single means of feeding water, provided means are furnished for shutting off its heat input prior to the water level reaching the lowest permissible level established by PG-60."

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Specific ASME BPVC, Section 1 Topics:

1) Single or Multiple Safety Relief Valves?
   - PG-67.1: “Each boiler shall have at least one pressure relief valve and if it has more than 500 ft2 of bare tube water-heating surface, …it shall have two or more pressure relief valves.”

2) What are the ASME Data Sheets?
   - P-3: Primary form for our Boilers, LVC, Separator, and Economizer
   - P-6: Extension of the P-3 Forms (rare case)
   - P-4: Pipe spools (rare case)

FORM P-3 MANUFACTURER'S DATA REPORT FOR WATERTUBE BOILERS, SUPERHEATERS, WATERWALLS, AND ECONOMIZERS
As Required by the Provisions of the ASME Code Rules, Section I
MASTER DATA REPORT (Check one) YES ☐ NO ☐

1. Manufactured by _____ (Name and address of manufacturer)
2. Manufactured for _____ (Name and address of purchaser)
3. Location of installation _____ (Name and address)
4. Unit identification _____ (Complete boiler, superheater, waterwall, economizer, etc.) ID Nos. _____ (Manufacturer's Serial No.) _____ (CRN) _____ (Drawing No.) _____ (Nat'l. Board No.) _____ (Year built)
5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The design conforms to Section I of the ASME BOILER AND PRESSURE VESSEL CODE _____ (Year),
   Addenda to _____ (Date) (if applicable), and Code Cases _____ (Numbers).
   Supporting Manufacturer's Data Reports properly identified and signed by Commissioned Inspectors are attached for the following items of this report:
   _____ (Name of part, item number, manufacturer's name, and identifying Designator)

6(a). Drums

No.	Inside Diameter	Inside Length	Shell Plates			Tubesheets		Tube Hole Ligament Efficiency, %	
			Material Spec. No., Grade	Thickness	Inside Radius	Thickness	Inside Radius	Longitu-dinal	Circum-ferential
1									
2									
3									

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THANK YOU!

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