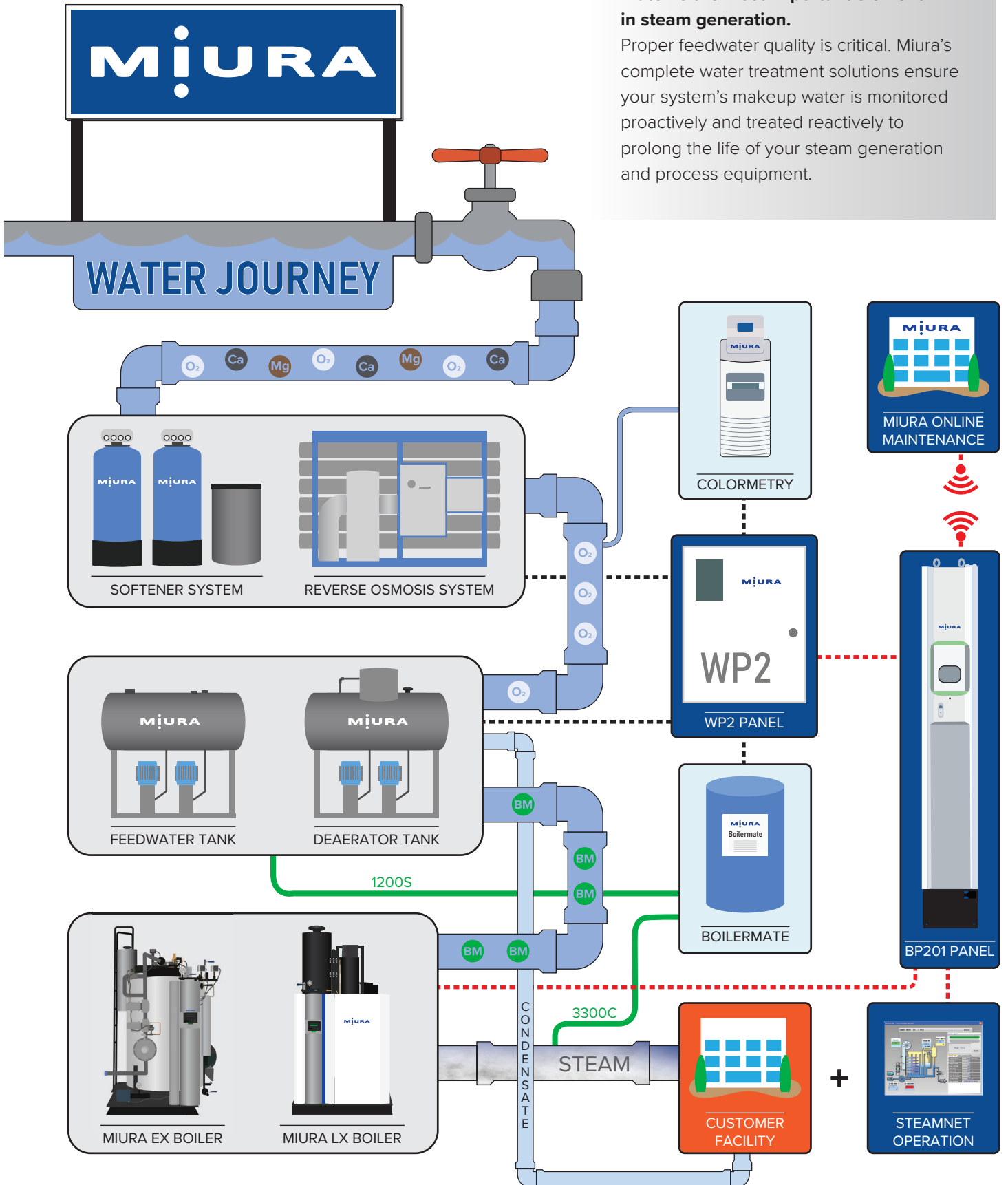


MiURA



**WATER
TREATMENT**

Water Treatment



EXECUTIVE SUMMARY

Miura is committed not only to providing the best available boiler technology, but also offering complete solutions and ancillary equipment that optimize and protect your investment and operations. Miura's Water Treatment solutions are ideally suited and custom tailored for modular, on-demand boilers. They ensure soft water, protect against scale and corrosion, and enhance overall performance and long term reliability.

This is accomplished using:

- Sophisticated, yet simple, monitoring equipment
- Proprietary, environmentally friendly chemical blends
- Softeners and RO Systems to remove Ca^{2+} and Mg^{2+}
- Feedwater Tanks and Deaerators to neutralize O_2
- Dedicated Water Labs to provide water analysis

FILTRATION

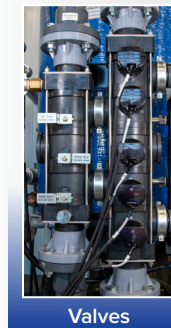
• MW - Water Softeners

Scale is the buildup of hardness upon the boiler tube and is a common cause of reduced efficiency and boiler damage. Water softeners remove hardness from the water. Scale is preventable, with the proper water softening solution.

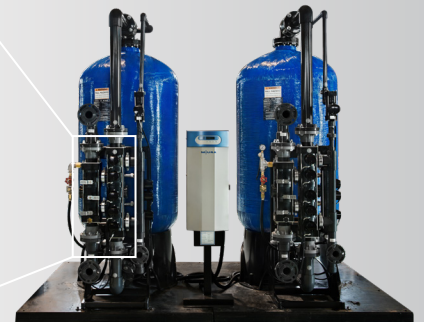
Miura's MW-Softeners provide many advantages over generic water softeners:

- Advanced controls with remote monitoring for reliable softening and system integration
- Duplex design supplies soft water even during regeneration
- Unique "split-flow" regeneration provides more efficient regeneration and nearly 0 ppm of hardness
- Multiple sizes available to fit every application

Install a MW softener and rest easy, knowing your capital investment is well protected.



Valves



Raw Water Temp:

39-140°F



Hardness Removal Capacity:

(x1000 grain CaCO_3)
= 82-1641



Reliably Softens to:

Less than 1 ppm



Controller

• Reverse Osmosis Systems

Reverse Osmosis (RO) uses pressure to force water through a semi-permeable membrane, producing nearly pure water and trapping other unwanted elements outside or within the membrane.

High quality RO water provides several key benefits:

- Decreased frequency of required manual blowdowns
- Reduction in required chemical dosage and related costs
- Decreased volume of surface blowdown increases efficiency

RO systems provide unparalleled protection for steam systems and greatly reduce operating costs.



Rejects up to 99.7% of water impurities



Max Feed Water Temp:

107.6°F



Feed Water Pressure:

20-80 PSI



Flow Rate:

28,000-900,000 GPD



STORAGE TANKS

• Feedwater Tanks

When designing your steam system, it is necessary to have a water storage tank to avoid low water shutoffs and to have a location to inject water treatment chemicals.

Feedwater Tanks are often used in MIURA installations and pair well with MIURA's BOILERMATE chemical treatment. These carbon or stainless-steel tanks are normally preheated with direct steam injection. Operating at atmospheric pressure, the water can be heated up to a maximum of 200°F which reduces the solubility of harmful gasses within the stored water.

Feedwater Tanks are an economical solution for water storage, preheat, and chemical injection. Speak with your MIURA Representative today for assistance with proper sizing and configuration.



Fully Packaged System for Ease of Installation



Storage Capacity:
60 - 750 Gallons



Steam Injection:
Direct (recommended)



Construction:
Carbon or Stainless-Steel



Integrated Pump Control & Communication (optional)



• Deaerators

Deaerators (DA) are specifically designed to maximize oxygen and carbon dioxide removal from feedwater using elevated temperature and low pressure.

Removing these gases is important because otherwise they may lead to accelerated corrosion within steam systems. A DA is normally pressurized to 5-10 PSI, which allows feedwater temperatures of up to 240°F to be utilized providing superior removal of oxygen and carbon dioxide from the system.

Deaerators are more costly than Feed Water Tanks; however, they provide superior removal of harmful gases and reduce the required dosage of chemicals and associated costs.



Horizontal or Vertical Orientation



Deaeration Type:
Spray or Tray



Capacities up to:
300,000 lbs/hr



Zero Titratable Free Carbon Dioxide



Dissolved Oxygen:
Less than 0.005cc/L (7ppb)



CONTROL & MONITORING

• WP2 Communication & Control Panel

MIURA's proprietary WP2 panel is a communication and control hub for multiple components of your water treatment system.

Capabilities:

- Precise chemical injection and management
- Fully integrates with MW Water Softeners and Colormetry Hardness Analyzer
- Feed tank water level control monitor
- Cold condensate return dumping control
- Communication with BP and MOM for system remote monitoring

Using the WP2 in your steam system provides a central communication panel where your water treatment can be properly managed and monitored.



CONTROL & MONITORING (continued)

• Colormetry Water Hardness Monitor

Operating a boiler with hard water reduces efficiency and can lead to serious damage, or even failure, of the pressure vessel. Miura's Colormetry monitor samples treated water and tests for hardness down to >1mg/L. If hardness is detected, the Colormetry will signal an alarm and increase surface blowdown to reduce damage to the boiler until the problem is resolved.

Major benefits include:

- Sampling via Colorimetric analysis every 30 or 60 mins.
- Easy One-touch reagent cartridge replacement
- Minimal maintenance with disposable cartridge filtration
- Self-calibrating
- Memory function tracks most recent alarms including time/date stamp
- External alarm output for integration with Building Automation

Historical Water Sample Data

COMC anomaly log data			LED1		LED3	
No.	mm/dd hh	COMC (mg/L)	Blank	ROT	Blank	ROT
PREV	11/13 16:00	0.0-1.0	616	123	91	601
02	11/13 15:00	0.0-1.0	616	122	91	600
03	11/13 14:00	0.0-1.0	616	125	91	599
04	11/13 13:00	0.0-1.0	594	118	88	599
05	11/13 12:00	0.0-1.0	595	115	88	596
06	11/13 11:00	0.0-1.0	585	115	88	597
07	11/13 10:00	0.0-1.0	596	115	88	596
08	11/13 09:00	0.0-1.0	596	116	88	595
09	11/13 08:00	0.0-1.0	597	117	88	595
10	11/13 07:00	0.0-1.0	597	119	88	594

Cartridge

Filter

Colormetry 324-HE

Install a Colormetry unit and rest assured, your water hardness is being monitored around the clock to protect your capital investments!

CHEMICAL TREATMENT

• BOILERMATE® Chemical Treatment

Miura produces its own brand of water treatment chemical, BOILERMATE®, which is ideally suited and optimized for operation in once-through, on-demand boilers. When utilized in conjunction with a Maintenance Contract, Pressure Vessels can be GUARANTEED against scale and corrosion. BOILERMATE® is NSF and Kosher approved where steam may contact edible products.

Three environmentally friendly mixtures are utilized for steam generation:



Boiler Treatment - Silicate Based

- BM1200S uses Silicate to create a microscopic protective film which inhibits corrosion of the boiler's tubes
- Little to No Activation Time required
- Superior Protection vs. Sulfite Based Programs
- No pH Booster Required
- Includes low dose of Scale Dispersant for Added Protection
- Naturally Occurring, Environmentally Friendly compound



Condensate Treatment - Amine Based


- BM3300C is Miura's condensate line treatment
- Neutralizes the carbon dioxide in the condensate line which inhibits corrosion
- Increases the pH of condensate return




Scale Remover & Iron Dispersant

- BM2100D is Miura's On-Line scale and iron dispersant
- Prevents scale formation while at the same time removing any preexisting scale from the tubes

Frequently Asked Questions

 **What is the lowest temperature that I should operate my feed water tank?**

140 °F. However, higher temperatures are better, as you will reduce the amount of dissolved oxygen within the system and potentially reduce the amount of chemical you will inject to protect the boiler.

 **How much hardness is allowable in a Miura boiler system?**

Less than 1 ppm of hardness in feed water and condensate return. The boiler should not concentrate to higher than 3 ppm of hardness to avoid scale formation. Miura's MW-U water softeners produce soft water with a hardness concentration of less than 1 ppm.

 **What should I look out for when trying to protect my boiler?**

It is critical to prevent scale and corrosion within the boiler. For corrosion, it is important to properly monitor and maintain the boiler's pH, be aware of dissolved oxygen, as well as look out for corrosive ions, such as chloride and sulfate. For scale, insure that proper water softening systems are installed and properly maintained.

WHAT'S IN YOUR WATER?

Mg²⁺

Ca²⁺

O₂

REQUEST A BOILER WATER ANALYSIS TODAY!

Mg²⁺

Ca²⁺

O₂

Are you unsure about how your current water quality compares to the required quality vital to protecting the steam system?

With decades of water treatment experience, Miura's water treatment lab will run your water sample through a series of tests, analyzing 7 components within the water to identify the major risk factors for maintaining the boiler longevity. Miura's water lab will supply you with the results of your water quality test, as well as a detailed recommendation on how to correct any issues, at no charge!

Reach out to your local Miura representative today!

For more information or local support:

 1-888-309-5574

 us.info@miuraz.com

 www.miuraboiler.com