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**HURST FEED WATER SYSTEM “OXY-MISER” DUAL TANK (5,000PPH – 200,000PPH)  
SAMPLE SPECIFICATIONS**

The following sample specifications are provided by Hurst Boiler & Welding Co., Inc. to assist you in meeting your customer's specific needs and application. The sample specifications are typically utilized as the base template for the complete boiler specification. Contact your local Hurst Boiler & Welding Co., Inc. authorized representative for information on special insurance requirements, special code requirements, optional equipment, or general assistance in completing the specification.

**1.0 – Boiler Characteristics**

Furnish a pressurized, spray type deaerating boiler feed water system, Hurst Oxy-Miser, model DOM- -  - , rated for  pounds per hour. The deaerating system shall be guaranteed to provide for oxygen removal to not more than 0.005 cc/liter in the boiler feed water at all flow rates from 5% to 100% of outlet capacity. The system shall operate at 5 to 7 psig. The surge tank shall receive the returned condensate and supplement with make up water to provide for the deaerating tank's water requirements. The dual tank design incorporates both the deaerator and the surge tank in one common shell, divided by a dished head between the two. The deaerating vessel shall be constructed for 50 psig as per the requirements of Section VIII of the ASME Code and registered with the National Board of Boiler and Pressure Vessel Inspectors. The surge tank portion is not pressurized, and is vented to atmosphere.

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**2.0 – Make Up Water**

Make-up water shall be fed to the deaerator through spring operated, stainless steel spray nozzles to provide for complete and thorough atomization of the water in the steam bath. Access to the steam scrubber section and the spray nozzles shall be provided for. Undissolved oxygen is vented to the atmosphere through an automatic vent valve.

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### 3.0 - Deaerator

The deaerator shall be factory piped and wired with the following components:

- A. Water level control is to be of the electric modulating type using a McDonnell & Miller 93-7B proportioning control, or approved equal. (Or, water level control is to be of the pneumatic type). The level control shall send a proportioning signal to the make-up valve to maintain accurate water level in the tank.
- B. Provide a modulating feed water valve, Worcester or approved equal with a 3-valve by-pass arrangement.
- C. Provide a steam pressure reducing valve, Spence or approved equal, for reducing the inlet steam pressure from  psig to 5 psig. Provide for a steam inlet strainer for installation up stream of the PRV. The PRV and the strainer are to be shipped loose for field installation.
- D. Provide a water level gauge glass assembly that provides for visual indication of the tank water level.
- E. Provide for high water and low water level alarms.
- F. Provide a safety relief valve set at 50 psig and sized for the capacity of deaerator rating.
- G. Provide a tank thermometer and tank pressure gauge.
- H. Provide a vacuum breaker.
- I. Provide a sacrificial magnesium anode for cathodic protection against corrosion. Internal tank linings are not acceptable.
- J. Provide a stainless steel ball check type chemical feed quill for injection of chemicals in the stored water.
- K. Provide an overflow drainer of the float trap type, sized to relieve the full capacity of the deaerator.

- L. Unit(s) shall be provided with minimum 2" thick mineral wool insulation. The boiler shall be lagged with a 22-gauge thick carbon steel jacket. The boiler jacket shall feature a bottom side primer of polyurethane resin base coat of .2 mil. dry finish thickness and a final coat of .4 mil. dry finish thickness of valspar. The top side (exterior) of the jacket shall feature a primer of 3 mil. dry finish thickness and a final coat of .8 mil. dry finish thickness of valspar polyurethane resin based paint. The application of the paint is to be automated roller type and is to be oven dried. The exterior finish of the boiler jacket shall have a limited warranty by the manufacturer for five (5) years from date of manufacture for chalking, fade, peeling, or blistering. factory insulation and jacketing.
  - M. Provide a structural steel support stand using steel legs with minimum height to provide for the NPSHR of the pumps selected. Provide for a steel base for pump supports.
  - N. Provide a 12" x 16" manhole.
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#### **4.0 – Surge Tank**

- A. The surge tank shall be factory piped and wired with the following components:
- B. Water level control is to be of the electric modulating type using a McDonnell & Miller 93-7B proportioning control, or approved equal. (Or, water level control is to be of the pneumatic type.) The level control shall send a proportioning signal to the make-up valve to maintain accurate water level in the tank.
- C. Provide a modulating feed water valve, Worcester or approved equal with a 3-valve by-pass arrangement.
- D. Provide a water level gauge glass assembly that provides for visual indication of the tank water level.
- E. Provide for high water and low water level alarms.
- F. Provide a tank thermometer.
- G. Provide a sacrificial magnesium anode for cathodic protection against corrosion. Internal tank linings are not acceptable.
- H. Provide two (2) vent connections for field installation of air vent lines.

- I. Unit(s) shall be provided with minimum 2" thick mineral wool insulation. The boiler shall be lagged with a 22-gauge thick carbon steel jacket. The boiler jacket shall feature a bottom side primer of polyurethane resin base coat of .2 mil. dry finish thickness and a final coat of .4 mil. dry finish thickness of valspar. The top side (exterior) of the jacket shall feature a primer of 3 mil. dry finish thickness and a final coat of .8 mil. dry finish thickness of valspar polyurethane resin based paint. The application of the paint is to be automated roller type and is to be oven dried. The exterior finish of the boiler jacket shall have a limited warranty by the manufacturer for five (5) years from date of manufacture for chalking, fade, peeling, or blistering.
  
  - J. Provide a structural steel support stand using steel legs with minimum height to provide for the NPSHR of the pumps selected. Provide for a steel base for pump supports.
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## 5.0 – Pumps

Provide  boiler feed water pumps of the centrifugal type. Each pump shall be rated at  gpm with a discharge pressure of  psig. Provide two (2) condensate transfer pumps to pump water from the surge tank to the deaerator's make-up inlet. Each pump shall be rated at  gpm with a discharge pressure of  psig. Electrical supply shall be  /  / , with 3450 rpm, ( ODP or  TEFC) motors.

- Optional - High efficiency motors

Pump seals shall be rated for 250° F. Provide individual pump suction piping including a strainer with removable and cleanable basket, and a gate type shut off valve. Pumps shall operate as on/off type and controlled by the respective boiler's water level controls. (Or, pumps shall be continuous run type to maintain boiler's water level control automatically through the boiler's proportioning water level control. Provide for pump discharge orifice for field installation of a recirculation line for minimum pump flow.

- Optional: Provide for each pump a discharge check valve with stainless steel spring and a liquid filled discharge pressure gauge

## **6.0 – Control Panel**

Provide a factory wired NEMA 1 control panel enclosure, UL Listed and including Allen-Bradley pump motor starters and heater, circuit breakers, pump selector switches, and control panel lights for annunciation of pump operation and for high and low water level alarms. Provide an electric alarm bell with silencing switch to alarm on high or low water levels. The control panel shall be factory mounted on the support stand.

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## **7.0 – Shipping & Installation**

The complete factory skid mounted and piped system may be “knocked” down for shipping purposes. The contractor shall install the deaerating feed water system as indicated on the project drawings.