



BEC

**Boiler
Equipment
Company, LLC**

becequipment.com

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**Job Name: Lithuanian Center
Project Name: Boiler installation
Proposal Number: KS – 200211
Date: February 11, 2020**

We thank you for the opportunity to present our proposal for your boiler replacement project. BEC Equipment, LLC will provide all required project management, labor, material, consumables, equipment, tools, supervision, overhead, and all other costs required to complete the scope of work as detailed below.

Proposed Boiler:

One (1) LES Firebox 15 psig low pressure steam boiler completely packaged with forced draft natural gas. The packaged unit will have a firing rate of 4,240 mbh input and an output of 3,520 mbh (100 hp) when supplied with 14" w.c of gas pressure and 208/3/60 electrical supply. Unit will be ready for fuel, electrical, vent, blow down and supply connections. The following trim and features are included with the boiler intending to meet your request:

- **Boiler**
 - Combination water column with try cocks and redline gauge glass set with valves
 - McDonnell Miller main probe type low water cutoff
 - ASME full capacity relief valve(s) as required by code
 - 0 – 60 psi pressure gauge
 - Honeywell operating pressuretrol
 - Honeywell manual reset, limiting pressuretrol
 - Honeywell modulating pressuretrol
 - Drain Valves
 - Bottom blowdown valves
 - Nema 1 Junction box assembly
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Proposed Burner:

One (1) Webster JB2G-30 – For install on new LES firebox boiler

Webster's gas burner shall be a forced draft burner firing natural gas to be factory piped and wired. This burner is set up for 4,240 MBH input at 14 in w.c. psi inlet gas pressure. Unit is full modulation. The gas train will meet UL and CSD-1 code requirements. Included are the following controls and accessories:

Burner Trim

- Ignition electrodes
- UV scanner
- Annunciating lights
- Manual/Auto firing rate switch
- Manual firing rate limiting potentiometer pressure controlled

- Audible alarm and silencing switch
- **Siemens LMV 37 flame safeguard**
- **Linkagless Control system**
- Motor voltage: 208-3-60. Control voltage: 120-1-60

Housing

- Burner housing consists of the following components:
 - Air damper assembly with blower wheel and diffuser
 - Direct drive fuel and air control
 - Pilot assembly
 - 2" flame observation port

Control Panel

- Control panel: NEMA 1 burner mounted 24"x24" control panel consisting of the following components set up for 480/60/3 supply voltage:
 - .5 KVA control transformer with fused protection
 - Manual reset
 - On/off switch and manual potentiometer
 - Alarm bell and silencing switch with relay
 - Combustion air relay and proving terminals
 - **Siemens LMV 37 Linkagless control system**
- Three phase CSD-1 disconnect

Main Gas Train

- Pre-piped and pre-wired for 14" wc gas
- Manual shutoff valve
- Gas pressure regulator
- Primary motorized safety gas valve
- Secondary solenoid safety gas valve
- High gas pressure switch
- Low gas pressure switch

Pilot Gas Train

- Manual shutoff valve
- Pilot regulator
- Pilot solenoid valve

Control Cabinet

- Burner switch

- Manual/Auto switch
- (4) Indicating lights
- Flame safeguard
- Motor contactor
- UL, CSD-1 approved

Stainless Steel Duplex Boiler Feed System

One (1) Fabtek Model TKLB.2548SS.BFD.D consisting of a 25" diameter X 48" long (102 Gallon) Horizontal Tank constructed of 304 Stainless Steel including 20 year warranty against corrosion.

Tank shall be mounted to a Heavy Duty Stainless Steel Saddles designed for floor mounting Tank shall include Stainless Steel Site Gauge Assembly and 3" SS Dial Thermometer. System includes:

- 1/2" electric solenoid / float switch freshwater make-up assembly.
- Tank includes all standard openings including: return, overflow, chemical feed, vent and drain.
- (2) Model 30503C4BC Stainless Steel Horizontal End Suction Centrifugal Pumps close coupled to 1/2 HP 3/60/208V TEFC Motors each rated for a capacity of 14 GPM @ 50' TDH.
- SS Pump Suction Isolation Valves
- NEMA 3R Duplex Control Panel with Motor Starters & Overloads
- Panel includes:
 - Individual Pump Circuit Breakers
 - HOA Selector Switches
 - Electric Alternator
 - Control Circuit Transformer
 - Pump Run Indicator Lights
 - Pumps and electric accessories will be wired to control panel using liquid-tite conduit. Panel is designed to receive start command from remote boiler control.

Stainless Steel Duplex Vacuum Return System

One (1) Model FTSSVCU10/25203D Duplex Vacuum Condensate Return Unit. Unit shall be completely factory assembled consisting of a 304 Stainless Steel Cylindrical Receiver with an inner Accumulator Tank. System includes:

- (2) 1/2 HP 3/60/208V 304

- Stainless Steel Condensate Pumps each designed for a capacity of 15 GPM @ 20 psig and (2) 2 HP 3/60/208V 304 Stainless Steel Air Pumps each rated for 12.4 CFM @ 5.5" Vacuum.
- Pumps shall be fitted with 250 deg F Mechanical Seal.
- SS Pump Suction Isolation Valves.
- UL approved NEMA 4/12 Control Panel including Type 4/12 Steel Enclosure.
- Panel includes:
 - Motor Starters & Overloads
 - Pump Circuit Breakers
 - HOA/TOA Selector Switches
 - Through Door Disconnect switch shall be provided.
 - Control Circuit Transformer to provide 24V Control power
 - Panel shall be mounted and wired to Pumps and Alternator using Liquid-Tite Conduit.

Water Softener

Marlo Twin Alternating Softener System

One (1) Marlo MAT 15M -3/4 water softener system includes:

- **(2)** 7" Diameter x 44" FRP pressure vessels with 150 psi rating
- 1.5 ft³ Softening resin per vessel (15,000 grains Capacity per Vessel)
- Washed gravel sub-fill for media support
- .75" Fleck top mounted control valve for automatic operation
- Pentair digital display electronic timer
- Alternating flow control configuration for continuous treated water supply
- Fleck inline turbine type flow sensor
- 18" x 33" Polyethylene Brine storage tank assembly with salt shelf and safety overflow valve
- Water hardness testing kit

Scope of Work – **Installation of BEC provided Vacuum Return and boiler feed system:**

- Demo existing boiler feed tank and remove all existing components not to be reused
- Set BEC provided Vacuum return system and boiler feed system
- Pipe in new feedwater header with schedule 40 material
- Pipe in new raw water line to new BEC provided water softener make-up water – Copper Propress
- Pipe new water softener to boiler feed inlet
- Pipe in vent 3" schedule 40 piping vertically through the roof (through existing piping)
- Tie in existing electrical using seal tite electrical whips

- Run new control conduit to new boilers
- Tie in existing condensate return to Vacuum system
- Pipe new steam pressure valve to feedwater sparge
- Provide field anchors for tanks as needed
- Provide pipe supports as needed

Scope of Work – Installation of BEC provided shell and tube heat exchanger:

- Mount BEC provided shell and tube heat exchanger
- Pipe in new cold water line to tube side of heat exchanger with schedule 40 material
- Pipe 2" steam line to shell side of heat exchanger
- Pipe drip trap assembly to condensate return line
- Pipe modulating steam control valve with temperature pilot
- Provide field anchors for as needed
- Provide pipe supports as needed

Scope of Work – Installation of New BEC provided boilers:

Demolition existing and installation of one (1) new low-pressure steam boilers. This work includes:

- Demolish and remove existing steam boilers and ancillary equipment.
- Insulate all condensate and steam piping

Each of the following will be completed for boiler

- Set new BEC provided low pressure steam boiler
- Pipe 8" to 6" reducer
- Pipe 6" schedule 40 steam piping
- Tie in steam nozzle to existing steam header
- Tie in existing gas line to new gas train
- Pipe new 12" exhaust stack through existing penetration through the roof
- Install ¾" steam traps off the steam header and tie into condensate return
- Pipe safety relief valves to safe point of discharge with drip pan elbows
- Tie into existing condensate down comer as required
- Provide field anchors for tanks as needed
- Provide pipe supports as needed
- Install new 6" steam gate valve

Gas

- Boiler room gas piping- We will furnish all necessary main fuel piping and pilot line piping using Schedule #40 black steel pipe and black malleable fittings. The vent lines shall be run outdoors. Items on each burner requiring venting are as follows.
 - Main gas pressure regulators
 - Pilot gas pressure regulators
 - Normally open vent valves between the two main shutoff valves.

Electrical

- BEC will utilize existing electrical to tie in new equipment. Should additional service be required, BEC will engage a licensed electrical contractor to provide the necessary electrical feeds but this service is not included in this scope
- Interconnected Control Wiring- We will fully wire the new equipment in compliance with the N.E.C.; All conduit runs will be made from E.M.T., (thin wall) all the connections to equipment that is not panel mounted will be accomplished with liquid-tite not to exceed 18" in Length.

System Start-Up

- Inspect piping connections; make sure it is installed per manufacturer drawings and recommendations.
- Confirm steam pipe has proper slope
- Confirm if the steam line between the valve and the vessel inlet is the same size as the vessel inlet.
- Check electric service to verify the supply voltage matches the voltage on the panels.
- Check to make sure that all recirculating orifices are present and installed properly ensuring proper modulating feedwater connections.
- Tighten all screwed and flanged connections, which may have loosened in transit.
- Tighten all electrical connections, which may have loosened in transit.
- Inspect the connection to drain from the vessel drain connection. These drains must be piped to a drain in the floor. The floor drain must be sized large enough to accept the full capacity flow of the main drain of the boiler. There cannot be any obstructions blocking the discharge of the drain or overflow trap. The drain lines must be piped into the floor drain to eliminate any potential of hot water spraying outside of the floor drain causing injury to people in the area.
- Ensure that the vent valve on the boiler is open and check there is no pressure in the boiler.
- Check that the steam stop valve is closed.

- Check and open the feed water valves to the boiler and fill the water inside the boiler drum to just above the low water level.
- Check the combustion chamber from the sight glass to ensure the burner has lit and the flame is satisfactory.
- Keep a close eye on the water level as the pressure increases and open the feed water when the level of water inside the gauge glass is stable.
- Once the working steam pressure is reached, blow down the gauge glass and float chambers to check for the alarms.
- Start-up, fuel air ratio adjustment, and testing of all safety related controls. This will be accomplished by Industrial Steam personnel that have received factory training. A report will be presented to you following start-up detailing all operating parameters and safety control set points.
- Drain the vessel to check low water alarm and the low water cut off.
- Adjust the level control valve and set to the manufacturer's recommendations.
- Adjust the pressure control valve and set to the manufacturer's recommendations.
- Open the shut off valve to the makeup valve to begin filling the vessel.
- Start the boiler feed water pumps, per the manufacturer's recommendations.
- Check discharge pressure of pumps, if rattling or other noises occur, shut off the pump.

Warranty

- Equipment and labor warranty- A one year, warranty is included as follows.
 - Parts
 - Labor to provide troubleshooting service to identify defects
 - Labor to change defective parts and put equipment back into service

Notes:

- All materials, fabrication and erection shall conform to the requirements of the American Institute of Steel Construction 15th edition
- All welding shall be done in conformance with AWS D1.1

Job Clarifications:

- Applicable sales taxes are not included
- Freight logistics and associated charges for transportation of all equipment and material are included.
- All work will be performed by fully skilled Union Pipe Fitters
- The following items are **excluded** from our proposal:
 - Asbestos abatement by others

Timing and Execution:

- All preliminary piping work to be initialized prior to equipment arrival if possible
- Based on scheduled delivery of equipment, Boiler Equipment Company will coordinate the installation of the boiler room equipment and the routing of the piping to limit operational down time and any scheduling conflicts with other vendors.
- This schedule is based on access to the boiler room between the hours of 6:00 am to 4:00 pm Monday through Friday without interruptions from operational delays.

PRICE SUMMARY & TERMS OF PAYMENT

Equipment Price

Boiler

One (1) LES firebox 15 psig boilers with mounted Webster gas burner
(linkage less control system)

One (1) Stainless Steel Duplex Boiler Feed System

One (1) Stainless Steel Duplex Vacuum Return System

One (1) THS U-tube heat exchanger

Installation and startup services as described above

Total overall cost \$ 185,210.00

Thank you for considering BEC Equipment, LLC for all your mechanical construction needs. Please do not hesitate to contact us with any questions you may have regarding this proposal or any other matter you wish to discuss.

CONDITIONS OF INSTALLATION CONTRACT

Prices proposed are firm for acceptance within thirty (30) days from date of proposal if the equipment is manufactured within seven (7) months of proposal date. If the equipment is not shipped within seven (7) months of proposal, the contract price shall be increased to that in effect at time of equipment shipment.

F.O.B.: The above proposed price is F.O.B. Factory, with truck freight allowed to Chicago, IL. Not including unloading or setting.

Terms: Balance due with approved formal purchase order

Delivery: Shipment of the equipment can be made immediately after receipt of your formal purchase order

Terms: Terms of sale for the installation proposed are 30% payment required with your purchase order, with progress invoices based on work progress.