

# SPECIFICATIONS FOR BOILER CLEANING

## Firetube and Commercial Watertube Boilers

Including Parts, Travel, and Expenses

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### DEFINITIONS

<b>Provider</b>	Person, company, corporation, institution, or other that provides boiler cleaning services.
<b>Purchaser</b>	Person, company, corporation, institution, or other that contracts with, or accepts a bid from, the Provider to perform boiler cleaning services.

### BOILER CLEANING PROCEDURES

The following procedures and actions shall be performed by the Provider. All applicable steps detailed below are to be performed on each boiler to be cleaned.

#### FIRESIDE CLEANING

- Open fireside access doors and openings for full access to fireside surfaces to be cleaned.
- Vacuum clean all fireside surfaces including flues, tubes, tube sheets, breechings.
- Clean the inside of the tubes on firetube boilers using an air turbine reamer wherever possible in conjunction with an industrial trailer vacuum. All efforts shall be made to avoid flushing the fireside surfaces with water to clean the fireside. Other methods of cleaning can be used if space and location prohibit the use of a trailer vacuum.
- Inspect and report the condition of the fireside brickwork and insulation materials.
- Report any abnormalities or questionable conditions found regarding the fireside of the boiler.
- Washcoat fireside brickwork with high temperature refractory coating. Use of refractory cement is not acceptable.
- Inspect and report condition of fireside gaskets.
- Graphite the sealing surface of all reusable fireside gaskets to extend the life of the gasket.
- Leave fireside open for inspection or repairs if necessary.
- Seal and close fireside of boiler using new sealing materials where applicable.

#### WATERSIDE CLEANING

- Drain and open waterside of boiler, including all manhole and handhole openings.
- Open all float chambers, including removing low water float and probe controls for inspection.
- Remove pipe plugs in low water control piping and control line piping.
- Flush out waterside to remove normal amounts of accumulated scale, sludge, or mud that may be in the boiler, low water float chambers, or control piping. If accumulation is excessive (beyond normal levels expected to be found in a boiler maintained with good boiler operating practices), the Purchaser will be notified and if desired, the additional (beyond normal) flushing work will be performed under a separate order.
- Inspect waterside and report any abnormalities, questionable or unfavorable conditions including signs of leakage, scale, pitting, or poor sealing surfaces.
- Clean and flush make-up and/or feedwater pump strainers when applicable.
- Drain the expansion tank when applicable.
- Leave waterside of boiler open for inspection or repairs if necessary.
- Close waterside of boiler using new gaskets.
- Install new gauge glass and gaskets where applicable.
- Contact boiler operator to add the proper amount of boiler treatment for summer storage when applicable.
- Fill waterside of boiler.
- Fire boiler and warm it up to reduce damage caused by sweating, condensation, and/or oxygen pitting.

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### BURNER/BOILER CHECKOUT

- Remove and clean burner drawer and pilot assembly.
- Clean burner air damper and air intake.
- Check pilot electrode for cracks and adjust electrode setting.
- Check packing material in air/oil receiving tank, if applicable; replace if necessary and fill with new oil.
- Clean lub-oil screen and filter if applicable.
- Check oil pump V-belt if applicable and replace if necessary.
- Remove fuel oil strainer/filter if applicable and clean or replace.
- Clean flame safeguard contacts if applicable.
- Inspect and report condition of any questionable burner or safety control components or devices.
- Install cleaned burner drawer back in the burner.
- Fire and properly warm up boiler.
- Check and record burner combustion efficiency on gas and oil fuels and adjust for best possible efficiency. If boiler summer load conditions prevent performing proper combustion check out, Provider shall return at the start of the heating season to provide a complete combustion check out. **This return trip to check out and adjust boiler combustion shall be provided at no charge and is to be considered part of the cleaning service.**
- Combustion readings shall be obtained using an electronic combustion analyzer.
- Combustion readings shall be taken and recorded throughout the boiler's firing range and shall include; Oxygen (O<sub>2</sub>) level, fuel pressures, combustion efficiency, carbon monoxide (CO) level, and stack temperature.
- Check and record the operation of all boiler safety control readings including burner limit controls and interlock switches.
- Check and record the operation of the flame safeguard readings and safety timings.
- Perform a "slow drain" test on steam boilers and record level readings including; pump on, pump off, low water cutoff, and auxiliary low water cutoff.
- Fire boiler until it shuts off on pressure/temperature and insure that the unit will restart.
- Flood boiler for summer storage if applicable.
- Check all handhole/manhole plates for leaks.
- Check all blowdown/drain valves and control piping for leaks.
- Check oil, gas, and air lines for leaks.
- Check fireside seals for leaks.
- Complete detailed boiler cleaning "check off sheet" indicating work performed and all combustion readings and submit to the Purchaser.

### OTHER REQUIREMENTS

The following requirements shall be performed during and after the boiler cleaning as applicable. OSHA requirements listed are always applicable in all situations and shall be followed at all times.

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### **REPORTING**

Provider shall provide a written or verbal report when necessary indicating recommendations for repairs or replacement parts when a questionable condition is discovered. Report shall address safety, reliability, and usability concerns of the boiler or associated devices and equipment. The following list consists of items that shall be assessed and the condition thereof reported when necessary. This list is not to be considered as complete and it is expected that any other problems or concerns noted during the cleaning process will be reported.

- Fireside tube surfaces, including signs of leaks
- Brickwork and refractory
- Fireside gaskets
- Fireside insulation
- Waterside surfaces, including signs of scale and pitting
- Low water safety controls and piping
- Burner components
- Gauges and indicators
- Safety controls
- Associated boiler components and equipment (i.e. pumps, feeders, valving, etc.)

### **CONFINED SPACE ENTRY**

OSHA 29 CFR Part 1910 rulings and regulations regarding Confined Space Entry shall be followed when the boiler cleaning work involves entering a boiler or other confined space. Boiler furnace tubes, fireboxes, and watersides are considered to be a confined space as defined by OSHA. Personnel performing confined space entry shall have received training and adhere to a Confined Space Entry Program developed by the Provider. A copy of the Confined Space Entry Program as required by OSHA shall be made available on request. The Provider shall provide all necessary equipment for confined space entry procedures including calibrated air monitors, forced air blowers, ropes and harnesses, Confined Space Entry Permits, Pre-Entry Checklists, and other related equipment. Evidence of proper confined space entry equipment, confined space program, and training certificates shall be provided on request.

### **LOCKOUT TAGOUT**

OSHA 29 CFR Part 1910 rulings and regulations regarding Lockout Tagout of equipment during the cleaning process shall be followed. Personnel performing lockout tagout shall have received proper training and adhere to a Lockout Tagout Program. The necessary equipment for lockout tagout procedures including locks, tags, chains, and other related equipment, shall be provided by the Provider. Evidence of lockout tagout equipment shall be provided on request. Purchaser shall be responsible for lockout tagout whenever the Provider is not at the job site.

### **SITE CONDITION**

Provider shall leave the job site free of soot, waste, and debris generated from the boiler cleaning. All waste materials shall be disposed of in waste receptacles, provided by the Purchaser, in the boiler room. Job site shall be left in the same condition as was present prior to cleaning.

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## EQUIPMENT

Provider shall own and maintain equipment designed for use in cleaning boilers. All vacuums shall have a filtering system designed for use with soot and refractory debris. Commercial wet/dry vacuums are not acceptable.

## INSURANCE

Provider shall take out and maintain with a carrier or carriers having a Best rating of not less than B+ at least the following minimum insurance at its expense for the duration of the contract (including all warranty periods thereunder) covering all of the Provider's obligations under the Contract with the Purchaser, and subcontractors of the Provider:

- |   |   |
|---|---|
| a) <u>Workers Compensation</u>            | Statutory   |
| b) <u>Employer's Liability</u>            |   |
| Bodily Injury by Accident                 | \$500,000 each accident                           |
| Bodily Injury by Disease                  | \$1,000,000 policy limit                          |
| Bodily Injury by Disease                  | \$500,000 each employee                           |
| c) <u>Commercial General Liability</u>    |   |
| General Aggregate                         | \$2,000,000                                       |
| Products - Completed Operations Aggregate | \$2,000,000                                       |
| Personal and Advertising Injury Limit     | \$1,000,000                                       |
| Each Occurrence Limit                     | \$1,000,000                                       |
| Medical Expense Limit - Any One Person    | \$5,000   |
| Fire Damage Limit - Any One Fire          | \$50,000  |
| d) <u>Business Automobile Liability</u>   |   |
| Bodily Injury and Property Damage         | \$1,000,000 combined single limit each occurrence |

Provider shall not start to perform cleaning work under the Contract until all required insurance has been obtained and until certificates confirming such coverage have been furnished to Purchaser.

## WARRANTY

Provider shall provide **no charge service**, as defined below, for a period of 30 days, starting on the first day that the boiler is put back into service. If the boiler is to remain shutdown for the summer months, immediately after cleaning and checkout, the said no charge service period will expire on October 31 of the calendar year in which the boiler was cleaned. Exceptions to this October 31 date are not allowed unless; 1) a different date is specifically requested by the Purchaser, and 2) said date is clearly stated in the bid. Any change of this date after bid acceptance is subject to agreement by both Purchaser and Provider and additional charges, for the change in warranty coverage, shall be in addition to the bid price agreed on prior to the change.

**No charge service** shall include all calls pertaining to burner adjustments including nuisance shutdowns, flame failures, and combustion problems. Calls pertaining to equipment, component, or device failure shall not be covered as a no charge service call. Calls related to, and/or caused by, conditions that were reported as "in need of repair or replacement" and on which said repairs or replacement was not performed, shall not be covered as a no charge service call.

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### PARTS

Normal closing parts used to assemble the boiler after cleaning shall be included in the bid price for the boiler cleaning. These parts shall include but not be limited to; handhole/manhole gaskets, waterside gaskets, normal sealing materials to properly seal the fireside, gauge glass, gauge glass gaskets, and low water control head gaskets.

### EXTRAS

Provider will perform additional work, to be billed separately and additionally to the boiler cleaning bid price, only with the purchaser's prior knowledge and permission. This additional work may include equipment charges for specialized equipment and tools which may be needed to perform the work. Said work will be performed on either a "time and material" basis or as per a verbal or written quote. Said additional work may include but is not limited to the following;

- Flushing excessive accumulations from the waterside of the boiler.
- Reaming "hardened accumulations" from the fireside surfaces of the boiler. "Hardened accumulations" are defined as those that are not readily removed by normal brushing or cleaning means.
- Tube or vessel work, refractory repairs, control repairs or replacement, motor repair or replacement, work on boiler related equipment (i.e. pumps, softeners, chemical systems, etc.), work performed on the heating system (i.e. steam traps, air bleeders, circulating pumps, etc.), any other work not specifically listed in the above boiler cleaning procedures.

### EQUIPMENT CHARGES

Charges for use of all boiler cleaning equipment will be included in the boiler cleaning bid price.

### OTHER EXPENSES

Bid price for boiler cleaning shall include all expenses for boiler cleaning except for applicable taxes and boiler inspection fees. Said expenses shall include the following; truck or equipment charges, travel time, meals and lodging on overnight stays, parking, and permits.

### BOILER INSPECTIONS

Provider shall, if requested by the Purchaser, schedule necessary boiler insurance inspections as required by state codes and regulations. Purchaser shall submit to the Provider, the insurance carrier's name and a list of the boilers that require inspection.

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## **WORKING HOURS**

Unless noted prior to bidding by Purchaser, all cleaning shall take place between the hours of 7:00 AM and 5:00 PM during normal work days, Monday through Friday, excluding holidays. If the cleaning bid includes work to be done during overtime hours or during hours other than those noted above at the request of the Purchaser, the bid shall clearly state those hours in which the cleaning will take place.

If the Purchaser requests or requires that the cleaning work be completed or performed during overtime hours and it was not noted in the bid, said work performed shall be charged in addition to the bid price at a hourly rate of one half (1/2) the normal service rate for the actual overtime hours spent performing the job.

Provider shall have the option, at its own expense, to provide cleaning services outside of normal working hours if so desired only if the time of cleaning is mutually agreed on by the Purchaser and Provider.

## **REFERENCES AND QUALIFICATIONS**

Prior to acceptance of bid, Purchaser may require a list of references from the Provider which can attest to the competency of the Provider to perform the tasks listed in this specification. References shall list jobs of similar size (boiler size and quantities) and scope as those being bid on. References shall include;

- Job name and location
- Contact name and phone number for job location
- Size and number of boilers cleaned at that location

Provider shall have been in the business of servicing and cleaning boilers/burners for a minimum of ten (10) years. Provider shall have knowledge of all types of boilers and burners, and shall have the capability to provide any needed repairs to this equipment on a timely basis.

## **SUBMITTING BID**

Provider shall submit, on Company letterhead, to the Purchaser, a bid or proposal that clearly states the following items in separate paragraphs;

- Reference to this "Specifications For Boiler Cleaning", including a statement that all provisions of the specification will be adhered to and followed. If there are items in the specification that will not be adhered to or followed, a detailed list of those items shall be clearly stated in a separate paragraph.
- List of all boilers on which boiler cleaning will be performed on.
- Name of Provider's contact from which Purchaser may obtain; certificate of insurance, Confined Space Policy, Lockout Tagout Policy, or to whom questions may be addressed to.
- Working hours in which the cleaning will take place, if other than normal working hours.
- Total bid price for performing the cleaning service on all boilers listed.
- Bid shall include a copy of the typical "cleaning check off sheet" and "combustion sheet" that will be provided to the Purchaser after the cleaning is performed.