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Cold weather and an undermaintained boiler can leave you facing a systemwide freeze−up or angry, shivering building occupants in the dead of winter.

Over the course of one year, soot, non−combustible materials, mineral scale, and other deposits can form within a boiler. All lead to inefficiency and additional costs. When weighing the costs of having an annual boilermaintenance program, you may want to consider that the cost of losing a controlled, heated environment equals 10 times the cost of a regular maintenance program. Moreover, annual boiler maintenance ensures higher rates of return for fuel savings.

This sidebar will address 10 tips for maintaining an efficient, safe boiler system.

Clean the Fire Side Carbon deposits left by the fuelcombustion process act as insulators to firetubes. The deposits reduce a firetube's ability to transfer heat, thus lowering boiler efficiency.

Repair the Refractory Most boilers require some minor refractory patching. Minor cracks in a refractory occur from normal cycles and allow heat to escape, lowering boiler efficiency.

Clean the Water Side All water−level controls and related inspection points should be opened and cleaned to remove any rust or sludge buildup. This cleaning is critical to ensuring a boiler is operating safely. Also, it eliminates inefficiency and unnecessary fuel usage caused by rust and sludge buildup.

Check the Burner All moving parts of a burner should be free and non−binding. The shutter, damper, oil nozzle, and/or diffuser should be kept in like− new condition. A qualified service technician should perform these checks annually.

Inspect the Controls The mechanical and electrical operation of controls should be checked at least once a year. Inspections should take place after controls are reinstalled and mounted, but before a boiler is started. Manufacturer recommendations should be followed.

Ensure Reliability A failure to conduct annual checks can result in equipment failure or shutdown. Checks of the following should be completed annually:

* Fluid levels on all hydraulic valves. * The oil pre−heater.

* Filter elements. * The gauge glass.

* Safety valves. * Boiler feed pumps and strainers.

Maintain a Boiler Log A boiler−room log sheet serves as a guide to a comprehensive maintenance program. A log sheet can be used to evaluate performance and help spot trends that may affect operating pressure (steam boilers), operating temperature (hot−water boilers), and stack temperature. Boiler logs can help one determine when to clean a boiler, adjust combustion, repair a refractory or insulation, adjust water treatment, and replace safety devices, fuel filters, and gaskets.

Remember the Backup Fuel System If a boiler is capable of firing dual fuels (for example, natural gas and No. 2 fuel oil), and the primary fuel is natural gas, the boiler that uses oil should be fired one day each month to ensure that the oil system is functioning at optimum efficiency. The data should be recorded in a boiler log.

Consider Timing Most local and state governments require some type of renewal permit. Annual cleaning often can be timed to coincide with a boiler inspection. All concerned parties should be notified as to when equipment will be open for inspection. Records from the previous year should be readily accessible.

Analyze Combustion Schedule a complete combustion analysis by a service technician. Combustion analyses are critical because fuel costs often represent the greatest operating expense. Based on accurate measurements of combustion byproducts, a burner can be adjusted to its optimum fuel efficiency. A professional service technician will measure flue−gas byproducts and components and adjust a burner as necessary.

Conclusion Proper attention to these details will ensure a more−efficient boiler room, leading to reduced energy consumption and considerable savings.

A professional service technician performs routine maintenance on a boiler motor.

By ***EARLE PFEFFERKORN C−B Package Boiler***

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The president of ***C−B Package Boiler***, a product division of ***Cleaver−Brooks*** Inc., ***Earle Pfefferkorn*** is a 20−year industry veteran who has extensive experience in aftermarket support programs, including annual boilermaintenance programs. 

***Highlights: EARLE PFEFFERKORN, C−B Package Boiler, Cleaver−Brooks, Earle Pfefferkorn***