Get ready to turn on the heat

The summer season is over, vacations are a faint memory and school is back in session. Soon, we will be cranking up the thermostat again. Now is the time to prepare your boiler for the heating season. Boilers require a certain amount of TLC to ensure safe and reliable operation. Be sure to be aware of, and to satisfy, all requirements of the jurisdiction having authority.

A boiler is a closed vessel that operates at a positive pressure when water is heated by burning a fuel. It appears to be a passive object and looks like nothing more than a large metal box. To the contrary, a boiler is a complex piece of equipment made up of sophisticated mechanical, electrical and electronic devices. Each component of the system was designed or chosen to work in conjunction with all other parts to make this automatic heater safe and efficient. Boilers must be serviced by highly skilled technicians who comply with manufacturer's guidelines. Malfunction of the boiler or fuel burning equipment can result in catastrophic failure causing an explosion or fire.

At least once a year, every boiler should:

Have waterside cleaned	Heat from the fuel is transferred through the boiler metal to the water inside. Scale and sludge from chemicals and impurities in the water can accumulate on the inside surface of the boiler and act as an insulator resulting in more fuel being burned for the same heat output. The furnace runs hotter than normal, metal temperatures are higher, stress and fatigue affect the structural integrity and more money is spent on fuel.
Have firesides cleaned	Carbon and hydrogen are the major components of fuels burned in boilers. Hydrogen reacts with oxygen and produces water when burned. When the boiler is operating at low loads or intermittently, this water vapor can condense and cause corrosion and rust buildup. Carbon reacts with oxygen and process carbon dioxide when burned completely. Carbon also causes soot when it is not completely burned. Soot acts as an insulator on the furnace side of the boiler metal and causes the same results as scale, in addition to flashback or a furnace explosion.
Be visually inspected	The watersides and firesides should be visually inspected after being cleaned. The watersides should be examined for signs of corrosion and pitting, remnants of scale and sludge, erosion, cracking, and any other abnormal condition. The fireside should be examined for flame impingement, pockets of soot, damaged refractory, damaged seals and gaskets in the gas passage, and indications of leaking.
Have all controls and safety devices tested	Open the ends of all headers that controls are connected to verify there is no blockage. Remove plugs from all four-way T's and clean. Open all electrical connection boxes, retighten all connections and clean before reinstalling cover. Dismantle and clean the low water fuel cutoffs. Test and reset all controls during startup before placing into operation.
Have the fuel burning device cleaned and serviced	Remove the burner assembly, inspect, clean and replace any worn parts. Inspect the fuel system that could device cleaned include pipes, tubes, valves, storage tanks and meters. Adjust the burner for optimum combustion throughout and serviced the range of the burner and test all controls and safety shutoffs during startup before placing into operation.
Have the electrical supply cleaned and tested	Panels should be cleaned, fuses removed and tested, and circuit breakers exercised.

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During the heating season, a qualified technician should:

Weekly	Test the low water fuel cutoff Blow down the water column and gauge glass Inspect for leaks and clean area around the boiler
Every three months	Test the safety valve by lifting the hand lever Open and close the bottom blowdown valve
Annually	Test and adjust burner operation Clean boiler and burner Verify operation of all controls and safety devices Maintain a current certificate of inspection if required

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