



SHOP TALK

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'Tis The Season...

Another year is in the books and it is time to reflect on our accomplishments of the past 12 months. Having completed my 18th year with Johnson Paterson Inc. this past September, I am very proud to say that I work with some of the most talented people in the industry. The vast knowledge and experience that each employee of Johnson Paterson Inc. posses is extremely impressive. What I am most proud of is the level of service that each employee at Johnson Paterson provides to you, our valued customers when called upon. Thank you once again for your continued support and loyalty to our services and product offerings during these challenging economic times. I look forward to working with each one of you in 2012!

I want to wish you and your families a happy and prosperous new year.

Kevin Kingston



Tech Talk!

"DIY Boiler Service: a bad idea"

"**DIY Boiler Service**", never fails to send a shiver down my spine when I come across a poorly serviced boiler or system that I know has been serviced by a non-experienced person. Let's be clear: there's no such thing as a DIY boiler service...It should be done by a professional or not done at all.

Unfortunately, the skills that work well for fixing a leaky tap or hanging a door really can't apply when you're dealing with complex boilers and heating systems today. Even very accomplished DIYers who have succeeded with ambitious projects around their place of work need to think twice. Unless you're a licensed and experienced Gas Fitter certified to work on boilers, considering to do your own boiler service or to higher the services of those who think they are boiler repair specialists can not only be dangerous, but also illegal.

The TSSA – Technical Standards & Safety Authority have put strict rules and regulations in place for a reason, and it's because you need a high degree of specialized training (not to mention specialized tools) to properly service a boiler safely. Sure you can buy your own boiler parts and might even think you're capable of fitting a thermocouple or even a new control, but this is one area where we'd strongly advise spending a bit of money rather than taking any risks. Leave the boiler service to Johnson Paterson's knowledgeable and highly skilled team of service professionals.

Determining the Best Boiler to Meet Your Needs

When determining which boiler is right for a facility, there are many important points to consider. The first step is selecting a boiler design from options that include: industrial watertube, firetube, condensing hot water, electric, etc. A facility's particular application and capacity needs often drive the boiler design decision. After deciding on the boiler design, there are three factors to take into account: fuels, emissions and efficiency. All three impact boiler system performance and can affect long-term boiler operating costs.

From an operating perspective, fuel costs typically account for approximately 10 percent of a facility's total operating budget. It can be advantageous to purchase a boiler with a combination burner that can burn two fuels independently, for example, oil or natural gas. A dual-fuel burner enables a facility to take advantage of "peak time" rates, which substantially reduce the cost of a therm of gas when operating "off peak" by merely switching to the backup fuel. Dual fuel capability is also beneficial if the primary fuel supply must be shut down for safety or maintenance reasons.

Emissions standards for boilers are becoming increasingly stringent due to new EPA rules and state legislative mandates. The ability of a boiler to meet emissions regulations depends on the type of boiler and burner options. Cleaver-Brooks has options to meet sub-5 ppm NO_x requirements and other options to meet 10 ppm CO. Cleaver-Brooks can also custom engineer selective catalytic reduction (SCR) for more rigorous emissions control. Noncompliance with these regulations can be expensive both from an outage and penalty perspective.

The term "boiler efficiency" is often substituted for combustion or thermal efficiency. True boiler efficiency is the measure of fuel-to-steam efficiency. Fuel-to-steam efficiency is calculated using either of two methods, as prescribed by the ASME Power Test Code, PTC 4.1. The first method is input-output, which is the ratio of British Thermal Unit (BTU) output divided by BTU input x 100. The second method is heat balance, which considers stack temperature and losses, excess air levels, radiation and convection losses. Therefore, the heat balance or "In Service Efficiency" calculations for fuel-to-steam efficiency is 100 minus the total percent stack loss and minus the percent radiation, convection, and cycling losses. It is important to properly evaluate a boiler's "In Service Efficiency" as this number gives a more accurate view of how a boiler will perform throughout day-to-day operations, and not just at high-fire and 100% capacity.

Ultimately, boiler system performance is based on the ability of the boiler, burner and controls to work together seamlessly. The efficiency of the boiler is based in part on the burner being capable of operating at optimum combustion levels. Burners not properly designed or fitted to the furnace will produce unacceptable levels of excess air, CO or soot, thereby fouling the boiler and substantially reducing efficiency. In addition to the boiler and the burner, the controls included on the boiler entailing the burner management system, combustion controls, oxygen trim, etc., can greatly enhance efficiency and reduce overall operating costs. A complete packaged boiler design includes the boiler, burner and controls as a single engineered unit, and Cleaver-Brooks is the only manufacturer that offers a fully integrated boiler room solution.

Cleaver-Brooks Clear Fire Boilers

Clear fire Condensing Model CFC - premier condensing hot water boiler. Size range from 500-2500 MBH, no minimum return water temperature, efficiencies up to 99%, low NOx emissions <20 ppm, sealed combustion option and whisper quiet.

Clear fire Model CFV – Steam - Size ranges from 10-60 boiler H.P. A vertical steam boiler offering low NOx <30 ppm, 81% efficiency, premix technology, low noise <70 dBA, full modulation fire and ease of maintenance.

Clear fire Model CFH – Steam - a horizontal steam fire tube from 10-60 H.P. offering low NOx <30 ppm, 85% efficiency, premix technology, low noise <70 dBA, full modulation fire and ease of maintenance.

Hybrid Systems – Ideal for our climate!



A Hybrid System. A hybrid system utilizes both a Condensing Boiler and a traditional Hot Water Design Boiler in one system. When the temperatures are ideal for a condensing heating system the condensing boiler is utilized; all other times the system utilizes the non-

condensing commercial boiler for the heating load. Creating a heating system that would use the model Clear fire (500,000-2,500,000 btuh) with one of the non-condensing products such as the Flexible Water tube (1.5 – 12 mbtuh). This would allow the end user to heat most efficiently in all temperature ranges. Modular



design allows for great flexibility in designing the heating system and adds in the availability of a knockdown Model Flex tube (where it can be assembled right in the boiler room) providing a win win for everyone involved in both new and retrofit applications. Cleaver-Brooks recent unveiled a new Wireless Intelligent sequencing

control for hydronic heating systems called the CB-SystemMax ISD. The control can handle multiple boilers, pumps, and dampers while calculating system load; adjusting boiler sequencing and firing rate based on real time variances from outdoor temperature, supply/return temperatures and flow. The control is designed to handle up to 16 boilers, pumps and dampers.

For more information on hybrid systems, condensing or non-condensing heating boilers, or the wireless control system — call one of our sales team at Johnson Paterson today.





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There They Grow Again

The Cleaver-Brooks family of companies has increased in the past few months to include Cheminée Lining Inc. Cheminée is a Quebec-based company that was acquired by Cleaver in order to expand their offering in the boiler room. Then just recently, Cleaver Brooks' parent company acquired Resco Products. Resco is a Pennsylvania-based refractory manufacturer. These acquisitions broaden the offering by Cleaver Brooks, with the end goal to be a single source supplier for all your boiler room needs.

Cleaver-Brooks offers a full line of integrated energy solutions, including firetube and watertube packages, heat recovery packages, integrated control systems, and burner upgrades to increase the efficiency of any system.

The Engineered Boiler Systems Division manufactures the widest range of Nebraska-engineered, industrial watertube boilers (10,000 – 1,000,000 pph) and pioneered the world's highest-efficiency, ultra-low emission burners. The division offers the most advanced, integrated boiler, control, and burner management systems and manufactures the broadest line of heat recovery systems in the world. Cleaver-Brooks NATCOM burner technology meets the strictest NOx, CO, VOC, and particulate emissions requirements for gas or oil systems.

The Packaged Boiler Systems Division produces fully integrated, high-performance systems ranging from 10 horsepower to more than 2,200 horsepower. The division manufactures firetube, condensing hot water, commercial watertube, and modular boilers that are engineered to integrate with the company's burners, controls, and other boiler room equipment including deaerators, economizers, heat recovery systems, and accessories.

The Packaged Burner Systems Division manufactures a comprehensive line of high-efficiency, low and ultra-low emissions products under its flagship brand ProFire®. Cleaver-Brooks burners are engineered to integrate seamlessly with the company's line of packaged boilers, components, and controls. The Exhaust Solutions division manufactures a complete line of exhaust gas products (breaching and stacks) to fit Cleaver-Brooks broad range of engineered and packaged boilers.

Cleaver-Brooks provides its reps with the tools and equipment to optimize any boiler system operating today. The company offers comprehensive upgrade and retrofit capabilities from a world-class engineering staff. Its turnkey upgrades and retrofits make it easy to change fuel types, lower emissions, and increase boiler efficiency. Cleaver-Brooks also offers a proprietary BOOST evaluation to determine how certain upgrades and/or retrofits can help companies maximize efficiencies, reduce operating costs, and increase productivity.

In addition to providing industry-leading service and customer support, Cleaver-Brooks has one of the most extensive boiler aftermarket parts networks in the world. It stocks more than 4,000 items, including gaskets, controls, valves, accessories, pumps, motors, gauges, deaerators, and water softeners.

Kerry Johnson