



**Waterloo
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Company Limited

Boiler News

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There have been a number of product enhancements to both the hot water and steam product lines in the past year including new equipment and advanced boiler control systems upgrades. Cleaver-Brooks has also unveiled their new website to rave reviews. We would like to buy you lunch and take some time to introduce the new products as well as expand on the existing product knowledge utilizing our

Lunch & Learns for Engineers, Contractors and End Users

We are offering Product Lunch and Learns and we can do it 2 ways

1. We come to you and bring the product information and lunch; you provide the meeting room and the people.
- or
2. We can host the Lunch & Learn here at our location and with interest we can arrange a factory tour, allowing you to view the product in the plant.

Either way we can provide you with a broad overview or design a very specific presentation to meet your needs.



Genuine CleaverBrooks® Aftermarket Parts



Our warehouse and service vehicles have a vast multitude of parts to meet your needs, ranging from gasket kits, refractory, motors, flame safeguard system controls, as well as boiler tubes.

It should be noted that even with our best efforts there are times when certain parts though stocked may temporarily be on order. Some of these parts have lead times of up to 10 weeks. We highly advise any of our customers whose business could be greatly affected by their boiler being down and those with a single boiler to have critical parts at their location. By doing this you could minimize any disruptions to your building heating or business process. Our team can assist you in identifying any critical spare parts which have longer lead times.



The Cost of an Oversized and Cycling Boiler

Looking at the commercial/industrial market today, there are approximately 160,000 boilers used for heating and/or process that average in size from 36 – 400 horsepower. Approximately 106,000 of these boilers are more than 20 years old, operating at or below an "In-Service or Cycle Efficiency" of 75%.



Replacing an oversized boiler with one such as this (smaller) load matched field erectable flexible watertube, will save substantial energy costs year after year.

Why the low efficiency? It is primarily due to frequent burner cycling. This can be caused by: installing a boiler that is too large for the heat/process load as a result of original over-sizing; building efficiency upgrades; boiler efficiency upgrades or a combination of all three.

Oversized boiler/burner cycling is extremely inefficient as it exacerbates fixed losses such as radiation and convection that increase at the lower firing rates as a percent of full input. For instance, a given boiler may have a 1% radiation and convection loss at high fire, but at 50% firing rate that loss increases to 2%, and at 25% firing, a 4% energy loss results. Compound this problem with other cycling losses due to pre and post purging of air through the boiler for safety reasons, and the result is an in-service or cycle efficiency of 75% or less.

As an example, say we have a 500 horsepower, high pressure steam boiler cycling over 10 times per hour at an average of 175 horsepower for a period of 8,400 hours per year.

Assume it burns natural gas at \$ 12.00 per decatherm, and its in-service or cycle efficiency is calculated at 71.6%. The annual fuel cost is \$ 825,552.00.

By matching the load with the properly sized boiler, we find a 250 horsepower unit is now the proper selection.

Going through the same calculations, but now with a higher in-service or cycle efficiency of 76.2%, we apply the formula $(1 - 71.6/76.2 \times 100 = .06\%)$

Taking the percentage savings from the result, the new fuel cost amounts to \$ 776,019.00, representing an annual savings of approximately \$ 49,533.00. The substantial decrease in fuel cost is the direct result of proper boiler sizing to load and cycle reduction.

So in the final analysis, if your boiler is too big for the load and frequently cycles, it really pays to analyze and act. The savings can be staggering.

Rightsizing your boiler can often pay for itself fairly quickly. Let an authorized Cleaver-Brooks Rep analyze if your boiler is properly sized and suggest a custom solution. They can provide a BOOST report that justifies the investment with the fuel savings and lowered emissions.

Cleaver-Brooks TIP SHEET,
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For information on products and services please contact us at:

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