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Identifying and Preventing **DAMAGE TO AIR HEATERS**

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Five used and reconditioned mobile boiler rooms, each rated at 650 hp, found a second life in the Midwest.

5 QUESTIONS to Ask Before Selecting a Used Boiler

Purchasing a used industrial boiler may make sense for your plant. Before you buy, ask these questions to help ensure you're buying a system that will operate effectively for your application.

By Chelsey Ryker,
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When it comes time to replace an industrial boiler, or the need for additional capacity arises, boiler owners have options: They can buy new, or they can buy used. Just as the adage "Age is just a number" applies to anyone young at heart, industrial boilers that are maintained properly have a life expectancy of 25 years or more.

To aid in the decision-making process when determining whether to buy a new or used boiler, ask yourself:

- When do you need the boiler?
- How much do you want to spend?
- Do you want to test drive the equipment before making your decision?
- What type of warranty do you expect?
- A reconditioned boiler typically is 60 to 70 percent of the cost of a new boiler.
- Most manufacturers do not offer the ability to test drive new equipment. However, a reconditioned boiler from some equipment providers can be leased with an option to buy at the end of the rental period.
- Used boilers often are sold with similar guarantees as a new boiler and can be warranted for 6 to 12 months.

Given these factors, and the specific project requirements, a used boiler may well be the right choice for the application. Considering five key questions will aid in the search for a good condition, used boiler that will provide the plant with a reliable

and efficient source of steam production for many years.

1. Has the Boiler Been Reconditioned?

With a reconditioned boiler, inspections, electrical and combustion testing, hydrostatic pressure test, tube repairs or replacement, and any other integrity or cosmetic issues should be taken care of by the company selling the boiler. As always, you want to make sure to choose a used boiler supplier and inspect the equipment with your own eyes. Or, hire a third-party inspection service to ensure that the integrity of the equipment matches the buyer's scope of supply.

If the boiler is not already reconditioned by a reputable used boiler dealer, and you are looking at purchasing equipment in an as-is, where-is condition, you will want to ensure the next items are checked prior to buying.

2. Has the Boiler Been Inspected and Tested?

It is important that used boilers are inspected and tested by a reliable service company or inspection agency for any tube leaks or cracked surfaces. It also should be confirmed that there are no signs of overheating, corrosion or erosion. Tube bulges and scaling, hot spots, plugged tubes and other deformities can indicate poor main-

tenance and inadequate water treatment. A hydrostatic test should be performed, which will check for tightness of all valves, gaskets, boiler fittings and flanged, rolled and welded joints. This is the most common method employed for testing pressure vessels.

Additionally, the boiler should be tested for proper functioning of all boiler controls, including the pressure gauges, low water cut-off devices, flame scanner, fuel train, gauge glass and pressure-relief valves.

3. Are the Tubes and Internals in Good Condition?

A boiler that is properly maintained and supplied with treated and conditioned



Shown before reconditioning, this used 82,500 lb/hr boiler was built in 1993.



This is the same 82,500 lb/hr boiler after a full reconditioning. The boiler was inspected and tested, and any necessary repairs and replacements were made.

feedwater can last a lifetime. Tube damage, however, will occur if the proper maintenance is not performed. Therefore, it is imperative that tubes and internals are examined thoroughly.

The most common, most reliable and simplest inspection method is a visual check. Just by looking at the tubes, you can typically determine and identify any areas of fouling, erosion, corrosion or localized overheating issues. Borescopes also can be utilized for chemistry-related issues such as pitting or restrictions internal to the tubes. Other tests common to internal inspections include magnetic particle exami-

nation and liquid penetrant examination. Both of these tests identify external cracking and thermal fatigue. Ultrasonic testing also determines tube thickness.

Tube repairs and replacements are common to extend the life of an older boiler with tube leaks or scaling. A 10-year-old boiler with brand new tubes is almost like a new boiler — for half the cost.

4. Have the Controls and Safety Devices Been Checked and Upgraded?

Once you have tested the controls and safety devices and confirmed that they are

in working order, they should be upgraded as necessary.

Often times, components become obsolete, and improvements in design and control systems make newer devices safer and more efficient. You also will want to make sure that all controls and safety devices meet current standards such as CSD-1 or NFPA 8501.

Upgrading older controls and devices may allow for a smoother, more proficient operation. Safety valves, in particular, should always be replaced on used boilers. They are the most important safety device on a boiler.

5. Have You Done Your Homework?

You cannot rely on a piece of paper and a photo when buying used equipment. It is important to go out and examine the boiler with your eyes. Feel it, touch it and make sure it is in the condition that you are expecting. Do your own visual inspections and, if you have the ability, physically test the boiler.

It may seem surprising, coming from an industrial boiler manufacturer, but purchasing a good quality used or reconditioned boiler can be more advantageous than buying new.

Some equipment providers have a fully operational test pit at their facilities. These companies can fire their used equipment for customers to assess before they buy. It is just like buying a used car — you want to test drive the equipment before you make the decision to buy.

In addition to going out and seeing the equipment in person, research the company from which you are buying the equipment. Be sure that they are a reliable and reputable used boiler dealer so you know they will stand behind their product.

In conclusion, boiler owners and plant operators can save time and money while



A reconditioned 70,000 lb/hr boiler with SCR was sold to a customer in California and installed on-site.

obtaining a good quality boiler by buying used equipment. Do your due diligence when searching for a used boiler for a system that will deliver what you need reliably and for some time to come. ❄

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