

Enhancing Boiler Efficiency with Customer Service

PHC professionals can help customers maximize the efficiency of new and existing boilers through a combination of maintenance, education and information sharing.

By Chuck O'Donnell

In many circumstances, boilers remain an ideal space heating solution for homeowners and business owners in North America.

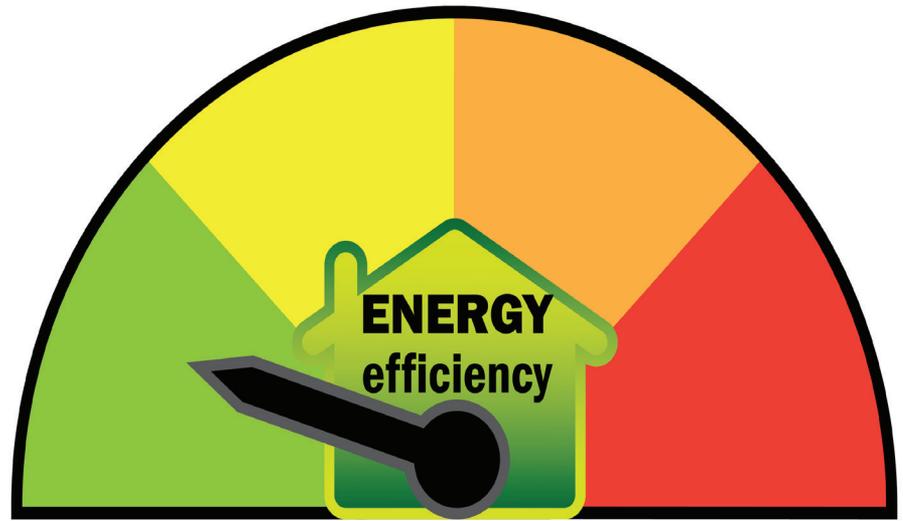
End-users, increasingly concerned with the efficiency of their homes and businesses, are looking for trusted sources of accurate information about their heating options. Contractors are in a unique position to help their customers get maximum efficiency out of their existing boilers and to understand the range of efficient heating options available, including high-efficiency gas-fired boilers for residential and commercial application.

With proper installation and maintenance, a boiler can provide reliable, efficient space and water heating for many years. And, depending on the available energy infrastructure and the application in question, the high-performance and durability of a boiler may offer greater value than other options.

Building Trust Through Maintenance

Maintenance calls are one of the most common and effective opportunities for helping homeowners or business owners enhance the efficiency of their boilers. Regular maintenance service is critical for optimized boiler performance. A boiler that is not properly serviced and maintained will be prone to breakdown or operate at reduced efficiency.

Annual boiler service calls are key for not only maintaining boiler reliability and safety, but



also for ensuring high-efficiency operation. Over time, combustion byproducts can collect on burner or heat exchanger surfaces, reducing combustion quality and decreasing heat transfer. A poor performing burner uses more gas to create the same amount of heat output.

The reduction in heat transfer further reduces efficiency by requiring the boiler to run longer to provide the same amount of heat to a home or business. A reduction in efficiencies of up to 10% can occur if proper maintenance is not maintained, and not only will efficiency be reduced, but so will the expected life of the boiler.

After giving the combustion chamber a thorough cleaning and safety inspection, the only way to truly make sure the boiler is running at peak operation is with a combustion test. This must be done using a combustion analyzer in order to properly test and adjust high efficiency, condensing boilers. This

ensures that CO, CO₂, and O₂ levels match what is recommended by boiler manufacturers as outlined in their manuals.

This is an important step that ensures safe, clean, combustion, and also avoids the issues outlined above. Improperly adjusted combustion can bring you full circle resulting in a dirty running boiler and increased combustion byproducts lining burners and heat exchanger surfaces, therefore, reducing reliability and efficiency.

Maintenance calls also provide a chance for two key steps for optimizing boiler efficiency:

- Checking the outdoor reset.
- Assessing current energy needs.

Many boilers today feature an outdoor reset control, which allows the boiler to automatically adjust its water supply temperature based on the outdoor temperature. This ensures sufficient hot water and reduces “short cycling,” saving fuel and long-term wear-and-tear.

If a homeowner or business owner has improved the overall energy efficiency of the building, the originally applied boiler settings may need to be adjusted. Properly adjusting control setpoints can also enhance the boiler's operational efficiency.

Install Efficiency Options

It's important to remember that new boilers offer greater potential efficiency than ever before, thanks to advanced combustion and control technology.

Many boiler manufacturers, including Laars Heating Systems, have increased the use of mass flow or O₂ sensors in their commercial products. These sensors limit excess oxygen within the combustion process in order to ensure peak efficiency across all operating conditions. This minimizes fuel use, as well as reduces emission levels.

O₂ sensors provide a feedback signal to the control system that senses the level of oxygen in the combustion chamber. The purpose of the O₂ sensor is to limit excess oxygen within the combustion process in order to enhance the overall efficiency of the boiler so the boiler runs at peak efficiency regardless of the weather conditions. And controls that better match building loads to outdoor conditions further enhance overall efficiency in gas-powered heating products.

The high turndown ratios achievable with current boiler models keep them operating in the low-temperature sweet spot for condensing operation whether the boiler is supplying heat to a small zone or to an entire building all at once. Additionally, the use of variable speed pumps enhances total installed efficiency savings via reduced pump energy consumption.

Control systems can help maximize the total installed efficiency by controlling a variable speed boiler

pump to maintain a fixed, user-selectable, boiler temperature rise – better matching a building's changing load profile and reducing energy use.

However, ensuring peak boiler efficiency starts with proper sizing before the boiler is installed.

Boilers in many older buildings are oversized. They are designed to produce more heat than the building needs, even on the very coldest day of

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the year, resulting in “short cycling,” where the boiler frequently cycles from off to full power. Short-cycling uses more fuel than consistent heating cycles, and adds unnecessary wear and tear on the boiler.

When the opportunity arises to suggest a new boiler installation, it is a perfect time to discuss with the home and business owners what upgrades to windows, doors, insulation, and any other improvements may have been done to the building since the original boiler was installed. A properly sized boiler for a potentially new, reduced heating load requirement could be a savings for the owner vs. simply putting in a “BTU per BTU” replacement. Both an upfront costs savings as well as operational savings over the life of the boiler.

Options and Opportunities

Contractors have a powerful opportunity to build loyalty with customers who currently choose gas boilers to meet their residential or commercial water and space heating needs. In response to a variety of factors and messaging, efficiency ranks as one of the most prominent public concerns of 2023.

Maintenance and service calls are also a great opportunity to inform customers about the wide range of efficient water heating products available. Indirect water heaters, for instance, work with a boiler and are widely recognized as among the most cost-effective water-heating systems on the market. The indirect heater efficiently facilitates the transfer of heat from the boiler to the water source, keeping energy use (and costs)

down.

Finally, rebates are commonly available for boiler purchase and installation and should be part of any consultative discussion with your customers. Federal, state, and local tax credits apply for some projects. You can find out more at www.laars.com/rebate-center.

PHC professionals can help customers maximize the efficiency of new and existing gas boilers through a combination of maintenance, education and information sharing — in turn positioning themselves as trusted service providers and differentiating themselves within their market.

At Laars, we are continuing to invest significantly in the development of innovative and efficient technology for a wide range of applications and energy sources. However, gas-fired boilers will continue to play a vital role in increasing the overall efficiency of North America's installed heating appliances, ensuring consumer choice and flexibility for the foreseeable future. ●

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