

## COMMERCIAL + INDUSTRIAL SERVICES

## bulletin

Technological advances in energy generation, distribution and delivery proceed at a remarkable pace. The options available to any commercial or industrial operation are as varied as they are numerous.

At Bay State Gas we strive to provide you the latest in technology and information on the most advanced and efficient natural gas energy solutions that are right for your business.



## HIGH EFFICIENCY BOILERS

## High Efficiency Boilers

- > Modern Designs and Materials
- > Low NOx Emissions
- > 90% Efficiencies
- > Attractive Paybacks
- > Well suited for new construction or replacement of existing boilers

## Facilities that may benefit from High Efficiency Boilers include:

- > Office buildings
- > Retail stores
- > Municipal facilities
- > Schools and public buildings
- > Industrial facilities

## Innovative Designs Provide High Efficiency and Reduced Emissions

Innovative materials and improved combustion control technology have resulted in a new generation of high efficiency natural gas boilers. Traditional boilers were designed to avoid combustion condensation (due to its corrosive nature), and large fluctuations in operating temperatures caused internal issues and thermal shock. However, without condensation, boilers cannot reach higher than 85% efficiency. Boilers that are designed for condensation and use advanced controls are able to achieve efficiencies in the high 90% range, meaning that 90 percent of the energy input is converted to usable heat for your facility. High efficiency systems are measured by their annual fuel utilization efficiency (AFUE). Savings can be significant when an older, less efficient boiler is replaced with a high efficiency system.

There is a first-cost premium for this efficiency improvement, but when energy prices are high, paybacks can be very attractive. Federal, state and local utility incentives may also be available.

Modern materials, controls and the pursuit of higher energy efficiency and reduced emissions are leading to boilers that are smaller in physical size, have cleaner emissions and produce dryer steam. New materials reduce the mass of the boiler which improves thermal transfer and are designed to handle the thermal stress of going from cold water to steam in seconds.

## High Efficiency Boilers



Multi unit installation of Clayton high efficiency boilers.  
Photo courtesy of Clayton Industries



GasMaster high efficiency boiler.  
Photo courtesy of GasMaster Industries, Inc.

Today, new boiler designs are providing some of the highest efficiencies and lowest emissions available for boilers. The latest designs are up to 98% efficient, incorporating sealed combustion systems with linkage-less modulating burners that provide high turn-down capabilities. These improvements allow for combustion air to be introduced into the burner from the outside where it is preheated further, reducing exhaust temperatures. This allows exhausting to be done via a small diameter PVC pipe eliminating the need for a traditional chimney.

Innovative boiler design options include:

“**Tubeless**” Boilers which use tubing coils instead of rigid tubes

“**Direct Contact**” water heaters that have no tubes, tubing or coils, instead using heat transfer media such as spheres or cylinders which allow flue gases to come in direct contact with the water

For facilities looking to conserve on energy costs, high efficiency boilers offer significant energy savings. Larger systems constructed of a number of small boilers offer a number of efficiency advantages:

- > One boiler may carry a larger building through Fall/Spring seasons
- > More continuous operation
- > Access solution - easier to get multiple boilers into difficult to access existing boiler rooms
- > Load matching with multiple boilers will increase overall boiler efficiency and reduce emissions

To learn more about high efficiency boilers for your business, contact your Bay State Gas field sales representatives. They will assess your needs and determine if this or another available technology will be beneficial to your business.

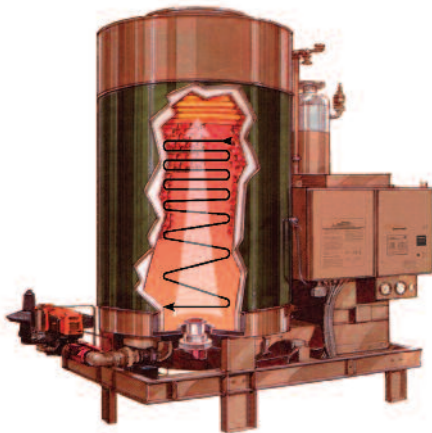


Illustration showing heat flow within boiler.  
Illustration courtesy of Clayton Industries



Steam generating high efficiency boiler.  
Photo courtesy of Clayton Industries



Clayton high efficiency boiler.  
Photo courtesy of Clayton Industries



## Partners In Energy Working Together

YOUR SOURCE FOR ENERGY SOLUTIONS

If you believe high efficiency boiler technology is an appropriate consideration for your operation, our **Partners In Energy** program can assist you. We offer financial incentives to help you minimize your upfront cost by sharing a portion of the cost to design, purchase and install the equipment. Simply follow the program guidelines to qualify for matching funds.\*

These rebates, combined with the reduction in your overall energy expenses can provide an outstanding return on investment that will pay dividends for years to come.

\*Program restrictions apply. Limited time offer.

FOR MORE INFORMATION call us toll-free

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