

# "THE MOST ADVANCED BOILER EVER MADE"

The Alta Condensing Boiler's class-leading combustion technology brings simplified installation and servicing to a high-efficiency residential unit

High-efficiency boilers are valued for their excellent energy efficiency and clean combustion, even though they are more complicated to install and service. U.S. Boiler engineers kept the needs of the contractor in mind as they set out to develop a revolutionary condensing boiler that eliminates these concerns while still delivering the best-performing condensing boiler to the market.

The new Alta Condensing Boiler offers industry-leading design features that provide easy service for contractors combined with the lower operating costs expected from homeowners. "We looked at everything from top to bottom to make the Alta mechanically sound, while delivering additional efficiencies through software enhancements," said Peter Cloonan, senior chief engineer, controls, U.S. Boiler. "It's the easiest boiler you'll ever install, because it's the most advanced boiler ever made."

To date, there are over 400 Alta units on the market as part of a limited launch. "We have received very positive feedback," said Craig Eshenaur, product development manager, U.S. Boiler. "Customers appreciate how easily the Alta can convert from natural gas to LP fuel, automatically adjusting its combustion based on installation-specific venting requirements or variable atmospheric conditions. It's a very simple process compared to the past when contractors had to change gas valves, orifices or springs to convert to LP."

## Fewer adjustments, less headaches

The Alta Condensing Boiler takes the complexity out of commissioning, with simplified controls, fewer steps and an easy-to-read display. Its class-leading, gas-adaptive combustion technology eliminates the need to fine-tune the combustion settings, further easing commissioning while assuring the systems are running safely and efficiently. Think of how a car's engine adjusts its performance under a variety of conditions (elevation, temperature, etc.). That's how the Alta works in your home!

In the past, to change the domestic hot water temperature, a contractor had to go through multiple control screens to



make adjustments. With the Alta, it takes only the push of a button to control the temperature. Homeowners can keep water consistently warm by simply selecting the comfort mode or save fuel by operating in Eco mode. Again, just like a car can switch from eco-drive mode to sport mode, the Alta can deliver unlimited hot water when you need it, with the flexibility to provide additional energy savings when you don't.

## Cold showers are a thing of the past

Modulating condensing boilers used to take up to 2½ minutes to come up to temperature and start making hot water. The Alta begins heating in under 10 seconds, thanks to adaptive combustion and a flow sensor that automatically detects when hot water is needed. "This is a fundamental game-changer. You turn on the faucet and the Alta automatically begins running," said Cloonan. "We also set the firing rate based on pressure changes in the system, so the firing rate can adjust according to the amount of hot water needed throughout the home."

## A boiler that does the heavy lifting

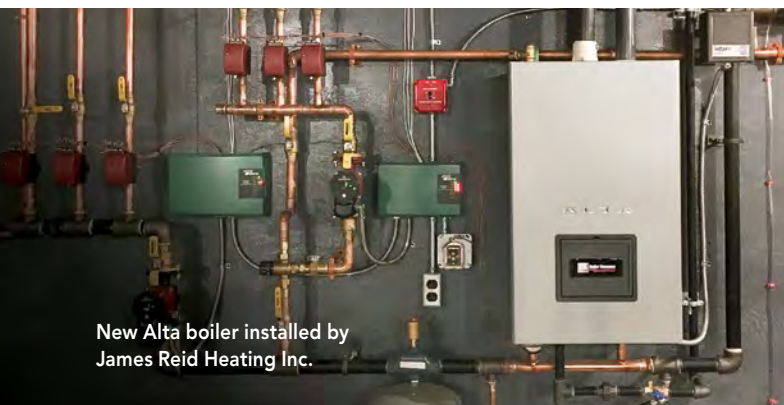
Contractors previously needed to install the boiler — then measure combustion, oxygen and CO2 and make adjustments to tune the boiler onsite. The Alta boiler is self-monitoring, meaning it can calibrate itself without the contractor having to make any adjustments.

The Alta also eliminates the need to install an outdoor temperature sensor, which is typically a required feature to meet federal regulations and provide optimal system efficiency. Because the Alta adjusts the set point based on indoor heat loss rather than outdoor temperature, it eliminates the need to wire and mount an outdoor sensor.

## Positive feedback yields strong returns

With the Alta just in the beginning stages of deployment, all signs point to a positive return on investment. "We were surprised by the feedback we received from contractors installing the product," Cloonan added. "They were going out of their way to send us praising emails, which is feedback we don't normally get. It's definitely the ease of use for contractors that is helping the Alta gain a lot of attention."

James Reid, owner of James Reid Heating Inc. in Hebron, Maine, is convinced the Alta is in a class by itself. "I liked Alta's features when I first saw it," he said. "After installing my first one in my brother's house and seeing the hot water performance, and the adaptive combustion work, I said this boiler is going to be a game-changer. I've installed five more since."



New Alta boiler installed by James Reid Heating Inc.



# PERSEVERING THROUGH A PANDEMIC

## BURNHAM ENGINEERING TEAM REFLECTS ON HOW THEY OVERCAME A NEW SET OF CHALLENGES IN 2020

In March 2020, many businesses, including Burnham Holdings, were forced to shutter their brick-and-mortar locations and send employees home to work remotely. This presented an extraordinary challenge for the Burnham Holdings engineering teams as they worked to complete a series of major new product development projects, from their various engineering labs dispersed throughout the U.S.

Recently, several members of the assorted engineering teams gathered for a virtual roundtable to discuss their thoughts on working through a pandemic and lessons learned along the way.

### What was the initial reaction to the shutdown from the pandemic?

**Craig Eshenaur, Product Development Manager, U.S. Boiler:**

I think early in the lockdown there were quite a few of us that were uncertain as to how well we were going to be able to keep up with project timelines and how effectively everybody was going to be able to do their job.

**Duane Breneman, Manager of Product Development, U.S. Boiler:**

Collaboration is a large part of how we operate, so initially it was a tough adjustment. Engineers are used to getting into a room together to brainstorm solutions. Now, we didn't have that luxury.

### What were some of the major challenges you faced working remotely?

**Paul Sohler, Director of Engineering, Velocity Boiler Works:**

When the lockdown took place in March 2020, we were in the process of working on two projects involving compliance with efficiency standards that went into effect later that month. We needed to create a solution allowing us to view a physical prototype and then share our findings via a group conference call. This led to a series of creative strategies to ensure deadlines were met. It wasn't ideal, but it got the job done.

**Craig Eshenaur:** While the engineering teams were working from home, the laboratory technicians needed access to their testing equipment and were required to work on-site. Despite the need to wear layers of protective gear to remain safe, the team came through with the critical testing needed to complete development projects. We all came together to collaborate and get the work done on time. Engineers were at the assembly plant to oversee preproduction and received support from the manufacturing facility as well.





In addition to the lab team, our drafting team has large computer setups that they can't just hold in their hand and carry with them from office to home. However, they not only managed to keep up with their work, but the head of the drafting department implemented some new forms of communication to keep engineers and other drafters updated on the status of projects, allowing us to keep things moving pretty quickly.

#### **Were there any new technologies used to enhance virtual collaboration?**

**Randy Witmer, Engineering Support Manager, U.S. Boiler:** Our people found new ways to exchange markups for bills of material. In the past, we would print out a bill of material or a hard copy of the drawing and mark it with a red pen. Our team started using Adobe and certain functionality within our ERP system and Excel that allowed us to do it electronically. We have some pretty creative and intelligent people that figured it out and kept things moving ahead.

#### **How did you ensure project deadlines were completed on time?**

**Duane Breneman:** People also stepped in when needed — often with very little notice — to support projects in the engineering lab, engineering office or in the plant. I also think people were much more intentional about how they communicated, which was necessary to ensure we were going to continue to move forward. People proved they could work independently and manage their time in and out of the office to get their work done.

**Randy Witmer:** Paul Sohler and his team, which are based out of Velocity Boiler in Philadelphia, racked up a significant number of hours commuting between Philly and Lancaster. I think it just shows that people are determined not to fail and let this thing beat them. Additionally, the new software package that we implemented keeps us up to date on everything that's going on. So instead of waiting for a weekly meeting, we can address new tasks immediately, which has been really beneficial to move projects forward in a rapid manner without going down any rabbit holes.

#### **Despite all the obstacles, what new products and innovations came out of 2020?**

**Peter Cloonan, Senior Chief Engineer, Controls, U.S. Boiler:** In addition to the new Alta condensing boiler and expanded AMP water heater line, it was a very good year of progress on development of a brand-new, cast-iron steam boiler. Once

launched in early 2021, this boiler will be absolutely best in class — no one else in the industry is developing a state-of-the-art steam boiler. There are a couple reasons Burnham is taking on this unique challenge. There is a large installed base of steam boilers throughout our core trading areas and the water in these markets is increasingly impacted by high concentrations of chlorides in the water supply, which is extremely bad for steam boiler longevity. Our new steam product is designed to offer a more robust life cycle despite these poor water conditions. Additionally, steam systems are not usually replaced in existing buildings because they are difficult to convert to a hot water system. Generally, there is only a single supply and return pipe to the radiator, so converting to a water system would require major modifications to the internal piping throughout the house. Typically, these boilers are in older, sometimes historic buildings with significant retrofit restrictions. By investing in developing a new product that's more resilient to challenging water environments, we are ensuring continued market leadership in this product segment for decades to come.

#### **Has the pandemic changed the way you may work in the future?**

**Tom Moore, Manager, Commercial Product Development, Bryan Steam:** Moving forward, I certainly feel what we learned in 2020 will make us more adaptable. For example, in the beginning of the pandemic we asked a third-party lab to come in and certify products for 2021 compliance. We got an email saying they were not visiting any labs to conduct testing until travel restrictions were lifted. Randy's team jumped in and secured a different certification lab that was able to move testing from the third-party lab to U.S. Boiler's lab. This move expedited the process and saved us at least a month of waiting for certification.

**Duane Breneman:** I also feel we learned to work smarter, knowing we had limited live interactions with team members. We successfully overcame the dual challenge of uncertainty and anxiety over the virus by learning new ways to work together and do it effectively. I don't think I could ask for better people when it comes to stepping up and getting things done.



# SMALL BUT MIGHTY

## The new AMP water heater line expansion delivers maximum performance in a compact footprint

The computer, which at first took up an entire room, now fits in the palm of a hand. Mobile phones, once the size of a bread box, can easily slide into a pocket. So, when it came to reimagining a new condensing water heater, the engineering team at Burnham knew they needed to move past a clunky design and into a world where great things come in small packages.

Currently, the AMP Condensing Water Heater series exists in the 1 million to 4 million MBH range. In March 2021, Thermal Solutions will expand the AMP product line to include units with 400, 500, 650, 800 and 1 million MBH input levels — launching this high-performance water heater into new, non-traditional boiler markets. Ideal for applications such as multifamily housing and schools, these compact units occupy only half the space of competitive systems and deliver 98% thermal efficiency.

“We’re expanding beyond the traditional boiler segments,” said Tom Moore, commercial and industrial product development manager, Burnham commercial divisions. “What makes this product unique is we’re integrating it with our proprietary Concert control platform that is pushing it into a new category for innovation.”

### Space saving advancements

Ideal for retrofit applications, all models of the AMP can fit through a standard doorway. The new AMP line also offers unique stacking capabilities to minimize the footprint in a boiler room. Innovative top water connections contribute to the sleeker design by eliminating the need for added rear dimension.

The 316L stainless steel heat exchanger features internal water circuits with large-diameter stainless steel tubes, minimizing pressure drop and allowing for reduced pump sizes. This saves on both installation and energy costs. By moving the burner from the top of the unit to the front, installation space is reduced by 46% and allows for a lower height of the water heater.



### Enhanced service and reliability

While competitive boilers don’t allow access to cleaning, the AMP line can be serviced and cleaned to ensure out-of-the-box performance year after year. All AMP models come with a supported swing-out door that offers complete access to the burner and combustion chamber — making service, inspections and cleanings much easier. The tested and proven 10:1 turndown improves combustion and allows for greater control of the firing rates for cleaner combustion through all conditions.

### Intuitive control platform

All AMP models use the same Concert controls, providing a unified strategy across many Thermal Solutions products. The AMP simplifies commissioning with a new quick setup menu that pinpoints fault codes with real-time corrective actions while seamlessly connecting to an energy management system (EMS).

Extensive data archives with graphical displays are available to evaluate boiler performance and make adjustments to maximize boiler and system efficiency. Additionally, self-guiding diagnostics help troubleshoot faults and allow service technicians to quickly drill down on the error. Four months of stored operational data give users a comprehensive view of historical performance.

### Customer-driven innovations

“The new AMPW models are more than a nod to space savings and energy efficiency. They are also a result of listening to market demands and creating a solution that exceeds those needs,” added Moore. “The engineers at Burnham field-tested all models to ensure customers were satisfied with the final product. This product delivers a lot of power in a small footprint.”

This discipline is at the heart of Burnham’s commitment to consistently respond to the needs of its customers, while maintaining a passionate focus on developing cleaner, greener solutions to support a healthier planet.

