

THE

US

Boiler Report



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Full Week, Full House

As the calendar turns to Fall, and the temperatures start to drop a bit, things generally get a little quiet in our training room. That certainly wasn't the case last week.

On Monday & Tuesday (9/23-9/24), we hosted a large group of contractors, wholesalers, and sales reps for a two-day seminar featuring a combination of a factory tour, product training, and company overview. Attendees of this group had travelled quite a distance to attend this event, coming to our Lancaster, PA facility from as far away as Bellgrade, Washington.

On Wednesday and Thursday (9/25-9/26), we hosted two seminars with Shipley Energy, a company headquartered in York, PA. This group was comprised of service technicians and the focus of their visit was Alpine boiler training.

The training portion for all of these seminars was administered by our own Ron Beck.

Some feedback that we got as a result of these seminars was overwhelmingly positive. Many attendees were pleasantly surprised at the UNMATCHED depth and breadth of the offerings and opportunities that U.S. Boiler provides for its customers. This



was especially good to hear, as many attendees in the group here on Monday and Tuesday had actually sold and serviced competitive products previously.

U.S. Boiler Company takes training sessions very seriously.

We recognize that it's no small undertaking for our attendees to take time out of their schedules to come and visit us here in Lancaster. As a result,

our efforts in training and overall company education are designed to provide as much "real world" benefit to attendees as possible.

Have you ever attended a training or overview seminar here at USB? If not would you like to? Simply contact your local sales representative of U.S. Boiler products and ask about attending an upcoming session. If you aren't sure exactly who to contact, you can always email us at webadmin@usboiler.net, and we'll point you in the right direction.



Look for this logo to find unique features that set U.S. Boiler Company apart from the competition. It's a quick, easy way to identify a product or service our competitors don't have – like **The US Boiler Report!**

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At some homes and buildings, there's an annoying echo that sounds long after the last hammer is swung. In some instances, it's as forceful as a sonic boom.

Another variation sounds like ghosts rattling chains in the wall.

Whether you're a plumbing installer, heating- and cooling-only contractor, or a bonafide wet-head that dreams of nothing but fitting pipe, you've likely run into – or have yet to – the issues that stem from the anomaly that is **"water hammer."**

Water hammer, and a variety of somewhat lesser annoyance – water chatter – are terms that describe the audible, rock n' roll world of piped systems, big and small. Water hammer is the term used to define the destructive forces, pounding noises and vibration that can develop in a piping system when a column of liquid, flowing through a line, is abruptly stopped. The tremendous forces generated at the stopping point can be compared to an explosion.

"After a sudden valve closure, a shockwave passes back and forth through the water column at roughly 4,500 fps, like a mini tsunami, causing

the vibrations known as water hammer," said Steve Hamoen, at Zonelife Inc., a design/build plumbing and mechanical installation and engineering firm based in Cambridge, ON.

When water hammer happens, energy forces cause damage throughout the piping network by the sudden shaking, pipe expansion and contraction. Damage can happen all along the piped system, especially with copper piping, not just at the point of stoppage. The weakest points in the system, typically where fittings are soldered, often absorb the majority of the impact. If left unchecked, water hammer goes from being an annoyance to being an expensive hazard if leaks develop. According to Bob Bilodeau, national marketing manager for Watts Water Technologies, the most common cause of water hammer is the quick closing of a valve within a plumbing fixture – most often a fast-acting solenoid valve inside a major appliance.

Whoa: 600 psi!

"When a piped supply of water – at 50 to 70 psi – is in motion and then suddenly stops, a sonic wave surges backwards toward the supply," said Bilodeau. "The problem can be especially challenging if the water piping is made of rigid copper," he added. Modern PEX plumbing systems are far more forgiving because

the tubing is pliable and the shock is absorbed. However [similar in this way to copper fittings], it's the crimped or otherwise coupled fittings that can be the weak links.

"The best solution is proper placement of a water hammer or 'shock' arrestor," continued Bilodeau. "Locate the device on the supply line as close to the fixture [that causes the problem] as possible. Typically, these are mounted in the wall very near where the line protrudes from the wall, going to the fixture."

The speed of the valve closure, especially during the last 15 percent of valve's closing, is directly related to the intensity of the surge pressure. An approximate pressure rise of 60 times the fluid's velocity is produced. So, water traveling at 10 fps could produce a shock pressure of 600 PSI!

Canada takes a stand

Water hammer problems became so pervasive in Canada's Quebec Province that the installation of water hammer arrestors was mandated. For the past three years, building codes now demand that all new homes must include the installation of the devices.

Mike Breault, product manager with Watts Canada, based in Burlington, ON, said that the mandating of water hammer arrestors stems chiefly from the need to solve widespread water hammer problems in new home developments.

"Quebec is a fast-growing area," explained Breault. "There are large, new subdivisions that place a strain on the water supply infrastructure. That leads to water pressure irregularity, so pressure-boosting stations are being installed. But this introduces a new challenge: higher-than-normal water pressure with some homes getting between 80 psi or higher. We've learned of some homes receiving water pressure in excess of 105 psi."

–Continues, see "Ghosts" on page 8



**Bare
Bones
BizTips**

By
Ellen Rohr

Snappy Answers to Tough Questions

Have you ever been caught off guard with a tough question from a customer? Perhaps you stumbled through and muttered something incoherent. Probably you got defensive and made a bad situation worse. Boy, I have. However, over the years I've gotten smarter...and snappier! I've learned from listening in on some terrific conversations in shops across the country.

Here are a few snappy answers to tough questions...

“Can you just send me a bill?”

This really means, **“Will you loan me \$350?”** if that's the amount on the invoice. So, respond with... *“Mrs. Fernwicky, would you like to defer your payment? We'd be happy to put today's services on your credit card. Do you prefer Visa, Master Card or American Express?”* Financing programs help you out here, too. Check into one for your company.

“But, your father used to send me a bill...why can't you?”

“You knew my dad? He taught me a lot about plumbing, and business. One thing he taught me is, ‘Keep your costs low. Wasted steps mean higher prices to your customers.’ As part of an overall

plan to run an efficient business, we are eliminating paperwork that can cost you money. So we are collecting on the job now.”

“How much for a water heater? I've been calling around. I've heard prices from \$250 - \$400?”

“Mrs. Jones, I understand you want to get the best value for your dollar. It's no fun spending money on home repairs! When you get a quote for plumbing service over the phone, keep in mind that the price MAY CHANGE once the serviceperson arrives at your home. Perhaps the current plumbing isn't to code, or maybe there is some problem that the serviceperson wouldn't discover until he takes a look at your water heater. So, the price could change. We don't like to work that way.”

“As a professional, our serviceperson must see the problem before he quotes you a price. You know how...you call the doctor because you KNOW you have strep throat, but the doctor must see you before he writes a prescription? That's because he is a professional. When he comes to your home, our serviceperson will inspect the water heater, and visit with you about your home and water usage. Then he will make professional recommendations to repair or replace the unit. He won't begin the repair until you have approved the written proposal.

And we will hold to the written price. No surprises. May I schedule you for a service appointment?”

So...Mrs. Jones says, **“No, thanks.”**

Oh well.

Then you say...*“No problem. Mrs. Jones, would you do me a favor?”*

She'll be surprised, but say, **“Uh, sure.”**

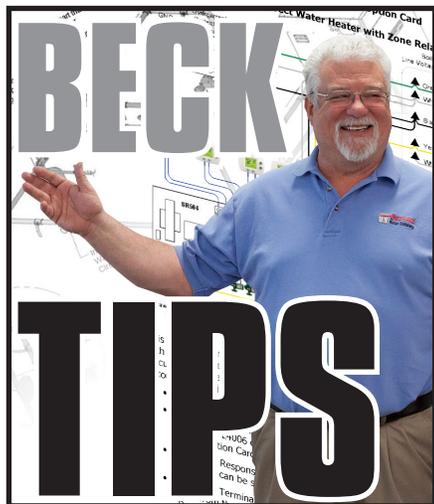
“If you have any problem with the service you receive today, give me a call back. I will send one of our top-flight techs to your home ASAP. OK?”

She'll say, **“Ok.”**

You may not book every call. Don't say anything like, *“You get what you pay for!”* Or *“You'll be sorry!”* Make it OK for her to call you again. There is the likelihood that an underpriced competitor will disappoint and change the price from the phone quote. Just sayin'.

Snap, crackle...POP!

A business plan can get you all on the same page! Less stress and drama, MORE MONEY! Download Ellen's free Biz Planning Video Series at: www.BareBonesBiz.com You can also find “ellenrohr” on Facebook, Twitter and Google+.



**By Ron Beck,
U.S. Boiler Company**

When Alpine high efficiency boilers are retrofitted into older homes with indirect water heaters, the heat loss is normally larger than the hot water demand. When the boiler is sized by the higher BTU/h heat demand and the boiler runs on the lower BTU-required DHW demand, the boiler will normally run much shorter cycles.

Short cycling is caused when the BTU input is greater than the connected load can dissipate. If this were a cast iron boiler, there'd be nothing you could do. The Alpine high efficiency boiler offers a cure. The best operation is when the boiler input and the connected load – be it radiation for heating or the indirect water heater for DHW demand – uses all the input BTUs. This causes longer run times, which helps maximize efficiency.

When the boiler inputs many more BTU's than the load can remove, the boiler water temperature raises too quickly, causing the boiler to repeatedly reach the high limit water temperature. Then the boiler shuts down. As long as there is a demand, the circulator will continue to run and the load keeps removing heat from the boiler. The boiler cools off to the **“Differential Below”** temperature setting, and re-fires until it reaches limit again, shutting down. This

Alpine Short Cycling? Here's the Cure!

continues until the demand satisfies. Short cycling can reduce efficiency and increase maintenance issues.

If your Alpine boiler is cycling only a few minutes at a time when reheating the indirect water heater, you may want to check the cycle times using the touch screen display. To gather that information, depress the status key until you see a display giving you the hours of operation and number of cycles. If you multiply the hours times 60 to convert to minutes and divide by the cycles, that will determine the average runtime in minutes.

If this results in runtimes of 1, 2 or 3 minutes, the boiler is short cycling. This is an average runtime for heating and making hot water. You will have to check the cycling of the boiler to determine if the boiler is short cycling on the DHW demand or not. When recovering the DHW tank, a good cycle count would be 1-2 cycles.

Now that you know what the average runtime is, short cycling can be reduced with a few button presses. The Alpine Sage2 control allows you to change the inducer fan RPM for heating and/or DHW demands independently. When the inducer fan RPM is reduced, so is the boiler's BTU input. This increases the run time during the demand cycles and avoids the short cycling dilemma through lower BTU input and slower temperature changes. Getting good average cycle times may require adjusting both the heating and DHW RPMs. There is a possibility the boiler is oversized for heating as well as DHW.

If either the heating or DHW inducer fan speed is reduced, the Alpine can still run at the maximum input for demand that was not changed. You now effectively

have two different input rates – or looking at this another way – two boiler sizes. When the boiler BTU input closely matches the BTU requirement for the indirect water heater or heating load, the short cycling is greatly reduced. Contrary to popular belief, longer run times are more efficient than shorter run times. High efficiency modulating boilers are designed for very long run times and are most efficient operating as designed.

To find the proper fan speed to fire the boiler for the water heater, you need to know three things:

1. **The BTU requirement for the indirect water heater.**
2. **The BTU DOE output of the boiler.**
3. **The maximum fan speed the boiler operates at for DHW.**

Here's how to calculate the DHW fan speed when the IDW BTU requirement is less than the boiler DOE output.

Let's assume we have an ALP210 and an Alliance AL35SL indirect water heater.

The ALP210 has a DOE output of 193,000 and a max fan speed of 5950 RPM. The Alliance AL35SL indirect water heater has an input rating of 99,000 btu/h

First divide the lower required indirect water heater input by the higher boiler DOE output.

–Continued, see “Cycling” on page 8



An Outstanding Response Superstorm Sandy...one year later

Last October, as soon as Hurricane Sandy blew out and the streets of Long Island were cleared to the point of single lane passage, the phone started ringing at Outstanding Plumbing and Heating, Inc.

“We must’ve completed two dozen boiler retrofits in a matter of a few weeks,” said Rob Cartelli, owner of the 12-person Smithtown, New York company. “It was nearly impossible to get around or find parking, and we were simply installing **any** equipment that could be found. Make and model were irrelevant. The focus was simply getting heat back on, and homeowners

were hiring anybody with a wrench, regardless of experience.”

Working with unfamiliar equipment added to the challenge. What wasn’t up for debate was the fuel type. Replacement systems had to burn whatever the home was equipped with. But now, nearly one year later, Outstanding technicians find themselves in the midst of another storm. But this one is better for business, less chaotic, and doesn’t involve the emotions that Sandy did.

The storm continues to make waves in the form of a burgeoning market for boiler retrofits and conversions

Winds of change

“We’ve swapped several dozen oil burners for gas units in the past year, simply because the homeowner preferred to burn gas, and was spurred by the residential energy efficiency rebates,” said Cartelli. “Much of it has been through National Grid, the gas utility throughout much of New England. They contact homeowners to inform them when gas is available in their area, and then our phones ring non-stop.”

Cartelli has found that the combination of efficiency and rebates makes homeowners aggressively pursue the idea

of a retrofit. The only deciding factor is who the installer will be and what equipment they’ll have installed.

“We offer three tiers when it comes to boiler selection,” he continued. “The Burnham Series 2, the ES2, and the Alpine. If they’re looking for an entry level boiler to bring their simple hydronic system into the gas realm, they’ll likely go for the Series 2. Lately, the ES2 seems to be the most popular – providing a step up in rebate qualifications without a huge price difference. If they’re really energy-conscious and the application fits, they

*-Continues, see
“Outstanding”, page 6*

–“Outstanding”, continued
might go with an Alpine.”

According to Cartelli, the wall-hung Alpine has also become a favorite of customers whose homes have flooded in the past. There’s peace of mind that comes from knowing the boiler is up off the basement floor.

In May, Outstanding customer, Serge Lambardi found the installed cost of the ES2, and associated rebates too much to resist. Not long after, Outstanding technicians completed the oil-to-gas conversion in his home. “I’m looking forward to the fuel savings this winter,” said Lambardi.

The 140 MBH Burnham ES2 that Lambardi had installed qualified him for \$965 of rebates. With the Alliance indirect tank and programmable thermostats, his total rebate amount was \$1255.00.

Satisfaction Guarantee

Outstanding P&H extends a written satisfaction guarantee to their customers as part of their membership program. For a \$289 annual fee, this includes a plumbing inspection, identification and tagging of all mechanical components, inspection of equipment, priority price and scheduling, and a three-year parts and labor guarantee.

But Cartelli wouldn’t offer the written guarantee if he knew it would come back to haunt him. He’s able to

do so because he’s confident in his employees. Their customers aren’t afraid to say so, either.

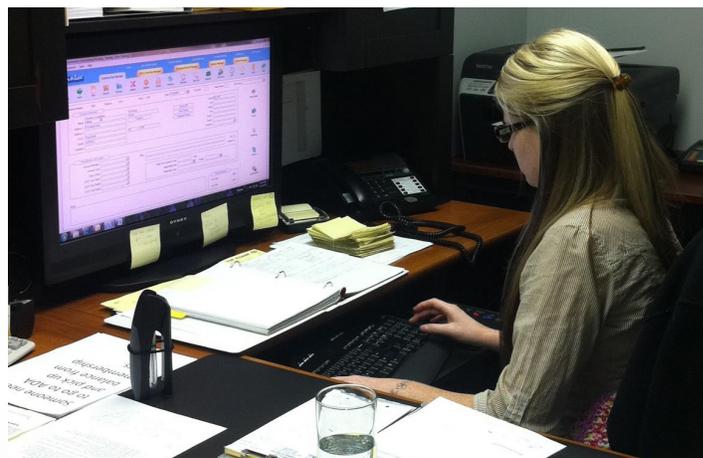
“We initially hired Outstanding to take care of some plumbing issues a few years ago,” said Karen McPoland, whose home in Smithtown is only minutes from the company’s shop. “After learning that we could change from oil to natural gas, I scheduled a date to update the heating system.”

The project was pushed back because it was scheduled to happen right when Hurricane Sandy hit. Needless to say, the folks at Outstanding were tied up elsewhere. Luckily, McPoland suffered only a broken fence.

“Once things settled down, they did an ‘outstanding’ job – no pun intended – on our heating system,” McPoland continued. “They walked me through all the rebates, and I can’t speak highly enough of their employees, especially Megan, their office administrator. She made everything easy.”

The new system that serves McPoland’s 1,900 square-foot home consists of a Burnham ES2 with a 50-gallon Burnham Alliance sidearm tank for DHW. The original system was a bit oversized, with an internal coil for hot water.

“I’m now saving about \$700 over the course of the summer, and roughly \$30 per month during the heating season,” said McPoland. “It goes without saying that the savings I’m seeing, plus the initial rebates I got, make me a very happy customer.”



(top) Field Supervisor Danny Fehrenbach wires a digital shower control panel. (middle) One of Outstanding’s service vans parked outside of the Northport Theater, where the company has a service contract. (bottom) Office Administrator Megan O’Malley helps the company run smoothly.

ASK ALEXIS!

by Alexis Gessner

Alexis is the Marketing Media Specialist for U.S. Boiler Company and manages all the company's social sites. She graduated in 2010 with a BS in Business, Digital Media, and Photography, and brings a young, tech savvy perspective to the HVAC industry...a growing trend.

This article is part of an occasional series devoted to the many sides of marketing in today's digital media environment. If you have any suggestions or questions for Alexis she can be reached at: webadmin@usboiler.net



Let's discuss Facebook, the largest social media platform. With over a billion users (yes, that's a "B"), it's obvious that companies are utilizing Facebook to boost their service, brands, or products to potential customers. It's beyond convenient for a company to create a Facebook page and publish their profile. However, setting up a Facebook page that receives a lot of "likes" and a huge fan base takes some strategy.

Yes! Do this!

Use Facebook to your advantage. Be a social stalker! What's your competition up to? What

Facebook. The Do's and the Don'ts

promotions are they running? How intriguing are their posts? Stay connected to stay ahead of the game.

Another advantage is to follow your distributors and manufacturers. Be the first to know about new products and features while staying up-to-date with industry news.

Which witch is which?

Yup... spelling, grammar, and punctuation. Need I say more? Remember, your social site IS the voice and feel of your company.

Engage!

It's important to share intriguing photos and videos! Show off installations, products, and graphics. You can also engage by offering promotions and giveaways. By getting customers to your business with an offer they can claim and share with friends... you now reach new potential customers. Additionally, giveaways enable you to have an ongoing conversation with customers that are interested (relationship builder).

Comment back to people that comment!

If a customer called you, would you not answer the phone? Facebook IS customer service and is new age dialogue.

Use your Facebook insights tool. Seriously.

Insights are a set of analytics that tracks usage and interaction with your page. Why use it? Because you can use the data to better understand your followers' demographics and how people are using your page. You will discover what content you post is of most interest.

No no no. Don't!

Just like dating, don't smack-talk the competition. It makes you sound insecure.

NO novels.

Facebook offers a quick way to stay connected in our fast-paced, busy world. Many times, a post may only receive a glance on a smartphone. Avoid the paragraph posts! Lets face it, people are too lazy to read that much.

Don't erase negative customer comments (unless they are way over the top).

Whaaaaaat??? Use the situation to turn the circumstance around. If successful, you will not only prove outstanding customer service, but also generate the best source of "word of mouth" marketing. Ever hear "any publicity is good publicity?" Not entirely

true – bad publicity is only good if you use it to your advantage. Use these situations to make good on a mistake if it was your fault. If it was a product issue, or a problem you had nothing to do with, fix it anyway!

Keep business and personal life separate.

Customers don't tend to care about what you had for dinner. Nonetheless, don't be shy about posting community events your company may be involved with.

Don't post once in a century.

Ignoring your Facebook page will send the "eh, don't care... nothing new here" message. Post consistently, then your posts will start moving up the ladder of your fan base newsfeed. An abandoned page can be worse than no page.

Be Yourself

Major thumbs down to overly-formal responses. Come on, loosen up, and be real! Use Facebook as a tool to connect personally with your customer. Don't work off of a script.

No politics. Ever.

Not even a little. Whatever side you take, you're going to alienate everyone on the other side.



Easy, Intelligent, & Proven... Alpine Boilers

- Fast & easy “out of the box” installation. The Alpine’s default settings can speed installation and eliminate guesswork.
- A Touch Screen Interface provides visual prompts and plain language instructions (eliminates codes and scrolling).
- Flexible capabilities are built into the Sage 2.1 control system which enable optional custom boiler settings to fit the needs of many heating systems.
- Increased modulation control for boilers approaching high limit temperatures. This capability slows the rise of boiler temperature and minimizes nuisance lockouts.



– “Ghosts”, continued

The higher the pressure within the piped system...the bigger the water hammer potential, and the severity of its effects.

Temporary relief of water hammer shock can be achieved by installing a correctly-sized air chamber, generally a standpipe. Although effective for a short amount of time, air chambers lose their effectiveness rather quickly, either during the flow cycle, when water travels both ways, or by the air being absorbed through turbulence. Short of draining the entire pipe system and removing the chamber, there is no way to replenish the air in the chamber.

“The only true, permanent solution to lessen the damage caused by water hammer is to install an engineered water hammer arrestor/surge absorber,” said Breault.

Are your customers hearing sonic waves? Solving the problem may be easy enough...and you’ll be an instant hero.

– “Cycling”, continued

EX: $99,000/193,000 = 51\%$

Next multiply the maximum fan speed by the above as a decimal.

$5950 \text{ RPM} * 0.51 = 3035 \text{ RPM}$.

Finally, enter your passcode in the **adjust** menu, choose **modulation setup**, press the right arrow key until you find “**DHW Max Modulation**.” Press the down arrow key to the calculated RPM and press the check mark to save the new setting. That’s it!

If the larger load is the indirect water heater, or if the boiler was oversized for the home and you want to de-rate the boiler for the heating load, just replace the BTU heating load from a calculated heat loss for the indirect water heater load in the above formula and change the “**Heating Max Modulation**” display by entering as stated above. You will now limit the input on a demand for heat.

You may also change the response speed for heating or DHW in the respective menu options. The response speed is a scale of 1 – 5. When adjusted to one, the modulation rate is slower to increase and slower to decrease. A setting of 5 will modulate up faster and down faster.

Ron Beck is Outside Technical Advisor and Manager of Training for U.S. Boiler Company, where he’s been since 1998. Ron’s 34 years of experience in the heating industry include climbing the ranks of a HVAC company, from apprentice to service manager. Currently, he’s the de-facto, go-to solution guy for contractors in the field. Ron can be reached at: RBeck@usboiler.net or (717) 877-9738



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Dan Vastyan (Delta C): 717-587-9595
Ken Niemi (U.S. Boiler): 717-397-4701

Distributor Line: 866-659-3927
Tech Line: 866-684-1463



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