



THE GRIME

SPRING 2023 Newsletter

HOW DO I MAKE MY BOILER MORE EFFICIENT?

By Gerald Blain

Maximum efficiency is the holy grail of every boiler operator out there. After all, the less fuel it takes to do the job, the more money you save every month. Plus, the better your boiler operates, the more capacity it can generate and the quicker it can recover from times of peak demand.

around the boiler. In a sense, they're all part of one big system that has to stay in sync to maximize every energy dollar. So, to make your boiler more efficient, you have to look at the problem from several angles.

and there's only so much an older boiler can do, even at its best. If you use a lot of steam, it might be worth investing in a newer boiler system that can start to pay for itself on day one.

HOW YOU TREAT YOUR BOILER

Getting the most out of your boiler means putting the most into it in terms of elbow grease.

Regular cleaning of the water side will help reduce the buildup of scale in the tank and tubes. If that scale builds up, it starts to act as an insulator, preventing the heat from transferring to the water efficiently. That, in turn, causes your boiler to use more fuel to get the same amount of steam.

Regular cleaning of the fireside is just as important. If soot and residue build up inside, they can act as insulators between the flame and the tank. Soot and residue can also restrict burner plates and can even cause improper readings in the flame sensor.

YOUR PIPES

Heat always likes to move to



"Boiler efficiency isn't about just one thing"

Boiler efficiency isn't about just one thing, however. There are several things at play as a boiler operates, including the boiler itself, the fuel supply, the water supply, and the environment

THE BOILER ITSELF

Efficiency can depend a lot on the make, model, and age of your boiler. Technology has come a long way in steam production,

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colder areas, which can mean losing heat in your steam pipes. Lost heat through the pipes not only wastes energy but also causes condensate that has to be drained away so it doesn't cause corrosion or damage in pipes or end processes. By insulating your pipes, you'll save energy in every pound of steam you produce, while helping your entire system last longer.

THE FUEL SUPPLY

If you want to have steady efficiency, a consistent fuel supply is pretty much critical. If your gas pressure fluctuates, it can cause your burners to get starved for fuel, or fed too much. That could mean safety switches tripping, and resets, and shutdowns. It could also cause your fireside to alternate between too much and too little heat, which means it's always trying to play catchup. That not only wastes fuel, it can cause heat stress to the boiler over time.

A gas pressure regulator is a relatively inexpensive and absolutely 100% necessary piece of equipment if you want consistent, efficient operation. It may also be code in your area, as well.

THE BURNERS

Burners need to be regularly inspected and tuned to make sure they're creating a consistent, even flame that falls within spec. If your boiler's furnace is using older burners, consider upgrading to newer, more efficient burners to get more out of your energy dollar.

RECLAIM THE HEAT

Installing an economizer in your system can help you reclaim

a lot of heat you'd otherwise use, and put it to work. With an economizer in place, the heat that you'd normally lose through your exhaust stack is used to preheat your feed water, so the boiler won't have to work as hard to bring it up to the right temperature to phase-change into steam.

GET CONTROL

If you have an older boiler, upgrading the control system can help you create more steam with less fuel. Modern boiler control systems can keep every part of a boiler in perfect balance, from the fuel flow to the feedwater rate. By adjusting them automatically, the system creates a sweet spot of efficiency and then keeps everything where it needs to be with constant micro-adjustments.

WATER QUALITY

You get as much out of your boiler as you put into it, literally. Water quality is kind of a big deal when it comes to proper boiler operation, largely because of what comes in with it. If your water isn't properly softened and conditioned, your boiler water will be full of dissolved solids. As they get hotter inside the tank, they start to collect and stick to each other and to every surface in your water side, from tubes to pipes.

As they build up, they rob your boiler of efficiency by restricting heat transfer and water flow rate over time. That means your boiler has to turn up the heat to make the right amount of steam. But the dissolved solids in boiler water can also affect the water's conductivity, which is its ability to conduct an electrical current. Electricity can accelerate

scale buildup, sort of like evil electroplating on the inside of your boiler. It can also accelerate corrosion inside, shortening the boiler's life. So the less electricity the water can conduct, the more efficiently your boiler can run.

INSULATE YOUR BOILER ROOM

Every boiler out there will radiate heat in some quantity. If it does so in a warmer room, there will be less of a temperature differential between the boiler itself and the environment around it. That means the heat will bleed through slower, causing less lost energy over time.

TRAIN YOUR PEOPLE

A well-trained boiler operator who knows their boiler inside and out can help you save on operating costs. If they have a thorough understanding of the equipment they will be able to make small adjustments and tweaks to the boiler as it runs to keep it properly supplied with the ideal amounts of fuel, air, and water. A boiler operator who's tuned in will also be able to detect problems long before they become serious, saving money in repairs or replacements down the line.

CALL A PROFESSIONAL

Regular inspections and maintenance will help keep your boiler running at its best. There's no substitute for the training and experience a good boiler technician brings to the equation. WARE has some of the best around, with the tools and education to get the most out of every boiler in terms of efficiency and safety. If you need us, we're always there. Just let us know how we can help.



THE WARE MOD-V MODULATING VALVE. The gold standard

By BRIAN GRINESTAFF

Sometimes, if you want something done right you have to do it yourself. That's what WARE did when we created the Mod V modulating feedwater valve. It's a purpose-built valve designed from the ground up by the experts at WARE to be everything a feedwater valve should be, and then some. In fact, we say it's the best-designed valve out there. We put a lot of

thought and effort into every detail, and you can tell. But before we go into details, let's take a look at what the name really means.

WHAT THE NAME MEANS

The WARE Mod V Modulating Feedwater Valve, kinda rolls off the tongue, doesn't it? But each part of that name tells you something important about the valve. First, there's that big ol' "WARE" on the

front of the name. That tells you that this valve was built right, by people who know and work with boilers every day and have done so for decades. It also tells you that this is a quality piece of equipment made with only the best materials and the most effective designs.

The "Mod V" part of the name tells you what to ask for when you decide you deserve the best boiler valves around. It also gives you a hint about how it performs, which is immediately followed up by the important details.

"Modulating" refers to the fact that this isn't just an on-and-off kinda valve. It's a valve that can be opened or closed to any point between 0 and 100%, which means your boiler's control system will be able to make small adjustments to the valve as the boiler operates, ensuring that the exact right amount of feedwater is flowing at all times whether that's 10%, 52%, 100%, or 0%. By making these small adjustments rapidly over time, the boiler can find a sort of "sweet spot" where it's hitting on all cylinders, so to speak, providing the exact right amount of steam while operating as efficiently as possible.

The "Feedwater" part of the name tells you the valve's primary function, which is to supply the feedwater that replaces boiler water lost to steam production. Without enough feedwater coming in, your boiler can run low. That causes damage to the boiler, and it hampers efficiency. But you don't want too much



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WARE's YouTube CHANNEL



YouTube channel wareboilers has informational and fun videos involving boilers, burners and more from an industry leading boiler company

#1 ON-LINE SOURCE FOR BOILER EDUCATION



Boiling Point - Ritchie Ware
Learn different aspects of your boiler room equipment.



Steam Culture - Brent Falcone
Where steam and culture intersect.



Boiler Tips - Jude Wolf
Learn boiler tips from a true Boiler professional



OTHER VIDEOS INCLUDE:

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NEW AND USED LIST

ALL EQUIPMENT LISTED IS FOR SALE OR LEASE AND SUBJECT TO AVAILABILITY

Unit	HP/PPH	Year	Manf.	Fuel	Type	PSI	Ctrl.
796	82,500	2016	Victory Energy Faber	(Low NOx) G/#2	Steam	350	IRI
797	82,500	2016	Victory Energy Faber	(Low NOx) G/#2	Steam	350	IRI
767	75,000	2011	Victory Energy	(Low NOx) G/#2	Steam/SH	750/750	IRI
747	75,000	2000	B&W	(Low NOx) G/#2	Steam/SH	750/750	IRI
791	75,000	2016	Victory Energy	(Low NOx) G/#2	Steam/SH	750/750	IRI
750	70,000	1996	Nebraska	(Low NOx) G/#2	Steam/SH	750/750	IRI
709	60,000	1979	Zurn	(Low NOx) G/#2	Steam	500	IRI
741	60,000	1979	Zurn	G/#2	Steam	550	IRI
795	40,000	1986	Cleaver Brooks	Gas	Steam	260	IRI
SWVB4	2500	2021	Victory Energy	(Low Nox) G/#2	Steam	250	UL/CSD-1
SWVB3	1500	2021	Victory Energy	(Low Nox) G/#2	Steam	250	UL/CSD-1
SSB-56	1200	2021	Victory Energy	(Low NOx) G/#2	Steam	250	UL/CSD-1
634	800	1972	York-Shipley	G/#2	Steam	150	IRI
620	800	1975	York-Shipley	G/#2	Steam	250	IRI
SSB-69	800 XID	2023	Victory Energy	(Low NOx) G/#2	Steam	250	UL/CSD-1
SSB-67	600 XID	2023	Victory Energy	(Low NOx) G/#2	Steam	250	UL/CSD-1
SB-139	500	2001	Cleaver Brooks	G/#2	Steam	150	
SB-277	400	2023	Victory Energy	(Low NOx) G/#2	Steam	150	UL/CSD1
SB-138	350	1994	Cleaver Brooks	G/#2	Steam	150	
SSB-39	300 XID	2016	Victory Energy	(Low NOx) G/#2	Steam	150	UL/CSD-1
SB-258	300	2016	Cleaver Brooks	Gas	Steam	150	ULs
SSB-65	250	2023	Victory Energy	(Low Nox) G/#2	Steam	150	UL/CSD-1
SB-148	200	1995	Kewanee	Gas	Steam	325	IRI
SB-273	200	2022	Victory Energy	G/#2	Steam	150	UL/CSD-1
SB-146	200	1995	Kewanee	Gas	Steam	325	IRI

TURN THE PAGE FOR MORE EQUIPMENT



ONE HOUR QUOTE ON-LINE AT WAREINC.COM OR CALL 800-228-8861





NEW AND USED LIST continued

ALL EQUIPMENT LISTED IS FOR SALE OR LEASE AND SUBJECT TO AVAILABILITY

Unit	HP/PPH	Year	Manf.	Fuel	Type	PSI	Ctrl.
SB-267	175	2022	Victory Energy	G/#2	Steam	150	UL/CSD-1
SSB-53	175 XID	2020	Victory Energy	(Low NOx) G/#2	Steam	150	UL/CSD-1
SB-264	175	2022	Victory Energy	G/#2	Steam	150	UL/CSD1
SB-266	150	2022	Victory Energy	G/#2	Steam	150	UL/CSD1
SSB-66	150	2023	Victory Energy	(Low NOx) G/#2	Steam	150	UL/CSD1
SB-265	150	2022	Victory Energy	G/#2	Steam	150	UL/CSD-1
SB-274	100	2022	Victory Energy	G/#2	Steam	150	UL/CSD-1
SB-275	100	2022	Victory Energy	G/#2	Steam	150	UL/CSD1
SB-276	100	2022	Victory Energy	G/#2	Steam	150	UL/CSD1
SSB-60	100	2022	Victory Energy	(Low NOx) G/#2	Steam	150	UL/CSD1
SB-260	75	2010	Johnston	Gas	Steam	150	UL
SB-271	70	2022	Victory Energy	G/#2	Steam	150	UL/CSD-1
SB-272	70	2016	Victory Energy	(Low NOx) G/#2	Steam	150	UL/CSD-1
SSB-64	70	2022	Victory Energy	(Low Nox) G/#2	Steam	150	UL/CSD-1
SB-270	50	2022	Victory Energy	G/#2	Steam	150	UL/CSD-1
SB-263	50	2022	Victory Energy	G/#2	Steam	150	UL/CSD-1
SB-268	10	2017	Lattner	Gas	Steam	150	

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WE'VE GONE SOCIAL!

BoilerWAREhouse.com

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water flowing in either, because you'll end up flooding the boiler, or you'll add so much water that the boiler struggles to turn it all into steam. By modulating the flow of water, you can supply your boiler with just enough, optimizing performance and fuel efficiency. Incidentally, while the valve does have "feedwater" in the name, it also works with deaerators, too.

THE VALVE GATE

We chose to build the Mod V valve with a 60-degree V port as opposed to a flat port because the V shape gives the valve greater modulation control. Small adjustments to traditional feedwater valves may not have an effect at first, then when you turn the valve a little more you get more water than you wanted. Thanks to the V port, every adjustment to the valve, no matter how small, provides a predictable, consistent variation in water flow.

MATERIALS AND CONSTRUCTION

We made the valve ball with high-carbon steel so it would last. We made the seat from highly durable Teflon™ because it provides a lasting seal while reducing friction to prolong component life.

THE HOUSING

The valve housing is extremely durable, and is clearly marked with bright graphics to indicate the valve's position at a glance. The housing also has directional markings to indicate the proper water flow direction.

THE MOTOR

The Mod V valve is usually supplied with a Honeywell electric motor, because they have a longstanding reputation for reliability, quality, and durability. Motors are available in 24- and 120-volt options, and can be configured for a 0-135 or 4-20mA control signal. For electropneumatic operations, we include a Jamesbury motor because they, too, supply the kind of lasting quality our valve deserves.

OTHER THINGS TO NOTE:

- The Mod V valve is a class-6 shutoff valve, meaning it won't leak even during prolonged boiler downtime. When we say it won't leak, we mean it. The Mod V has been bubble tested and tested again over and over during construction to make sure it doesn't let a drop of water get by.
- The Mod V valve is unidirectional, meaning it must be installed so the water flows in a specific direction. Don't worry, though, the correct

direction is indicated on the valve housing itself, so you can't miss it. The valve bodies are also field-swappable if needed, and can be configured in whichever direction you want when ordering, so the valve is shipped to you in the configuration you want.

- The Mod V valve comes with threaded connections, but can be ordered with flanged connections. We wanted it to be compatible with as many boiler systems as possible, so we make it with both options.

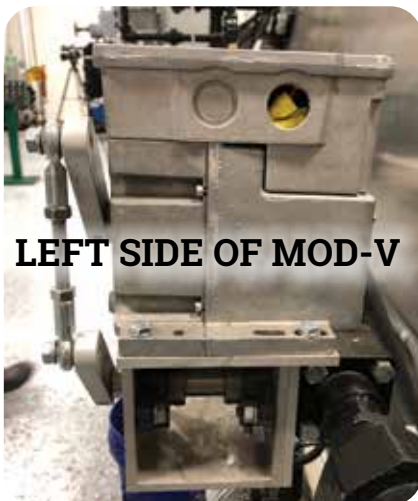
- The Mod V valve is available in feedwater and deaerator configurations, so you can bring more control and precision to every aspect of your boiler system. The Mod V valve is for feedwater applications, while the Mod F valve is designed for deaerator use.

- The valve assembly uses a pillow-block bearing with a grease fitting. The bearing needs to be greased regularly to preserve optimal performance and reduce wear.

- WARE recommends installing an upstream strainer to remove any contaminants before they get to the valve. This helps protect it from rust and debris that can damage the seats and the ball, and cause corrosion over time.

If you'd like to know more about the Mod V valve, we'd be happy to take you through it. If you would like to purchase a Mod V valve or any other boiler parts, our on-line BoilerWarehouse store is here to help. Whatever you need, just let us know.

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