

 **Fulton**<sup>®</sup>

 **PULSE**<sup>®</sup>

Condensing Hydronic Boilers  
300,000 - 2,000,000 BTU/HR



**RUGGED  
ROBUST  
RELIABLE**

The heat transfer innovators.

# THE PULSE

## CONDENSING HYDRONIC BOILER

### FEATURES

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- High Mass and Water Volume
- Low Cost of Ownership
- Low Electrical Consumption
- Rugged, Robust, Reliable
- Ultra High Efficiencies
- Simple Installation
- Minimal Maintenance Costs

### OVERVIEW

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Fulton has been a leader in condensing boiler technologies for over 20 years with Pulse combustion products. Pulse boilers are offered in models for hydronic heating applications ranging in size from 300,000 BTU/hr input to 2,000,000 BTU/hr input.

### HIGH MASS AND WATER VOLUME

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Pulse boilers feature a HIGH PRODUCT MASS and HIGH PRESSURE VESSEL WATER VOLUME; making the boilers exceptionally tolerant of varying and sometimes unpredictable system conditions.

### LOW COST OF OWNERSHIP

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Extremely low electrical consumption and minimal maintenance requirements lead to an overall LOW COST OF OWNERSHIP. Conservative designs and robust manufacturing practices provide reliable operation.



### MODELS AVAILABLE

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#### **Pulse HW** (Hydronic Heating):

- PHW - 300
- PHW - 500
- PHW - 750
- PHW - 1000
- PHW - 1400
- PHW - 2000

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#### **Pulse DHW** (Domestic Hot Water):

- PDWH - 1000

# EXTREMELY LOW ELECTRICAL CONSUMPTION



- Combining high thermal efficiencies with low electrical consumption; Pulse boilers have the lowest net energy usage in the industry.
- During run mode, Pulse boilers use only 90 Watts of electrical power due to the unique self-aspirating design that has no power burner or blower motor.

To put it into perspective, popular coffee makers require over 15 times more power to run than Pulse boilers!

You'll get a lot more hot water out of a Pulse for far less electricity!



# RUGGED, ROBUST AND RELIABLE

## MATERIALS

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Fulton has been designing and manufacturing boilers for over 60 years. Construction parameters typically include material thicknesses 30% greater than ASME minimum requirements. This applies to the Pulse boilers and all Fulton products. Pulse pressure vessels are standard at 160 PSIG maximum allowable working pressure. LOW EMISSIONS is available in <30ppm NOx, as well as DUAL FUEL with Natural Gas and Propane.



## ENGINEERING

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Pulse combustion is accomplished using a gas and an air metering valve. This patented design is the heart of the Pulse combustion process. The metering valves allow a controlled volume of air and gas to flow into the combustion chamber. An igniter is used to start the Pulse process. Combustion is maintained through a series of positive and negative pressures, which draw in additional gas and air as required. The Pulse process continues until the water temperature setpoint is reached. This self aspirating design prevents the need for a blower motor and decreases venting diameter requirements.



## CRAFTSMANSHIP

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Pulse boilers are built by skilled craftsmen. The impressive workmanship that goes into constructing the pressure vessels is performed by Fulton's ASME certified welders, who average over 20 years of experience.



**STRONGER MATERIALS + SMARTER ENGINEERING + SUPERIOR CRAFTSMANSHIP = FULTON**



# A LOOK INSIDE

## THE COMBUSTION PROCESS

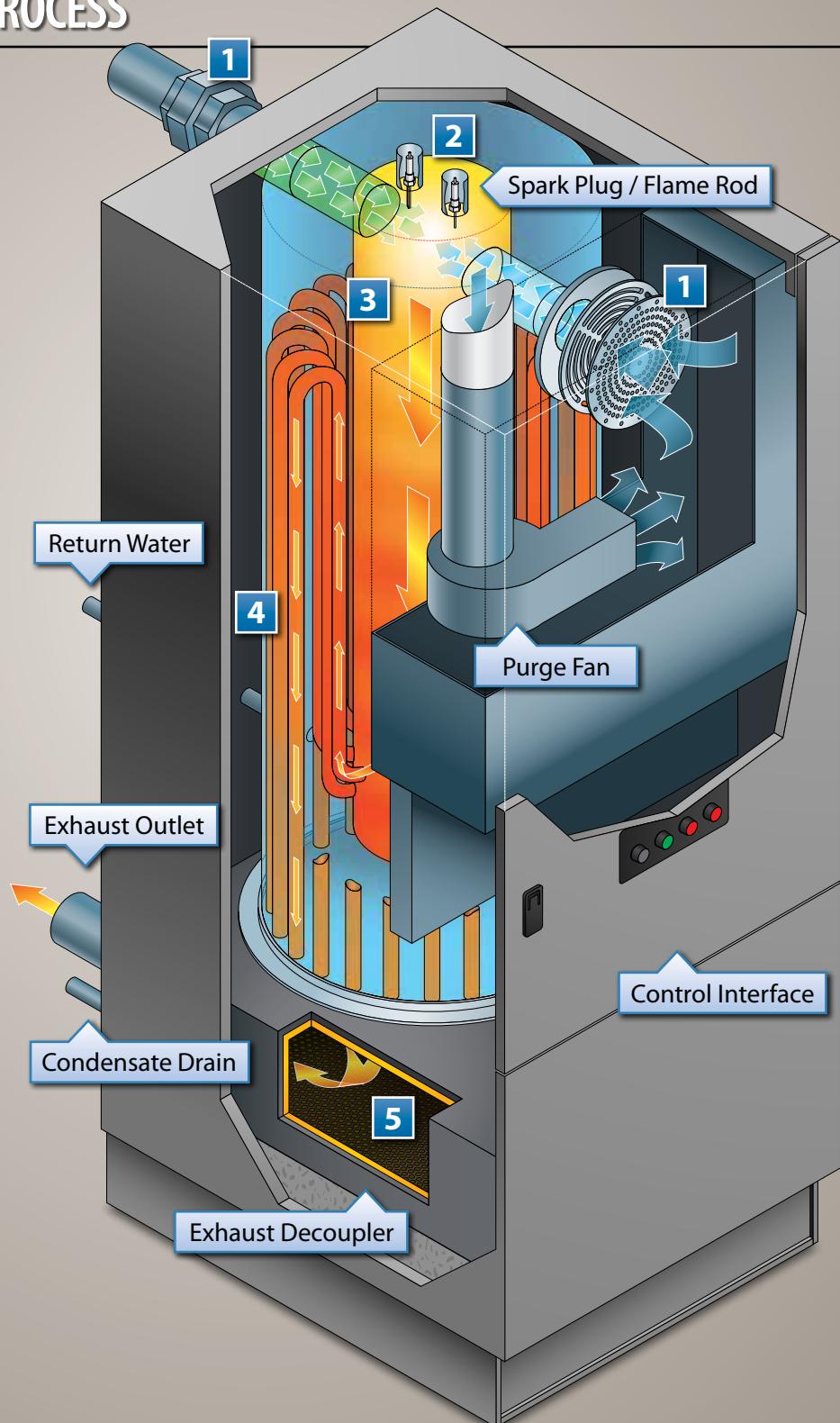
**1** Air & gas metering valves act as check valves; allowing flow into the combustion chamber.

**2** As the mixture enters the combustion chamber an igniter is used to begin the Pulse combustion process.

**3** Combustion is maintained through a series of positive and negative pressures, which draw in additional gas and air as required.

**4** The hot gases are forced through a series of tailpipes where condensing occurs extracting latent heat.

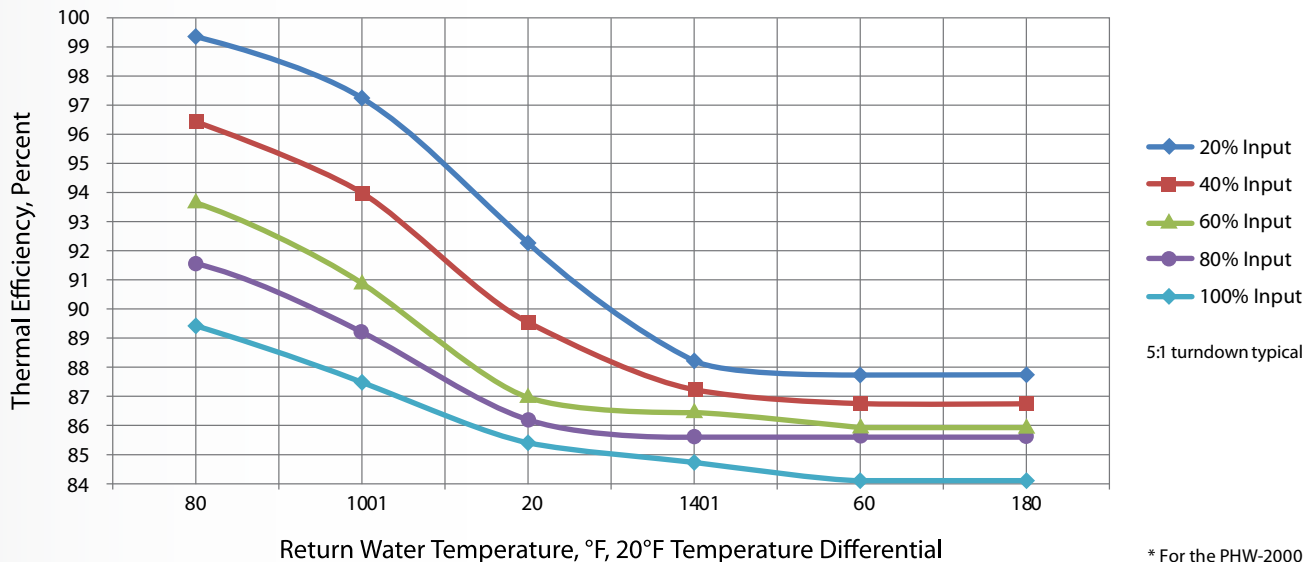
**5** Flue gases and condensate enter the exhaust decoupler where they are expelled through exhaust outlet and the condensate drain.



# EFFICIENCY & CONTROLS

## THERMAL EFFICIENCY

### Thermal Efficiency vs. Return Water Temperature\*



## COLOR TOUCH SCREEN CONTROLS

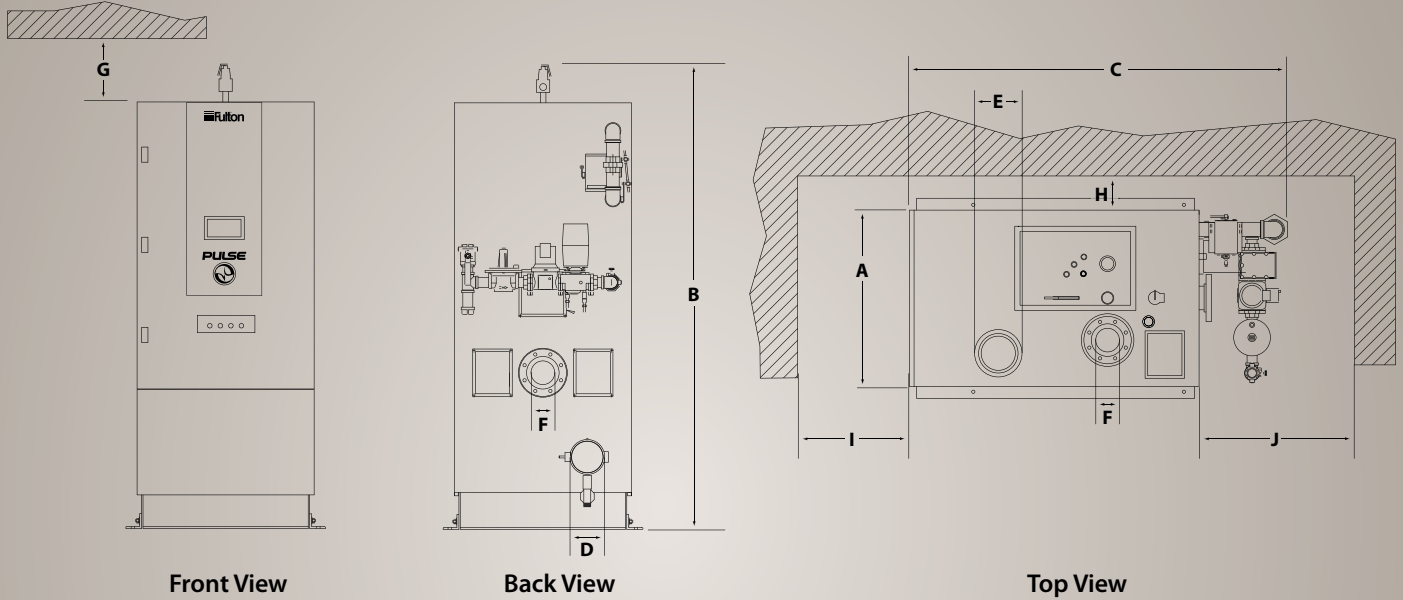


The Pulse control features a color touch screen display, and has an extensive line up of capabilities including pump control, stack temperature monitoring, and complete boiler operation monitoring. With ModBus communication capabilities, low voltage twisted pair communication simplifies multiple boiler installations. Each boiler can be given its own name, personalizing it for any application.

- Integrated sequencing control for up to 8 boilers
- Communication with BMS via ModBus Network



# SPECIFICATIONS AND DIMENSIONS



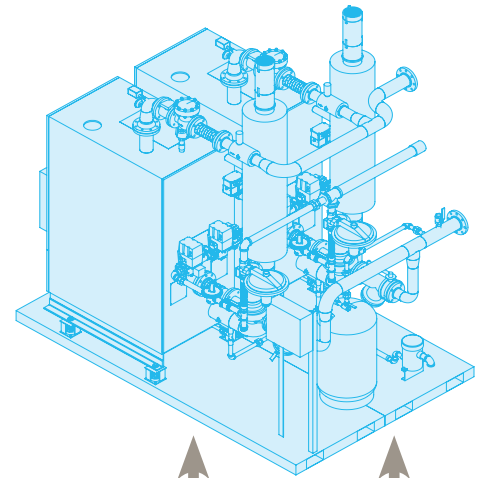
MODEL	PHW-	300	500	750	1000	1400	2000
<b>SPECIFICATIONS</b>							
Input	BTU/Hr.	300,000	500,000	750,000	1,000,000	1,400,000	2,000,000
Nat. Gas Consumption @ rated capacity:	FT3/Hr.	300	500	750	1000	1400	2000
Propane Consumption @ rated capacity:	FT3/Hr.	120	200	300	400	560	720
Electrical Requirements (Amps: Max/Run)	120V/60/1	4.2/0.6	4.2/0.6	4.2/0.6	4.2/0.6	4.2/0.6	10/.75
	240V/60/1	2.1/0.3	2.1/0.3	2.1/0.3	2.1/0.3	2.1/0.3	5/4
MAWP	PSI	160	160	160	160	160	160
	BAR	4.1/11.0	4.1/11.0	4.1/11.0	4.1/11.0	4.1/11.0	4.1/11.0
Water Content	Gal	34	34	42	42	80	75
Dry Weight	LB	1,395	1,395	1,800	1,800	2,230	2,900
Operating Weight	LB	1,680	1,680	2,150	2,150	3,195	3,500
<b>DIMENSIONS*</b>							
A. Boiler Width	IN	27.5	27.5	27.5	27.5	33.6	33.6
B. Overall Boiler Height	IN	71.25	71.25	83.2	83.2	88.1	89
C. Overall Boiler Depth	IN	53.25	53.25	51.3	51.3	62.6	70.1
D. Exhaust Outlet Diameter	IN	4	4	4	4	4	6
E. Air Inlet Diameter	IN	3	3	4	4	4	6
F. Water Inlet/Outlet Diameter	IN	2	2	2	2	2.5	4 Flanged
G. Min. Clearance to Ceiling	IN	24	24	24	24	24	24
H. Min. Clearance to either Side Wall	IN	1	1	1	1	1	1
I. Min. Clearance in front of boiler	IN	36	36	36	36	36	36
J. Min. Clearance behind boiler	IN	24	24	24	24	24	24

Specifications and Dimensions are approximate and for reference only. We reserve the right to change specifications and/or dimensions without notice.  
 \* Please consult factory for a complete list of dimensions and clearances including metric conversions.

# APPLICATIONS

## ENGINEERED SYSTEMS

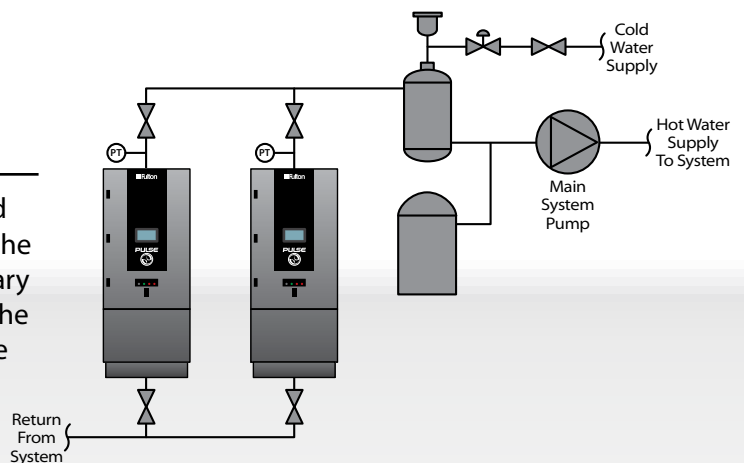
Fulton's engineering and design capabilities are unmatched in the industry providing comprehensive solutions to custom-designed hydronic systems. Our team of engineers and project managers assist in the specification and design of a "turnkey" system for each application. Skid mounted hydronic systems provide simplified installation with single point water, fuel and electrical connections available. From design to complete fabrication, trust Fulton and our many years of experience to build a system you can rely on for years to come.



Custom 3D models are created for all engineered systems

## SIMPLE INSTALLATION

Simple installation requirements permit variable speed primary flow directly through the boilers, eliminating the need for dedicated circulator pumps (primary/secondary piping). Low flow or no flow conditions will not harm the pressure vessel of the boiler. Pulse boilers also have the smallest vent diameters per BTU input in the industry.



 **Fulton**<sup>®</sup> The heat transfer innovators.

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