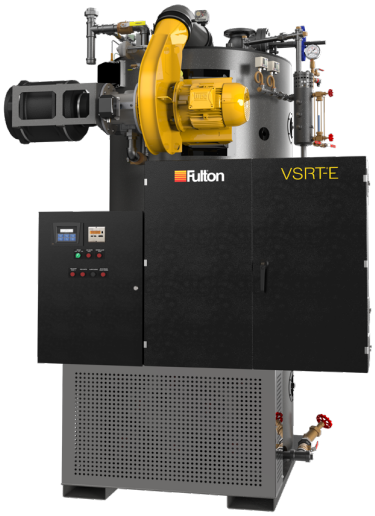
TECHNICAL DATA SHEET

VSRTE SERIES:
VSRTE-50

50 HP
Vertical Spiral Rib Tubeless Hybrid Boiler



Combining the industry leading performance of the VSRT® gas fired steam boiler with electric element heating, the VSRTE is proven to meet your sustainability and net zero goals. The VSRTE offers a 20% fuel reduction combined with a compact vertical footprint in natural gas usage. Electric operation reduces onsite emssions to zero. With fuel change at the flip of a switch, the VSRTE boiler is built to make going green easy.

STANDARD FEATURES:

- Vertical Tubeless Heat Exchanger
- Thick wall construction (0.375" minimum)
- Never needs re-tubing
- Fully wetted design- no refractory
- 150 PSIG maximum allowable working pressure
- 82% minimum operating efficiency
- Variable speed combustion air blower
- Fully modulating 8:1 turndown burner
- Low NOx emissions <20ppm
- Operating and high pressure limit switches
- Two (2) low water cut off probes, (1) with auto reset, (1) with manual reset
- Combustion air intake filter
- CSD-1 ventless gas train
- Industrial pilot ignition
- PID type pressure controller
- NEMA 1 enclosure with locking electrical panel
- Safety interlock contacts for external device
- Emergency-stop contacts
- 10 year pressure vessel warranty
- 5 year burner warranty
- Element step sequencer (5 steps)
- Incoloy 800 elements

OPTIONS:

- ☐ Stainless steel jacket
- ☐ Conductivity based surface blowdown
- ☐ Timer based bottom blowdown
- ☐ Control panel with non-fused disconnect
- ☐ High water overflow protection
- ☐ Reflex type sight glass
- ☐ Boiler alarm package
- ☐ Boiler gauge kit
- ☐ Remote E-stop
- ☐ MM-150 ALWCO
- ☐ MM-157 PWLCO and pump control
- ☐ MM-193-7B PWLCO modulating level control
- ☐ On/off motorized FW valve & 3-valve bypass
- ☐ On/off FW solenoid valve
- ☐ Differential pressure level control
- ☐ Modbus integration gateway
- ☐ BACnet integration gateway
- ☐ SCR element control
- ☐ NEMA 3R
- ☐
- ☐
- ☐

PROJECT DETAILS:

Project Name		City, State (Province)	
Date Submitted		Engineer of Record	
Fulton Representative		Contractor	

LISTINGS & COMPLIANCE:

- ASME Section I and IV code
- ETL approved to UL-795 and UL-834
- CSD-1 and CSA Controls and Fuel Train
- GAPS Compliant; Supersedes IRI
- Exceeds AHRAE 90.1 efficiency requirements
- FM Compliant Fuel Train Components
- Control panel wired in a UL 508 facility

TRIM KIT ITEMS:

- ASME Safety Relief Valve
- Pressure Gauge
- Installation, Operation and Maintenance Manual
- Gauge Glass and Protector Rods
- Touch-up Spray Paint

NOTE: Information provided in this document is based on standard boiler configurations only. Custom configurations may result in deviations.

CONNECTION SIZES:

		VSRTE	VSRTE-50
Steam Outlet Operating at 80 psig	**inches** *mm*		**4** *102*
Feedwater Inlet	**inches** *mm*		**1** *25*
Bottom Blowdown	**inches** *mm*		**1-1/2** *38*
High Water Protection	**inches** *mm*		**3/4** *19*
Gas Train Inlet	**inches** *mm*		**1-1/2** *38*
Combustion Air Inlet	**inches** *mm*		**8** *203*
Stack Connection	**inches** *mm*		**10** *254*
Water Column Drain	**inches** *mm*		**1** *25*
Surface Blowdown	**inches** *mm*		**3/4** *19*
Sight Glass Drain	**inches** *mm*		**1/4** *6*
Element Cleaning Blowdown	**inches** *mm*		**1-1/2** *38*
Safety Valve Inlet x Outlet Section I 15 psi trim	**inches** *mm*		**(2) 1-1/2 x 2** *38 x 51*
Safety Valve Inlet x Outlet Section I 150 psi trim	**inches** *mm*		**1 x 1-1/4** *25 x 32*

MINIMUM CLEARANCES: **LOCAL CODES MAY SUPERSEDE FULTON REQUIREMENTS**

		VSRTE	VSRTE-50
Element Removal Clearance	**inches** *mm*		**36 1/8** 918
Total Installed Height Required for Burner Removal	**inches** *m*		**149 1/2** 3.8

WEIGHTS AND VOLUMES:

	VSRTE	VSRTE-50
Dry Weight	**lbs**	**6,830**
	kg	3,098
Operating Weight at Normal Working Level	**lbs**	**10,570**
	kg	4,794
Flooded Weight	**lbs**	**11,275**
	kg	5,114
Water Volume at Normal Working Level	**Gallons**	**448**
	Liters	1,696

CAPACITIES: **NATURAL GAS/PROPANE OPERATION**

	VSRTE	VSRTE-50
Rated Input at High Fire	**BTU/hr**	**1,993,000**
	kWh	*584*
Minimum Input at Low Fire	**BTU/hr**	**249,000**
	kWh	*73*
Rated Output (At 0 psig operating pressure and 212F feedwater temperature)	**BTU/hr**	**1,674,000**
	Boiler HP	50
	lbs/hr	1,725
	kg/hr	782
	kWh	490

GAS OPERATING REQUIREMENTS: **PRESSURE REQUIREMENTS AT RATED INPUT**

	VSRTE	VSRTE-50
Fuel Usage at Rated Input (Natural Gas)*	**SCFH**	**1,993**
	m^3/hr	*57*
Fuel Usage at Rated Input *(Propane)***	**SCFH**	**797**
	m^3/hr	*23*
Minimum Gas Pressure	**in W.C.**	**3**
	kPa	*0.75*
Maximum Gas Pressure	**in W.C.**	**13.8**
	kPa	*3.4*

*SCFH based on 1,000 BTU/ft^3
**SCFH based on 2,500 BTU/ft^3

ELECTRICAL REQUIREMENTS FOR GAS OPERATIONS:

		VSRTE	VSRTE-50
Short Circuit Current Rating	**Amps**		**5000**
NEMA Rating			**1**
Full Load Amps	**460/60/3** **480/60/3** **575/60/3**		**17** **17** **13**

VENTING REQUIREMENTS:

		VSRTE	VSRTE-50
Typical Combustion Air Intake Flow Rate	**SCFM** *m^3/hr*		**442** *751*
Flue Gas Exhaust Flow Rate	**SCFM** *ACFM*		**475** *831*
Minimum Allowable Draft Pressure	**in W.C.** *kPa*		**-0.25** *-0.062*
Maximum Allowable Draft Pressure	**in W.C.** *kPa*		**+1.50** *+0.373*

EMISSIONS: TYPICAL OPERATION (CORRECTED TO 3% O2, CO TO BE 10ppm OR LESS)

		VSRTE	VSRTE-50 <20ppm NOx condition	VSRTE-50 15% excess air condition
NO_x	**lbs/hr** *kg/hr*		**0.042** *0.019*	**0.141** *0.064*
SO_x	**lbs/hr** *kg/hr*		**0.0012** *0.0005*	**0.0012** *0.0005*
Volatile Organic Compounds	**lbs/hr** *kg/hr*		**0.0110** *0.0049*	**0.0110** *0.0049*
Total Particulates	**lbs/hr** *kg/hr*		**0.015** *0.007*	**0.015** *0.007*
CO	**lbs/hr** *kg/hr*		**0.014** *0.006*	**0.014** *0.006*

SOUND DATA: MEASUREMENTS TAKEN FROM FIVE FOOT FROM THE FRONT OF THE BOILER

		VSRTE	VSRTE-50
Sound Level at High Fire	**dBa**		**76**

ELECTRIC OPERATING REQUIREMENTS:

	VSRTE	VSRTE-50
Fuel Usage at Rated Input *(Electric)*	**kW**	**500**
Minimum Relieving Capacity SRV	**lbs/hr**	**1,750**
	kg/hr	794
Rated Output (At 0 psig operating pressure and 212F feedwater temperature)	**BTU/hr**	**1,674,000**
	Boiler HP	50
	lbs/hr	1,725
	kg/hr	782
	kWh	490

ELECTRICAL REQUIREMENTS FOR ELECTRIC OPERATION:

	VSRTE	VSRTE-50
Short Circuit Current Rating	**Amps**	**5000**
NEMA Rating		**1**
Full Load Amps	**460/60/3** **480/60/3** **575/60/3**	**628** **602** **503**

ELEMENTS:

	VSRTE	VSRTE-50
Elements	**kW**	**(QTY 7) 40** **(QTY 4) 55**

DIMENSIONS:

Refer to the Product Data Submittal Drawing for dimensions.

Note: Some specification and performance may differ for Australian version of the VSRTE-50