TECHNICAL DATA SHEET

VSRTE SERIES:
VSRTE-40

40 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 6:1 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-40
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) 1-1/4 x 1-1/2** *32 x 38*
Safety Valve Inlet x Outlet Section I 150 psi trim	**inches** *mm*	**3/4 x 1** *19 x 25*

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

	VSRTE	VSRTE-40
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-40
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-40
Rated Input at High Fire	**BTU/hr**		**1,600,000**
	kWh		*469*
Minimum Input at Low Fire	**BTU/hr**		**267,000**
	kWh		*78*
Rated Output (At 0 psig operating pressure and 212F feedwater temperature)	**BTU/hr**		**1,339,000**
	Boiler HP		40
	lbs/hr		1,380
	kg/hr		626
	kWh		*392*

GAS OPERATING REQUIREMENTS: PRESSURE REQUIREMENTS AT RATED INPUT

		VSRTE	VSRTE-40
Fuel Usage at Rated Input (Natural Gas)*	**SCFH**		**1,600**
	m^3/hr		*45*
Fuel Usage at Rated Input *(Propane)***	**SCFH**		**640**
	m^3/hr		*18*
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-40
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-40
Typical Combustion Air Intake Flow Rate	**SCFM** *m^3/hr*	**353** *600*
Flue Gas Exhaust Flow Rate	**SCFM** *ACFM*	**380** *665*
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-40 <20ppm NOx condition	VSRTE-40 15% excess air condition
NO_x	**lbs/hr** *kg/hr*	**0.034** *0.015*	**0.112** *0.051*
SO_x	**lbs/hr** *kg/hr*	**0.0010** *0.0004*	**0.0010** *0.0004*
Volatile Organic Compounds	**lbs/hr** *kg/hr*	**0.0088** *0.0040*	**0.0088** *0.0040*
Total Particulates	**lbs/hr** *kg/hr*	**0.012** *0.005*	**0.012** *0.005*
CO	**lbs/hr** *kg/hr*	**0.012** *0.005*	**0.012** *0.005*

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

	VSRTE	VSRTE-40
Sound Level at High Fire	**dBa**	**73**

ELECTRIC OPERATING REQUIREMENTS:

		VSRTE	VSRTE-40
Fuel Usage at Rated Input *(Electric)*		**kW**	**405**
Minimum Relieving Capacity SRV		**lbs/hr**	**1,417.5**
		kg/hr	643
Rated Output (At 0 psig operating pressure and 212F feedwater temperature)		**BTU/hr**	**1,620,000**
		Boiler HP	40
		lbs/hr	1,397
		kg/hr	634
		kWh	475

ELECTRICAL REQUIREMENTS FOR ELECTRIC OPERATION:

	VSRTE	VSRTE-40
Short Circuit Current Rating	**Amps**	**5000**
NEMA Rating		**1**
Full Load Amps	**460/60/3** **480/60/3** **575/60/3**	**503** **482** **402**

ELEMENTS:

	VSRTE	VSRTE-40
Elements	**kW**	**(QTY 6) 40** **(QTY 3) 55**

DIMENSIONS:
Refer to the Product Data Submittal Drawing for dimensions.