TECHNICAL DATA SHEET

VSRTE SERIES:
VSRTE-9.5

9.5 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
- 100 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 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
- Meets CA Title 8 Section 771

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-9.5
Steam Outlet Operating at 80 psig	**inches** *mm*		**1** *25*
Feedwater Inlet	**inches** *mm*		**1** *25*
Bottom Blowdown	**inches** *mm*		**1** *25*
High Water Protection	**inches** *mm*		**3/4** *19*
Gas Train Inlet	**inches** *mm*		**1** *25*
Combustion Air Inlet	**inches** *mm*		**3 5/8** *102*
Stack Connection	**inches** *mm*		**6** *152*
Water Column Drain	**inches** *mm*		**1** *25*
Surface Blowdown	**inches** *mm*		**3/4** *19*
Sight Glass Drain	**inches** *mm*		**1/4** *6*
Safety Valve Inlet x Outlet Section I 100 psi trim	**inches** *mm*		**3/4 x 1** *19 x 25*

MINIMUM CLEARANCES: LOCAL CODES MAY SUPERSEDE FULTON REQUIREMENTS

		VSRTE	VSRTE-9.5
Element Removal Clearance	**inches** *mm*		**15 5/8** 397
Total Installed Height Required for Burner Removal	**inches** *m*		**110 7/8** 2.8

WEIGHTS AND VOLUMES:

		VSRTE	VSRTE-9.5
Dry Weight	**lbs**		**1,940**
	kg		880
Operating Weight at Normal Working Level	**lbs**		**2,230**
	kg		1,012
Flooded Weight	**lbs**		**2,315**
	kg		1,050
Water Volume at Normal Working Level	**Gallons**		**34.9**
	Liters		132

CAPACITIES: **NATURAL GAS/PROPANE OPERATION**

		VSRTE	VSRTE-9.5
Rated Input at High Fire	**BTU/hr**		**388,815**
	kWh		*114*
Minimum Input at Low Fire	**BTU/hr**		**48,602**
	kWh		*14*
Rated Output (At 0 psig operating pressure and 212F feedwater temperature)	**BTU/hr**		**318,051**
	Boiler HP		9.5
	lbs/hr		328
	kg/hr		149
	kWh		*93*

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

		VSRTE	VSRTE-9.5
Fuel Usage at Rated Input (Natural Gas)*	**SCFH**		**389**
	m^3/hr		*11*
Fuel Usage at Rated Input *(Propane)***	**SCFH**		**156**
	m^3/hr		*4.4*
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-9.5
Short Circuit Current Rating	**Amps**	**5000**
NEMA Rating		**1**
Full Load Amps	**460/60/3** **575/60/3**	**4.8** **3.4**

VENTING REQUIREMENTS:

	VSRTE	VSRTE-9.5
Typical Combustion Air Intake Flow Rate	**SCFM** *m^3/hr*	**88** *150*
Flue Gas Exhaust Flow Rate	**SCFM** *ACFM*	**91** *156*
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-9.5 <20ppm NOx condition	VSRTE-9.5 15% excess air condition
NO_x	**lbs/hr** *kg/hr*	**0.0078** *0.004*	**0.0261** *0.013*
SO_x	**lbs/hr** *kg/hr*	**0.0002** *0.0001*	**0.0002** *0.0001*
Volatile Organic Compounds	**lbs/hr** *kg/hr*	**0.0020** *0.0009*	**0.0020** *0.0009*
Total Particulates	**lbs/hr** *kg/hr*	**0.0028** *0.0013*	**0.0028** *0.0013*
CO	**lbs/hr** *kg/hr*	**0.0027** *0.0012*	**0.0027** *0.0012*

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

	VSRTE	VSRTE-9.5
Sound Level at High Fire	**dBa**	**70**

ELECTRIC OPERATING REQUIREMENTS:

	VSRTE	VSRTE-9.5
Fuel Usage at Rated Input *(Electric)*	**kW**	**95**
Minimum Relieving Capacity SRV	**lbs/hr**	**332.5**
	kg/hr	*151*
Rated Output (At 0 psig operating pressure and 212F feedwater temperature)	**BTU/hr**	**318,051**
	Boiler HP	9.5
	lbs/hr	328
	kg/hr	149
	kWh	*93*

ELECTRICAL REQUIREMENTS FOR ELECTRIC OPERATION:

	VSRTE	VSRTE-9.5
Short Circuit Current Rating	**Amps**	**5000**
NEMA Rating		**1**
Full Load Amps	**480/60/3** **575/60/3**	**116** **97**

ELEMENTS:

	VSRTE	VSRTE-9.5
Elements	**kW**	**(QTY 5) 19**

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