

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 emissions 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
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PROJECT DETAILS:

Project Name	
Date Submitted	
Fulton Representative	

City, State (Province)	
Engineer of Record	
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:

	VS RTE	VS RTE-40
Steam Outlet Operating at 80 psig	inches <i>mm</i>	4 102
Feedwater Inlet	inches <i>mm</i>	1 25
Bottom Blowdown	inches <i>mm</i>	1-1/2 38
High Water Protection	inches <i>mm</i>	3/4 19
Gas Train Inlet	inches <i>mm</i>	1-1/2 38
Combustion Air Inlet	inches <i>mm</i>	8 203
Stack Connection	inches <i>mm</i>	10 254
Water Column Drain	inches <i>mm</i>	1 25
Surface Blowdown	inches <i>mm</i>	3/4 19
Sight Glass Drain	inches <i>mm</i>	1/4 6
Element Cleaning Blowdown	inches <i>mm</i>	1-1/2 38
Safety Valve Inlet x Outlet Section I 15 psi trim	inches <i>mm</i>	(2) 1-1/4 x 1-1/2 32 x 38
Safety Valve Inlet x Outlet Section I 150 psi trim	inches <i>mm</i>	3/4 x 1 19 x 25

MINIMUM CLEARANCES: LOCAL CODES MAY SUPERSEDE FULTON REQUIREMENTS

	VS RTE	VS RTE-40
Element Removal Clearance	inches <i>mm</i>	36 1/8 918
Total Installed Height Required for Burner Removal	inches <i>m</i>	149 1/2 3.8



WEIGHTS AND VOLUMES:

	VS RTE	VS RTE-40
Dry Weight	lbs	6,830
	<i>kg</i>	3,098
Operating Weight at Normal Working Level	lbs	10,570
	<i>kg</i>	4,794
Flooded Weight	lbs	11,275
	<i>kg</i>	5,114
Water Volume at Normal Working Level	Gallons	448
	<i>Liters</i>	1,696

CAPACITIES: NATURAL GAS/PROPANE OPERATION

	VS RTE	VS RTE-40
Rated Input at High Fire	BTU/hr	1,600,000
	<i>kWh</i>	469
Minimum Input at Low Fire	BTU/hr	267,000
	<i>kWh</i>	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
	<i>kWh</i>	392

GAS OPERATING REQUIREMENTS: PRESSURE REQUIREMENTS AT RATED INPUT

	VS RTE	VS RTE-40
Fuel Usage at Rated Input (Natural Gas)*	SCFH	1,600
	<i>m³/hr</i>	45
Fuel Usage at Rated Input (Propane)**	SCFH	640
	<i>m³/hr</i>	18
Minimum Gas Pressure	in W.C.	3
	<i>kPa</i>	0.75
Maximum Gas Pressure	in W.C.	13.8
	<i>kPa</i>	3.4

*SCFH based on 1,000 BTU/ft³

**SCFH based on 2,500 BTU/ft³

ELECTRICAL REQUIREMENTS FOR GAS OPERATIONS:

VS RTE		VS RTE-40
Short Circuit Current Rating	Amps	5000
NEMA Rating		1
Full Load Amps	460/60/3	17
	480/60/3	17
	575/60/3	13

VENTING REQUIREMENTS:

VS RTE		VS RTE-40
Typical Combustion Air Intake Flow Rate	SCFM	353
	<i>m³/hr</i>	600
Flue Gas Exhaust Flow Rate	SCFM	380
	<i>ACFM</i>	665
Minimum Allowable Draft Pressure	in W.C.	-0.25
	<i>kPa</i>	-0.062
Maximum Allowable Draft Pressure	in W.C.	+1.50
	<i>kPa</i>	+0.373

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

VS RTE		VS RTE-40 <20ppm NOx condition	VS RTE-40 15% excess air condition
NO _x	lbs/hr	0.034	0.112
	<i>kg/hr</i>	0.015	0.051
SO _x	lbs/hr	0.0010	0.0010
	<i>kg/hr</i>	0.0004	0.0004
Volatile Organic Compounds	lbs/hr	0.0088	0.0088
	<i>kg/hr</i>	0.0040	0.0040
Total Particulates	lbs/hr	0.012	0.012
	<i>kg/hr</i>	0.005	0.005
CO	lbs/hr	0.012	0.012
	<i>kg/hr</i>	0.005	0.005

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

VS RTE		VS RTE-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	503
	480/60/3	482
	575/60/3	402

ELEMENTS:

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

DIMENSIONS:

Refer to the Product Data Submittal Drawing for dimensions.

Note: Some specification and performance may differ for Australian version of the VSRTE-40