TECHNICAL DATA SHEET

VSRT® SERIES:
VSRT-80

80 HP
Vertical Spiral Rib Tubeless Steam Boiler

As the worlds first and only spiral rib tubeless design, the VSRT® has been optimized so that its spiral rib heat exchanger can acheive maximum heat transfer in a compact space. The VSRT® features a fully water backed pressure vessel wrapped with high-density insulation, resulting in minimal thermal losses and low jacket temperatures. The VSRT® provides the highest efficiencies available combined with a compact vertical footprint. VSRT® boilers are built to last as a reliable source of dry steam, providing savings and operator peace of mind for years to come.

STANDARD FEATURES:

- Vertical Tubeless Heat Exchanger
- Thick wall construction (0.375" minimum)
- Never needs re-tubing
- Fully wetted design- no refractory
- Operating efficiencies up to 86%
- Variable speed combustion air blower
- 150 PSIG maximum allowable working pressure
- Can be trimmed 15-150 PSIG
- Fully modulating 10:1 turndown burner
- Industrial pilot ignition
- Operating and high pressure limit switches
- Two (2) low water cut off probes, (1) with auto reset, (1) with manual reset
- NEMA 1 enclosure with locking electrical panel
- Low NOx emissions <20ppm
- Combustion air intake filter
- CSD-1/CSA ventless gas train
- PID type pressure controller
- Safety interlock contacts for external device
- Emergency-stop contacts
- Combustion air inlet adapter
- 10 year pressure vessel warranty
- 5 year burner warranty

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
- ☐
- ☐
- ☐

PROJECT DETAILS:

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

LISTINGS & COMPLIANCE:

- ASME Section I & IV code
- ETL approved to UL-795
- 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.

CAPACITIES: **STANDARD NATURAL GAS; APPLIES TO ELEVATIONS UP TO 2,000 FT)**

		VSRT®	VSRT-80
Rated Input at High Fire	**BTU/hr**		**3,223,000**
	kWh		*945*
Minimum Input at Low Fire	**BTU/hr**		**322,300**
	kWh		*95*
Rated Output (At 0 psig operating pressure and 212F feedwater temperature)	**BTU/hr**		**2,678,000**
	Boiler HP		80
	lbs/hr		2,760
	kg/hr		1,252
	kWh		*784*

CONNECTION SIZES:

	VSRT®	VSRT-80
Steam Outlet Operating >75 PSI	**inches**	**4**
	mm	*102*
Steam Outlet Operating <= 75 PSI	**inches**	**6**
	mm	*153*
Feedwater Inlet	**inches**	**1**
	mm	*25*
Bottom Blowdown	**inches**	**1-1/2**
	mm	*38*
High Water Protection	**inches**	**3/4**
	mm	*19*
Natural Gas Train Inlet	**inches**	**1-1/2**
	mm	*38*
Combustion Air Inlet	**inches**	**8**
	mm	*203*
Stack Connection	**inches**	**12**
	mm	*305*
Water Column Drain	**inches**	**1**
	mm	*25*
Surface Blowdown	**inches**	**3/4**
	mm	*19*
Sight Glass Drain	**inches**	**1/4**
	mm	*6*

CONNECTION SIZES (CONTINUED):

	VSRT®	VSRT-80
Safety Valve Inlet x Outlet Section I 100-150psi trim	**inches**	**(1) 1 x 1-1/2**
	mm	*25 x 38*
Safety Valve Inlet x Outlet Section I 75psi trim	**inches**	**(1) 1-1/2 x 2**
	mm	*38 x 51*
Safety Valve Inlet x Outlet Section I 50psi trim	**inches**	**(1) 2 x 2-1/2**
	mm	*51 x 64*
Safety Valve Inlet x Outlet Section I 30psi trim	**inches**	**(2) 1 x 1-1/2**
	mm	*25 x 38*
Safety Valve Inlet x Outlet Section I 15psi trim	**inches**	**(2) 2 x 2-1/2**
	mm	*51 x 64*

FUEL REQUIREMENTS: PRESSURE REQUIREMENTS AT RATED INPUT

	VSRT®	VSRT-80
Fuel Usage at Rated Input (Natural Gas)*	**SCFH**	**3,223**
	m^3/hr	*91*
Fuel Usage at Rated Input *(Propane)***	**SCFH**	**1,289**
	m^3/hr	*37*
Minimum Gas Pressure	**in W.C.**	**4**
	kPa	*1*
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: APPLIES TO <20 PPM NOx STANDARD BLOWER MOTOR AND CONTROL OPTION

	VSRT®	VSRT-80			
Electrical Supply	**Volts**	**208**	**230**	**460**	**575**
	ø	*3*	*3*	*3*	*3*
	Hz	*60*	*60*	*60*	*60*
Short Circuit Current Rating	**Amps**	**5000**	**5000**	**5000**	**5000**
NEMA Rating		**1**	**1**	**1**	**1**
Full Load Amps	**Amps**	**36**	**31**	**16**	**12**

WEIGHTS AND VOLUMES:

		VSRT®	VSRT-80
Dry Weight	**lbs**		**5,800**
	kg		*2,630*
Operating Weight at Normal Working Level	**lbs**		**9,080**
	kg		*4,119*
Flooded Weight	**lbs**		**9,710**
	kg		*4,404*
Water Volume at Normal Working Level	**gallons**		**393**
	liters		*1,488*

VENTING REQUIREMENTS:

		VSRT®	VSRT-80
Typical Combustion Air Intake Flow Rate	**SCFM**		**734**
	m^3/hr		*1,247*
Flue Gas Exhaust Flow Rate	**SCFM**		**758**
	m^3/hr		*1,307*
Minimum Allowable Draft Pressure	**in W.C.**		**-0.25**
	kPa		*-0.062*
Maximum Allowable Draft Pressure	**in W.C.**		**+1.50**
	kPa		*+0.373*

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

		VSRT®	VSRT-80 <20ppm NOx condition	VSRT-80 15% excess air condition
NO_x	**lbs/hr**		**0.066**	**0.2235**
	kg/hr		*0.030*	*0.1013*
SO_x	**lbs/hr**		**0.0019**	**0.0019**
	kg/hr		*0.0009*	*0.0009*
Volatile Organic Compounds	**lbs/hr**		**0.0171**	**0.0171**
	kg/hr		*0.0078*	*0.0078*
Total Particulates	**lbs/hr**		**0.024**	**0.024**
	kg/hr		*0.0109*	*0.0109*
CO	**lbs/hr**		**0.023**	**0.023**
	kg/hr		*0.0104*	*0.0104*

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

		VSRT®	VSRT-80
Side Clearance from Boiler Jacket	**inches**		**24**
	mm		*609*
Total Installed Height Required for Burner Removal	**inches**		**143-1/2**
	m		*3.6*

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

	VSRT®	VSRT-80
Sound Level at High Fire	**dBa**	**75**

DIMENSIONS: Refer to the Product Data Submittal Drawing for dimensions