# TECHNICAL DATA SHEET

**VMP® SERIES:**
VMP-49.5

**49.5 HP**
Vertical Multi-Port Steam Boiler

Designed for heavy-duty applications, the VMP® is Fulton's Vertical Multi-Port steam boiler. The rugged, robust, and reliable vertical design of the VMP® has been proven through decades of successful installations and provides exceptional value over the lifetime of the boiler. The VMP® is a proven pressure vessel coupled with modern state of the art burners and combustion controls to ensure maximum efficiency. It provides specifiable steam quality greater than 99%, making it ideal for humidification, sterilization, and food processing applications.

## STANDARD FEATURES:

- Vertical Heat Exchanger
- 85% operating efficiency
- 150 PSIG maximum allowable working pressure
- Compact footprint
- Thick walled construction
- Tubeless construction- Schedule 80 vertical pipes
- Near zero jacket loss
- Integral combustion air preheater
- Integral burner
- Linkage-less controls
- Full factory test fire and control programming
- Fuels available: natural gas, propane, biogas, #2 fuel oil
- 3:1 turndown as standard when firing on natural gas, with 5:1 turndown available
- 2:1 turndown when firing on #2 oil
- 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 options down to <9ppm on natural gas
- Safety interlock contacts for external device
- Emergency-stop contacts
- 5 year pressure vessel warranty expandable to 10 years**
- 1 year burner warranty

## OPTIONS:

- ☐ 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
- ☐ Up to 300 PSIG design
- ☐
- ☐
- ☐

## PROJECT DETAILS:

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

## LISTINGS & COMPLIANCE:

- ASME Section I code*
- UL approved to UL-795
- CSD-1 and CSA Controls and Fuel Train
- GAPS Compliant; Supersedes IRI
- 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

*ASME Section IV code available- consult factory
**with engineered system per Fulton Warranty Statement
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)**

| VMP® | | VMP-49.5 |
|---|---|---|
| Rated Input | **BTU/hr** | **1,974,000** |
| | *kWh* | *579* |
| Rated Output (At 0 psig operating pressure and 212F feedwater temperature) | **BTU/hr** | **1,658,000** |
| | Boiler HP | 49.5 |
| | lbs/hr | 1,708 |
| | kg/hr | 775 |
| | *kWh* | *485.6* |

**CONNECTION SIZES:**

| VMP® | | VMP-49.5 |
|---|---|---|
| Steam Outlet Operating at <75 psig | **inches** | **4** |
| | *mm* | *102* |
| Steam Outlet Operating at >=75 psig | **inches** | **3** |
| | *mm* | *76* |
| Feedwater Inlet | **inches** | **1** |
| | *mm* | *25* |
| Bottom Blowdown (x2) | **inches** | **1-1/2** |
| | *mm* | *38* |
| Natural Gas/LP Inlet | **inches** | **1-1/2** |
| | *mm* | *38* |
| Oil Inlet | **inches** | **1/4** |
| | *mm* | *6* |
| Surface Blowdown | **inches** | **3/4** |
| | *mm* | *19* |
| Stack Connection | **inches** | **12** |
| | *mm* | *305* |
| Water Column Drain | **inches** | **1** |
| | *mm* | *25* |
| Sight Glass Drain | **inches** | **1/4** |
| | *mm* | *6* |
| Safety Valve Inlet x Outlet* Section I 15-50 psi trim | **inches** | **1-1/2 x 2** |
| | *mm* | *38 x 51* |
| Safety Valve Inlet x Outlet Section I 75 psi trim | **inches** | **1-1/4 x 1-1/2** |
| | *mm* | *32 x 38* |
| Safety Valve Inlet x Outlet Section I 100-150 psi trim | **inches** | **1 x 1-1/4** |
| | *mm* | *25 x 32* |

*Two (2) safety valves will be provided

**FUEL REQUIREMENTS:** PRESSURE REQUIREMENTS AT RATED INPUT

| | | VMP® | VMP-49.5 |
|---|---|---|---|
| Fuel Usage at Rated Input (*Natural Gas*) | **SCFH*** | | **1,974** |
| | *$m^3/hr$* | | *55.9* |
| Fuel Usage at Rated Input *(Propane)* | **SCFH**** | | **790** |
| | *$m^3/hr$* | | *22.3* |
| Minimum Gas Pressure (NG or LP) STD emissions/<20ppm | **in W.C.** | | **9** |
| | *kPa* | | *2* |
| Maximum Gas Pressure (NG or LP) STD emissions/<20ppm | **in W.C.** | | **138** |
| | *kPa* | | *34* |
| Minimum Gas Pressure (NG) <9ppm low emissions | **in W.C.** | | **40** |
| | *kPa* | | *10* |
| Maximum Gas Pressure (NG) <9ppm low emissions | **in W.C.** | | **138** |
| | *kPa* | | *34* |
| Fuel Usage at Rated Input (#2 Fuel Oil) | **GPH***** | | **14.1** |
| | *lph* | | *52.6* |

*SCFH based on 1,000 BTU/ft3
**SCFH based on 2,500 BTU/ft3
***GPH based on 140,000 BTU/gallon

**ELECTRICAL REQUIREMENTS:** FLA IS SUBJECT TO CHANGE BASED ON OPTIONS, CONSULT FACTORY FOR JOB SPECIFIC FLA

| | VMP® | STD NG | <30ppm | <20ppm | <9ppm |
|---|---|---|---|---|---|
| Burner Motor (Gas) | **HP** | **1.5** | **5** | **5** | **5** |
| | *kW* | *1.1* | *3.7* | *3.7* | *3.7* |
| Full Load Amps (Gas) | **208/60/3** | **11.5** | **22** | **22** | **22** |
| | **230/60/3** | **9.5** | **18.5** | **18.5** | **18.5** |
| | **460/60/3** | **5** | **9.5** | **9.5** | **9.5** |
| | **575/60/3** | **4** | **7.5** | **7.5** | **7.5** |

**ELECTRICAL REQUIREMENTS:** FLA IS SUBJECT TO CHANGE BASED ON OPTIONS, CONSULT FACTORY FOR JOB SPECIFIC FLA

| | VMP® | #2 Oil-Combo |
|---|---|---|
| Burner Motor (#2 Oil-Combo) | **HP** | **2** |
| | *kW* | *1.5* |
| Full Load Amps (#2 Oil-Combo NG/#2 Oil) | **208/60/3** | **14** |
| | **230/60/3** | **12** |
| | **460/60/3** | **6** |
| | **575/60/3** | **5** |

**GAS EMISSIONS:** CORRECTED TO 3% O2, CO TO BE 25ppm OR LESS

| | | VMP® | STD | <30ppm | <20ppm | <9ppm |
|---|---|---|---|---|---|---|
| $NO_x$ | **lbs/hr** | **0.139** | **0.0650** | **0.0418** | **0.0186** |
| | *kg/hr* | *0.064* | *0.0295* | *0.0190* | *0.0084* |
| $SO_x$ | **lbs/hr** | **0.0012** | **0.0012** | **0.0012** | **0.0012** |
| | *kg/hr* | *0.0005* | *0.0005* | *0.0005* | *0.0005* |
| Volatile Organic Compounds | **lbs/hr** | **0.0108** | **0.0108** | **0.0108** | **0.0108** |
| | *kg/hr* | *0.0049* | *0.0049* | *0.0049* | *0.0049* |
| Total Particulates | **lbs/hr** | **0.0150** | **0.0150** | **0.0150** | **0.0150** |
| | *kg/hr* | *0.0068* | *0.0068* | *0.0068* | *0.0068* |
| CO | **lbs/hr** | **0.0360** | **0.0360** | **0.0360** | **0.0360** |
| | *kg/hr* | *0.0163* | *0.0163* | *0.0163* | *0.0163* |

**#2 FUEL OIL EMISSIONS:** ASSUMING 15PPM SULFUR CONTENT OF OIL

| | | VMP® | STD |
|---|---|---|---|
| $NO_x$ | **lbs/hr** | **0.286** |
| | *kg/hr* | *0.130* |
| $SO_x$ | **lbs/hr** | **0.0003** |
| | *kg/hr* | *0.0001* |
| Volatile Organic Compounds | **lbs/hr** | **0.0007** |
| | *kg/hr* | *0.0003* |
| Total Particulates | **lbs/hr** | **0.0460** |
| | *kg/hr* | *0.0209* |
| CO | **lbs/hr** | **0.0569** |
| | *kg/hr* | *0.0258* |

**VENTING REQUIREMENTS:** WHEN OPERATING ON NATURAL GAS

| | | VMP® | STD | <30ppm | <20ppm | <9ppm |
|---|---|---|---|---|---|---|
| Typical Combustion Air Intake Flow Rate | **SCFM** | **406.1** | **437.3** | **437.3** | **468.5** |
| | *$m^3/hr$* | *689.9* | *742.9* | *742.9* | *795.9* |
| Stack Flow Rate @ 135 PSIG operating | **SCFM** | **438.9** | **470.1** | **470.1** | **501.4** |
| | *$m^3/hr$* | *827.2* | *886.1* | *886.1* | *944.9* |
| Required Draft Pressure running hot @ flue outlet | **in W.C.** | **-0.04 to -0.08** | **-0.04 to -0.08** | **-0.04 to -0.08** | **-0.04 to -0.08** |
| | *kPa* | *-0.01 to -0.02* | *-0.01 to -0.02* | *-0.01 to -0.02* | *-0.01 to -0.02* |
| Required Draft Pressure standing hot @ flue outlet | **in W.C.** | **-0.02 to -0.04** | **-0.02 to -0.04** | **-0.02 to -0.04** | **-0.02 to -0.04** |
| | *kPa* | *-0.005 to -0.01* | *-0.005 to -0.01* | *-0.005 to -0.01* | *-0.005 to -0.01* |

**WEIGHTS AND VOLUMES**

| | VMP® | VMP-49.5 |
|---|---|---|
| Operating Weight at Normal Working Level | **lbs** | **8,085** |
| | *kg* | *3,667* |
| Flooded Weight | **lbs** | **8,595** |
| | *kg* | *3,898* |
| Water Volume at Normal Working Level | **gallons** | **231** |
| | *liters* | *875* |

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

| | VMP® | VMP-49.5 |
|---|---|---|
| Sound Level at High Fire | **dBa** | **79** |

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