The Power Flame Vector™ Industrial Burner offers a unique combination of operating and design advantages never before seen in medium to high input combustion systems. The Vector brings state-of-the-art design and manufacturing techniques together to form a cost effective alternative to the 100-year-old technology of the Register type burner.

Parallel flow, low excess air design provides high efficiency, high turndown and low NOx operation. Modular construction brings manufacturing lead times down while providing a wide range of application flexibility. The Vector factory packaged combustion system is designed to fire boilers, heaters and process equipment.

- High Efficiency
- Low Excess Air
- High Turndown
- Low NOx
- Parallel Flow
- Modular Construction

The Power Flame Vector™ Industrial Burner is designed to fire boilers, heaters and process equipment. It offers a unique combination of high efficiency, low excess air, high turndown, low NOx, parallel flow and modular construction. It is designed to operate on gas, light oil, and heavy oil with firing capacities ranging from 16,800,000 to 63,000,000 BTU/hr.
Windbox
Splitter Vanes and Baffles, strategically located using hydro analog simulation methods, provide even flow distribution to the Air Sleeve.

Air Sleeve
Parallel, turbulent free, combustion air flow is produced in the Vector Air Sleeve. Even distribution assures a uniform flow pattern and proper mixing at near stoichiometric conditions. Introduction of this parallel flow combustion air stream into the Swirler produces Staged Air Combustion.

Swirler
A rotational effect on the primary portion of the combustion air creates a Primary Combustion Zone downstream of the Swirler. The Primary Combustion Zone produces a vortex that provides flame stability and thorough mixing of the fuel and air to achieve complete combustion at up to 10:1 turndown when firing gas and up to 8:1 when firing liquid fuels. The Vector Burner can effectively operate with Excess Air Levels at or below 5.0% (1.0% O₂). When compared with the traditional Register Burner, operating at 15% to 30% Excess Air, the result is higher efficiency and cost saving operation.

Burner Throat
The Burner Throat exit shape is specifically matched with the Air Sleeve and Swirler to produce an aerodynamically stabilized flame. The Refractory Throat can be factory installed as part of the packaged system, or field installed using the factory-supplied Refractory Former assembly.

Multi Lance Gas Burner
Six (6) gas lances are attached to the gas manifold located within the burner. Multi-port stainless steel gas spuds, attached to the lances, are factory set and field adjustable to provide optimum fuel staging. The fuel is properly proportioned to the most turbulent Primary Combustion Zone, as well as to the laminar Secondary Combustion Zone.

Fuel Staging is accomplished by directing the relative Vector orientation of the gas spuds to create fuel rich and fuel lean zones within the combustion envelope. The result is high efficiency combustion and low NOx.

Y Jet Liquid Fuel Atomizer
The Vector’s Y-Jet atomizer incorporates multiple mixing chambers to produce a finely atomized spray with economical use of either steam or air. Steam (air) consumption at maximum capacity can be as low as 0.020 pounds of steam (air) per pound of oil. Atomized fuel is injected into the Primary Combustion Zone where the turbulent action intimately mixes fuel and air to produce efficient low excess air combustion.
by selecting the appropriate modules required to produce the complete, factory-assembled Combustion System Package.

Oil Assembly Manifold Block
The Oil Assembly Manifold Block provides accessible connections for both fuel and atomizing medium. The entire oil assembly can be easily removed from the burner by using the Snap Lock and Quick Disconnect assemblies.
AIR STAGING

The Primary Combustion Zone is created by the aerodynamically designed Swirler that converts the parallel air flow into rotational flow.

The Secondary Combustion Zone is created between the outer circumference of the Swirler and the inner circumference of the Air Sleeve.

This parallel laminar flow, and inherent pressure drop, produces flame shaping characteristics capable of meeting a wide range of combustion chamber configurations. The Primary/Secondary air ratio is factory set and field adjustable.

LOW NOx

The Vector produces low NOx results without Flue Gas Recirculation (FGR). The turbulence created in the Primary Combustion Zone produces a reverse flow in the form of a self-generating annular vortex.

This Internal Recirculation, coupled with combustion staging at low excess air levels, produces significant NOx reductions. Added NOx reduction can be accomplished using the Vector Induced FGR Air Inlet assembly. This method produces a premix of flue gas and combustion air, resulting in further reductions in both thermal and prompt NOx formation.

VECTOR BURNER AIR SLEEVE WITH OIL GUN & GAS MANIFOLD

RATINGS & SPECIFICATIONS

<table>
<thead>
<tr>
<th>Burner Model</th>
<th>Maximum MBH</th>
<th>Nominal BHP</th>
<th>GPH #2 Oil</th>
<th>GPH #6 Oil</th>
<th>Blower Motor</th>
<th>#2 Oil Pumpset</th>
<th>Compressor Set</th>
<th>Gas Train</th>
<th>Atomizing Media Train</th>
<th>Oil Train</th>
</tr>
</thead>
<tbody>
<tr>
<td>V168</td>
<td>16800</td>
<td>400</td>
<td>120</td>
<td>112</td>
<td>10</td>
<td>15</td>
<td>1/4</td>
<td>5</td>
<td>3&quot;</td>
<td>1/2&quot;</td>
</tr>
<tr>
<td>V210</td>
<td>21000</td>
<td>500</td>
<td>150</td>
<td>140</td>
<td>15</td>
<td>20</td>
<td>1</td>
<td>5</td>
<td>4&quot;</td>
<td>3&quot;</td>
</tr>
<tr>
<td>V252</td>
<td>25200</td>
<td>600</td>
<td>180</td>
<td>168</td>
<td>20</td>
<td>25</td>
<td>1</td>
<td>5</td>
<td>4&quot;</td>
<td>3/4&quot;</td>
</tr>
<tr>
<td>V284</td>
<td>28400</td>
<td>700</td>
<td>210</td>
<td>196</td>
<td>20</td>
<td>25</td>
<td>1 1/2</td>
<td>5</td>
<td>3&quot;</td>
<td>4&quot;</td>
</tr>
<tr>
<td>V315</td>
<td>31500</td>
<td>750</td>
<td>225</td>
<td>210</td>
<td>25</td>
<td>30</td>
<td>1 1/2</td>
<td>5</td>
<td>3&quot;</td>
<td>3/4&quot;</td>
</tr>
<tr>
<td>V336</td>
<td>33600</td>
<td>800</td>
<td>240</td>
<td>224</td>
<td>25</td>
<td>30</td>
<td>2</td>
<td>5</td>
<td>3&quot;</td>
<td>1&quot;</td>
</tr>
<tr>
<td>V378</td>
<td>37800</td>
<td>900</td>
<td>270</td>
<td>252</td>
<td>30</td>
<td>40</td>
<td>2</td>
<td>7/2</td>
<td>3&quot;</td>
<td>1/2&quot;</td>
</tr>
<tr>
<td>V420</td>
<td>42000</td>
<td>1000</td>
<td>300</td>
<td>280</td>
<td>30</td>
<td>40</td>
<td>2</td>
<td>7/2</td>
<td>4&quot;</td>
<td>1&quot;</td>
</tr>
<tr>
<td>V504</td>
<td>50400</td>
<td>1200</td>
<td>360</td>
<td>336</td>
<td>40</td>
<td>60</td>
<td>2</td>
<td>15</td>
<td>4&quot;</td>
<td>1/2&quot;</td>
</tr>
<tr>
<td>V630</td>
<td>63000</td>
<td>1500</td>
<td>450</td>
<td>420</td>
<td>50</td>
<td>75</td>
<td>2</td>
<td>15</td>
<td>4&quot;</td>
<td>1/2&quot;</td>
</tr>
</tbody>
</table>

* Gas pressure at first safety shutoff valve in standard UL gas train (outlet of Gas Pressure Regulator).
** V378 L-shaped configuration requires a 50 hp motor.

NOTE:
The Vector Burner can be furnished in left-hand, right-hand, inline and inline-above configurations. Systems can be designed to meet UL, IRI, FM, NFPA8501 and other codes as required.

The Power to Manage Energy

Power Flame

2001 South 21st Street  Phone 620-421-0480
Parsons, KS 67357  Fax 620-421-0948
Web Site: http://www.powerflame.com
E-Mail: csd@powerflame.com
Copyright © Power Flame Incorporated 1994 Printed in U.S.A.

Represented By: