Cerafil™ Hot Gas Filter Candles
What are Ceramic Filter Candles?

- Rigid candles are employed like fabric bags in the filter housing
- Capable of operating at elevated temperatures
- Applied to hot processes where clean off gas is required
- On the market since the mid 1980s
- 100’s of references worldwide
Cerafil Product Portfolio

- XS, white Alumosilicate fiber, 900°C, very resistant against chemical attacks (standard)
- Green, MgAl mineral fiber - strong and bio soluble
- TopKat, catalytic ceramic candle - toxic gas removal catalyst included
- Various dimensions up to 3 m and diameter 150 mm
Advantages

- High efficiency
  - Less than 2 mg/m$^3$ emissions
  - Handles sub-micron particles
- High temperature capability
  - Temperature resistant up to 900°C
- Corrosion resistant
  - Virtually chemically inert
- Works well in conjunction with a dry scrubbing agent
Maximum Operating Temperatures

<table>
<thead>
<tr>
<th>Material</th>
<th>Typical Operating Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>TopKat</td>
<td>32°F - 392°F</td>
</tr>
<tr>
<td>Green</td>
<td>392°F - 752°F</td>
</tr>
<tr>
<td>Cerafil XS</td>
<td>752°F - 1,112°F</td>
</tr>
<tr>
<td>Glass</td>
<td>1,112°F - 1,472°F</td>
</tr>
<tr>
<td>PTFE</td>
<td>1,472°F - 1,832°F</td>
</tr>
<tr>
<td>P84</td>
<td>0°C - 200°C</td>
</tr>
<tr>
<td>Nomex</td>
<td>200°C - 400°C</td>
</tr>
<tr>
<td>Ryton</td>
<td>400°C - 600°C</td>
</tr>
</tbody>
</table>

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Clamping - Typical
The new way of flue gas cleaning!

Photo: Maguin SAS
Cerafil TopKat Based APC

ADVANTAGES:
- Low Emissions
- Works at exhaust gas temperature
- Compact system
- Small footprint
- Lower investment costs
- Lower maintenance costs

Pollutants:
- PM
- NOx
- SOx
- HF
- HCL
- Dioxins

Sorbent injection

NH₃ injection

TopKat Filter

Emmisions:
- PM < 2mg/m³
- NOx -95%
- SOx -90%
- HF -95%
- HCL -95%
- Dioxins -99%
## Filtration Efficiency

<table>
<thead>
<tr>
<th>Process</th>
<th>Dust loading (g/Nm$^3$)</th>
<th>Particle size (µm)</th>
<th>Emission level (mg/Nm$^3$)</th>
<th>Inferred Efficiency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste incineration</td>
<td>5</td>
<td>&lt;10</td>
<td>&lt;5</td>
<td>99.88</td>
</tr>
<tr>
<td>Zirconia production</td>
<td>8</td>
<td>&lt;3</td>
<td>&lt;1</td>
<td>99.99</td>
</tr>
<tr>
<td>Nickel refining</td>
<td>12</td>
<td>&lt;10</td>
<td>&lt;1</td>
<td>99.99</td>
</tr>
<tr>
<td>Alumina production</td>
<td>18</td>
<td>&lt;50</td>
<td>&lt;1</td>
<td>99.99</td>
</tr>
<tr>
<td>Cement</td>
<td>60</td>
<td>&lt;3</td>
<td>&lt;5</td>
<td>99.99</td>
</tr>
</tbody>
</table>
**Performance - Comparison**

- **Typically, Cerafil can handle ca. 63 cfm per Candle (4 cfm/ft²)**

<table>
<thead>
<tr>
<th></th>
<th>Glass Industry</th>
<th>Cement - Clinker Cooler</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Volume flow (cfm)</strong></td>
<td>148,320</td>
<td>164,800</td>
</tr>
<tr>
<td><strong>Inlet dust load (gr/scf)</strong></td>
<td>0.45</td>
<td>26.2</td>
</tr>
<tr>
<td><strong>No. of Candles</strong></td>
<td>2500</td>
<td>2400</td>
</tr>
<tr>
<td><strong>Pressure drop (in. W. C.)</strong></td>
<td>8 - 9</td>
<td>6.5 - 7.5</td>
</tr>
<tr>
<td><strong>Dust emission (gr/ft³)</strong></td>
<td>&lt; 0.001</td>
<td>&lt; 0.001</td>
</tr>
</tbody>
</table>

- **For actual performance – a pilot study is recommended**
Examples of Cerafil longevity

- Aluminium powder: 5 years
- Glass furnace: 6+ years
- Catalyst manufacture: 4 years
- Wood waste incineration: 6 years
- Meat waste incineration: 5 years
- Lab waste incineration: 11 years
- Asphalt reclamation: 5 years
- Fluid bed metal cleaning: 5 years
- Zirconia production: 9 years
Contacts

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