Corning® Advanced-Flow™ G3 Reactor

A seamless and direct solution from lab to production

Corning has developed a high-flow-rate reactor for chemical production that retains the outstanding mixing and heat exchange performance of its lower-scale Advanced-Flow™ reactors while also providing:

- Large internal volume
- High flexibility
- Metal-free reaction path
- Scalability: Throughput factor increase of > 10 from G1 to G3
- Processing capability up to 100 kg/h

Integration of Corning® Advanced-Flow™ G3 Reactor in Production Plant
Example of Processing Capability

Reactor Characteristics

<table>
<thead>
<tr>
<th>Total pressure drop Process path (Approx.) (barg)</th>
<th>5 (*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total pressure drop Heat exchange path (Approx..) (barg)</td>
<td>2 (**)</td>
</tr>
<tr>
<td>Total internal volume (Approx.) (L)</td>
<td>0.8</td>
</tr>
</tbody>
</table>

(*) water 20ºC, 100 kg/h total flow rate
(**) water 20ºC, 1500 kg/h total flow rate

For typical reactor configuration: 2 feeds premix/reaction with 3rd feed/residence time (30 s)/quench with 4th feed.

Reactor Elements

The G3 reactor is composed of borosilicate glass fluidic modules, PFA piping, perfluoro-elastomer gaskets and a full stainless steel frame compatible with the chemical production environment.

Boundary Conditions

<table>
<thead>
<tr>
<th>Operating Range</th>
<th>Process Path</th>
<th>Heat Exchange Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature ( ºC )</td>
<td>-60 up to 200</td>
<td>-60 up to 200</td>
</tr>
<tr>
<td>Pressure (barg )</td>
<td>Up to 18</td>
<td>Up to 6</td>
</tr>
</tbody>
</table>

Various Fluidic Module Designs Available

<table>
<thead>
<tr>
<th>Mixing Designs</th>
<th>Residence Time Designs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 injection zone to contact 2 reactants and Residence time Heat exchange integrated</td>
<td></td>
</tr>
<tr>
<td>Heat exchange integrated</td>
<td></td>
</tr>
</tbody>
</table>

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