### BIOREACTORS.NET STANDARD PILOT REACTOR CONFIGURATIONS

<table>
<thead>
<tr>
<th>Model</th>
<th>RF10.1</th>
<th>RF20.1</th>
<th>RF35.1</th>
<th>RF50.1</th>
<th>RF100.1</th>
<th>RF200.1</th>
<th>RF350.1</th>
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</thead>
<tbody>
<tr>
<td><strong>Total Volume, L</strong></td>
<td>15</td>
<td>30</td>
<td>50</td>
<td>75</td>
<td>150</td>
<td>270</td>
<td>500</td>
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<tr>
<td><strong>Working Volume, L</strong></td>
<td>10</td>
<td>20</td>
<td>35</td>
<td>50</td>
<td>100</td>
<td>200</td>
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<tr>
<td><strong>H/D Ratio</strong></td>
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<tr>
<td><strong>Top</strong></td>
<td>Flat</td>
<td>Flat</td>
<td>Flat</td>
<td>Flat</td>
<td>Flat</td>
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</tr>
<tr>
<td><strong>Bottom</strong></td>
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<td>Torispherical</td>
<td>Torispherical</td>
<td>Torispherical</td>
<td>Torispherical</td>
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<tr>
<td><strong>Jacketed</strong></td>
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<td>Yes</td>
<td>Yes</td>
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<tr>
<td><strong>Insulation</strong></td>
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<td>50 mm</td>
<td>50 mm</td>
<td>50 mm</td>
<td>50 mm</td>
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<td><strong>Baffles</strong></td>
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<tr>
<td><strong>Agitator</strong></td>
<td>Top mounted</td>
<td>Top mounted</td>
<td>Bottom mounted</td>
<td>Bottom mounted</td>
<td>Bottom mounted</td>
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<tr>
<td><strong>Type</strong></td>
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<tr>
<td><strong>Turbines</strong></td>
<td>2xRushton</td>
<td>2xRushton</td>
<td>2xRushton</td>
<td>2xRushton</td>
<td>2xRushton</td>
<td>2xRushton</td>
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<tr>
<td><strong>Agitator RPM</strong></td>
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<td>40-750</td>
<td>40-750</td>
<td>40-750</td>
<td>40-650</td>
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<tr>
<td><strong>Gas</strong></td>
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<td>Air</td>
<td>Air</td>
<td>Air</td>
<td>Air</td>
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<tr>
<td><strong>Filters</strong></td>
<td>Inlet and Outlet 0.2 μm</td>
<td>Inlet and Outlet 0.2 μm</td>
<td>Inlet and Outlet 0.2 μm</td>
<td>Inlet and Outlet 0.2 μm</td>
<td>Inlet and Outlet 0.2 μm</td>
<td>Inlet and Outlet 0.2 μm</td>
<td>Inlet and Outlet 0.2 μm</td>
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<tr>
<td><strong>Sparger</strong></td>
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<td><strong>Gas flow control</strong></td>
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<tr>
<td><strong>Gas flow range</strong></td>
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<td>2 vvm</td>
<td>2 vvm</td>
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<td>2 vvm</td>
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</tr>
<tr>
<td><strong>Pumps (fixed speed)</strong></td>
<td>3 (acid, base, antifoam)</td>
<td>3 (acid, base, antifoam)</td>
<td>3 (acid, base, antifoam)</td>
<td>3 (acid, base, antifoam)</td>
<td>3 (acid, base, antifoam)</td>
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<tr>
<td><strong>Cooling</strong></td>
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<td>Water</td>
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<td>Water</td>
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</tr>
<tr>
<td><strong>Heating</strong></td>
<td>Electric heater</td>
<td>Electric heater</td>
<td>Electric heater</td>
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<td>Electric heater</td>
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<td>Electric heater</td>
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<tr>
<td><strong>SIP</strong></td>
<td>External via Saturated steam</td>
<td>External via Saturated steam</td>
<td>External via Saturated steam</td>
<td>External via Saturated steam</td>
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<td><strong>pH sensor</strong></td>
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<td>Yes</td>
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<td>Yes</td>
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<tr>
<td><strong>DO sensor</strong></td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td><strong>Temperature</strong></td>
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<td>Yes</td>
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<td>Yes</td>
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<tr>
<td><strong>Foam level</strong></td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td><strong>Alarm level</strong></td>
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<td>Feature</td>
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<td>Pressure sensor</td>
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<td>Pressure Gauge</td>
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<td>Lighting with sight glass</td>
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<td>Sampling Valve</td>
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</tr>
<tr>
<td>Dip tubes (for base, acid, anti-foam)</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Glass bottles (for base, acid, anti-foam)</td>
<td>3x250 ml</td>
<td>3x250 ml</td>
<td>3x500 ml</td>
<td>3x500 ml</td>
<td>3x1000 ml</td>
<td>3x1000 ml</td>
<td>3x1000 ml</td>
</tr>
</tbody>
</table>

**Utility Requirements**

<table>
<thead>
<tr>
<th>Utility</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling water</td>
<td>2 barg</td>
</tr>
<tr>
<td>Compressed air</td>
<td>8 barg</td>
</tr>
<tr>
<td>Steam</td>
<td>2.5 barg</td>
</tr>
</tbody>
</table>

**Optional features (customize in configurator)**

- Marine/Pitched blade or customized impellers
- Pressure control during fermentation (up to 1.6 barg)
- Condenser
- Gases (Oxygen, Nitrogen, Carbon Dioxide and others up to 4)
- Overlay (Air)
- Mass Flow Controller for Gas flow control
- Sterilizable dosage modules
- Variable speed pump for fed-batch
- Continuous process module
- Scales
- Additional dip tubes
- Lid lifting device (hydraulic or electric)
- CIP Spray ball
- Service and maintenance stairs with platform
- Clean steam and condensate lines
- SCADA