

Single-Use Fermenters

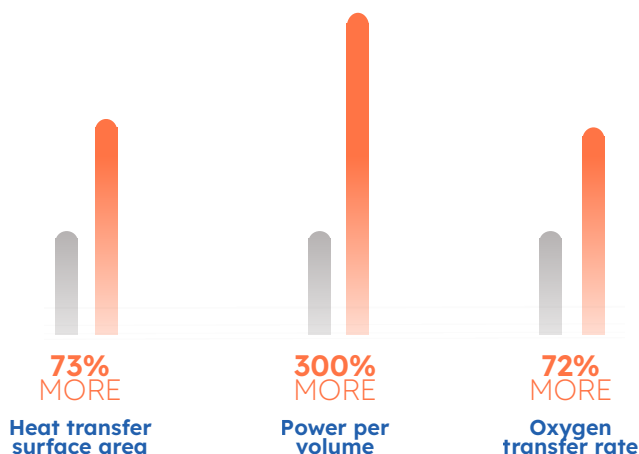


Introduction

ABEC's Custom Single Run (CSR) single-use Fermenters and Disposable Containers (DC) set an industry benchmark in productivity with superior performance, resulting in customer benefits such as cost, flexibility, and time-to-market. CSR Fermenter design overcomes the demands of microbial processing in single-use by leveraging ABEC's long history of stainless-steel reactor design, maximizing heat transfer surface area, and customizing the system. The ABEC CSR Fermenter can uniquely support high oxygen transfer rates (OTR) similar to stainless steel systems due to superior power input and gas handling. This capability paired with the industry's largest single use microbial production, enables ABEC CSR Fermenters to successfully scale and transfer processes in single use starting at 25L up to 1,000L working volumes.

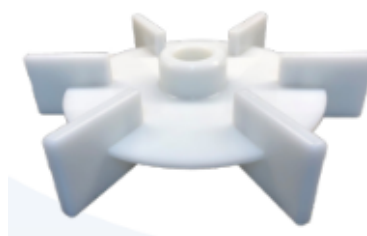
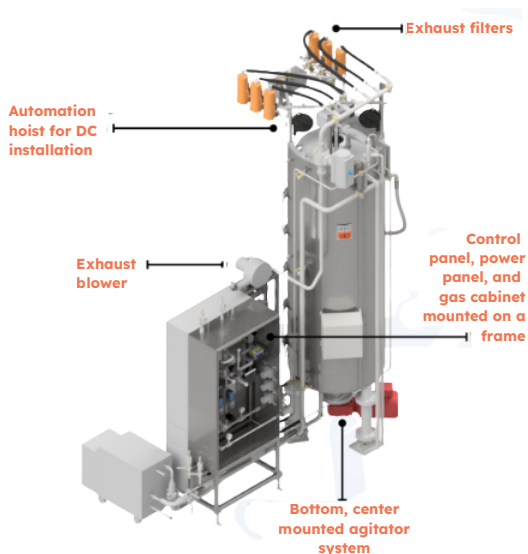
Benefits

- Highest productivity/yield
- Seamless technology transfer and scalability
- Lowest COGS
- Lowest supply chain risk



Unique features

- Customizable sizes and the only available commercial-scale production volumes in single use
- Maximum heat transfer surface area
- Strategic exhaust design
- Highly customizable system and DC to suit process and facility needs
- Global, in-house manufacturing of all equipment and consumables
- Efficient Disposable Container (DC) loading and unloading
- Temperature control option via dimpled jacket
- Stainless baffles welded to sidewalls of CSR holder
- Non-proprietary control system options
- Transparent supply chain with multiple Qualified Suppliers



ABOVE:
CSR Rushton impellers offer reliable performance and maximize system power input



Typical Specifications

ABEC's CSR systems are customizable to meet specific process and operational requirements. Typical design elements and specification ranges are shown

Working Volumes	Customizable: 25L up to 1,000L
Turndown Ratios	Customizable
Agitator Mounting	Bottom Center
Agitator Motor Coupling	Mechanical
Agitator Seal	Mechanical/SiC
No. Baffles	Up to 4
Gassing	Up to 2 VVM
Impeller Type	Customizable: Radial flow (Rushton) and/or axial flow (Hydrofoil or Marine) impellers
Tip Speed	Up to 5.0 m/s (980ft/min)
Spargers	Customizable: Ring Type: 0.5 to 3.2 mm
Performance @ 1,000L V _w	OTR > 350 mmol L ⁻¹ h ⁻¹
Disposable Container (DC) Materials of Construction	Film: RENOLIT SELMED Infuflex 9101 Multilayer LDPE/EVOH Impellers: HDPE Seal Housing, Shaft Coupling: LDPE Agitator Shaft: 316L SS
Process Controls	Customizable: Open architecture via Emerson, Rockwell, or Siemens hardware or software
Process Monitoring	Customizable: Single use or traditional sensor technology pH, DO, antifoam (non-invasive), pCO ₂ , optical density, conductivity