



Single-Use Bioprocessing Systems

Portfolio & Capabilities

Standard, configure-to-order
and engineer-to-order options.



About Avantor

Avantor® is a leading life science tools company and global provider of mission-critical products and services to the life sciences and biopharmaceutical industries.

Fluid Management Systems

For over 30 years, our Fluid Management Systems team has been serving global biopharma and CDMO companies with single-use (SU) bioprocessing systems, consumables, and assemblies.

All our systems are specifically designed to maximize your biomanufacturing production while ensuring product contamination protection in all aspects of your operations including:

- Mixing
- Filtration
- Buffer and media preparation
- Storage and transportation

We offer flexible options designed to address simple and complex operations according to your requirements:

- Standard systems and SU consumables
- Configure-to-order (CTO) solutions with a large range of selectable options
- Engineer-to-order (ETO) customized systems, specifically tailored to your unique needs

Single-Use Mixing Systems

Scalable mixing for solid-liquid or liquid-liquid applications

Magnetic Mixer



Powerful, low shear, aseptic mixing, facilitated by magnetic forces driving a free-floating SU impeller

- Compact and mobile design
- Scalable mixing from 1L to 1500L in standard configurations
- ETO options available up to 2500L

Top Mixer



Open top SU mixer for bulk production of less sensitive materials such as buffers

- Scalable mixing from 5L to 560L in standard configurations
- ETO systems available up to 3000L
- Compatible with Avantor's full suite of single-use solutions including tank liners and other accessories

Quattro Mixer



Cost-effective aseptic mixing, powered by recirculation through a SU fluid pathway generated by a stand-alone pump

- SU mixing head with 16 nozzles
- Scalable mixing from 5L to 500L in standard configurations.
- Support vessels available in plastic or stainless steel

Configurable options

Standard and CTO options:

- Loadcells
- Bag inflation system
- Double-jacketed vessels for temperature control
- Integrated SU sensors: pH, conductivity and DO

Standard models:

- Loadcells
- TopMixer 200 – drum size from 50L to 200L
- TopMixer 500 – drum size from 200L to 560L
- Two types of metallic impellers for liquid-powder or liquid-liquid mixing applications

Standard and CTO options:

- Loadcells
- Bag inflation system
- Double-jacketed vessels for temperature control
- Inline single-use sensors such as pressure, conductivity, flow, temperature and pH

Fluid Transfer and Filtration Systems

Scalable ETO options for filtration and fluid handling

Tangential Flow Filtration Systems



ETO Tangential Flow Filtration (TFF) systems for ultrafiltration, diafiltration, purification and concentration

- Recirculation flowrates supported from 700 to 5000L/hr
- Permeate flowrates supported from 12 to 300L/hr
- Hollow fiber or stack cassette filter styles supported with membrane areas from .01m² to 10.0m²
- Modular automation software supporting numerous unit operations: concentration, diafiltration, recirculation and/or WFI rinse

Pump Skids



Fully integrated ETO pump skid for advanced control fluid transfer

- Ergonomic design including one controller for all functions
- Integrated formulation programming for automated pumping

Configurable options

- Temperature and/or weight controlled
- Permeate/retentate hold up container or on-board mixing vessels
- Inline SU sensor process and quality control options: pressure, flow, temperature conductivity, pH, UV/turbidity and bubble detection
- Different types of pump heads: peristaltic, diaphragm pump, centrifugal
- Assorted inline SU sensors for process control: pressure, flow, temperature conductivity, UV/turbidity and bubble detection and/or pH

Inline Buffer Preparation Systems

ETO systems for inline mixing or on-demand buffer/media preparation to support upstream and downstream unit operations

Inline Dilution System



For diluting concentrated buffer solutions with water to achieve the desired buffer concentration

Inline Conditioning System



For mixing individual buffer stock components (e.g., acids, bases, salts) and water to create the final buffer solution

Inline Mixing System



For inline static mixing or surge vessel mixing with SU mixing elements. Potential applications: cell lysis, cell viral inactivation and others

Configurable options

- Weight and flow measurement for volume and process control
- Passive or active mixing options
- Assorted inline SU sensors for process control: pressure, flow, temperature conductivity, UV/turbidity, bubble detection and/or pH

Storage and Transportation Containers

Plastic 3D Bag Support Containers



- Plastic containers that can be collapsed for easy storage, handling and shipping
- Standard sizes 200L, 500L, 1000L
- ETO support containers available up to 2500L
- ISTA certified for shipping

Stainless-Steel 3D Bag Support Containers



- Transport style in 200L, 500L and 1000L sizes while cleanroom style comes in 50L, 200L, 500L, 1000L & 1500L sizes
- ETO systems available up to 2500L
- ISTA certified for shipping

Transport and Handling Accessories



- Wheeled dollies
- Pushbar trollies

Configurable options

- Cleanroom castered wheels
- Bag hoist assist
- Light blocking
- Cleanroom compatible

- Double jacketed vessels for temperature control
- Cleanroom castered wheels
- Loadcells
- Bag inflation
- Bag hoist assist
- Light blocking
- Leak proof
- Cleanroom compatible

- Cleanroom castered wheels
- Loadcells

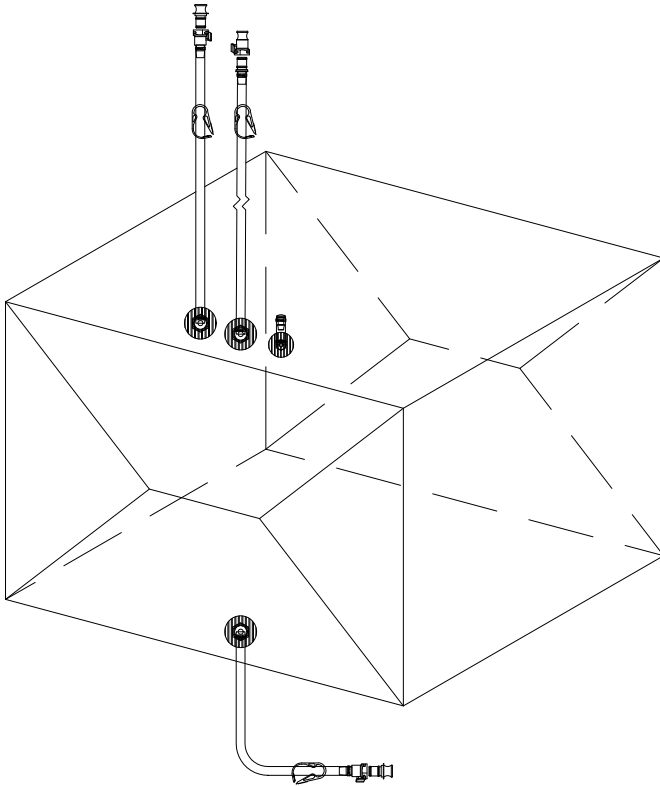
Single-Use Bags and Assemblies

Mixing and storage/ transportation SU bags:

- Multilayered film comprised of:
 - Inert ULDPE contact layer
 - Gas and moisture vapor barrier layer
 - Durable polyethylene (PE) outer layer
- Same materials and connections across different sizes & scales
- Standard 3D cubic bags with 3 top ports, and 1 drain port

ETO bioprocessing SU bag assemblies

- Fully customizable designs
- Leveraging Avantor's extensive component library (over 14,000 parts), including SU bags, bottles, tubing, filters, connectors, etc.
- Brand-agnostic design approach, selecting components from different vendors based on fit-for-purpose or lead time



Outer Layer	
PE	50 μm
Tie	10 μm
EVOH	20 μm
Tie	10 μm
ULDPE	230 μm
Contact Layer	

Software and Automation

Integrated user interface software is designed to provide intuitive and easy-to-use operational control of the system. Logged performance or audit data can be accessed locally via the on-device touchscreen HMI or remotely via automation production control.

- Consistent UI software across all Avantor systems and platforms
- Regulatory compliance: 21 CFR Part 11, GAMP 5, ISA88
- Open communication connectivity with other unit operations, upstream and downstream, independent of manufacturer
- Customized HMI software compatible with Siemens and Exor screens
- Multiple communication protocols (supervisory control and data acquisition, SCADA) supported, allowing seamless integration to common automation production control systems



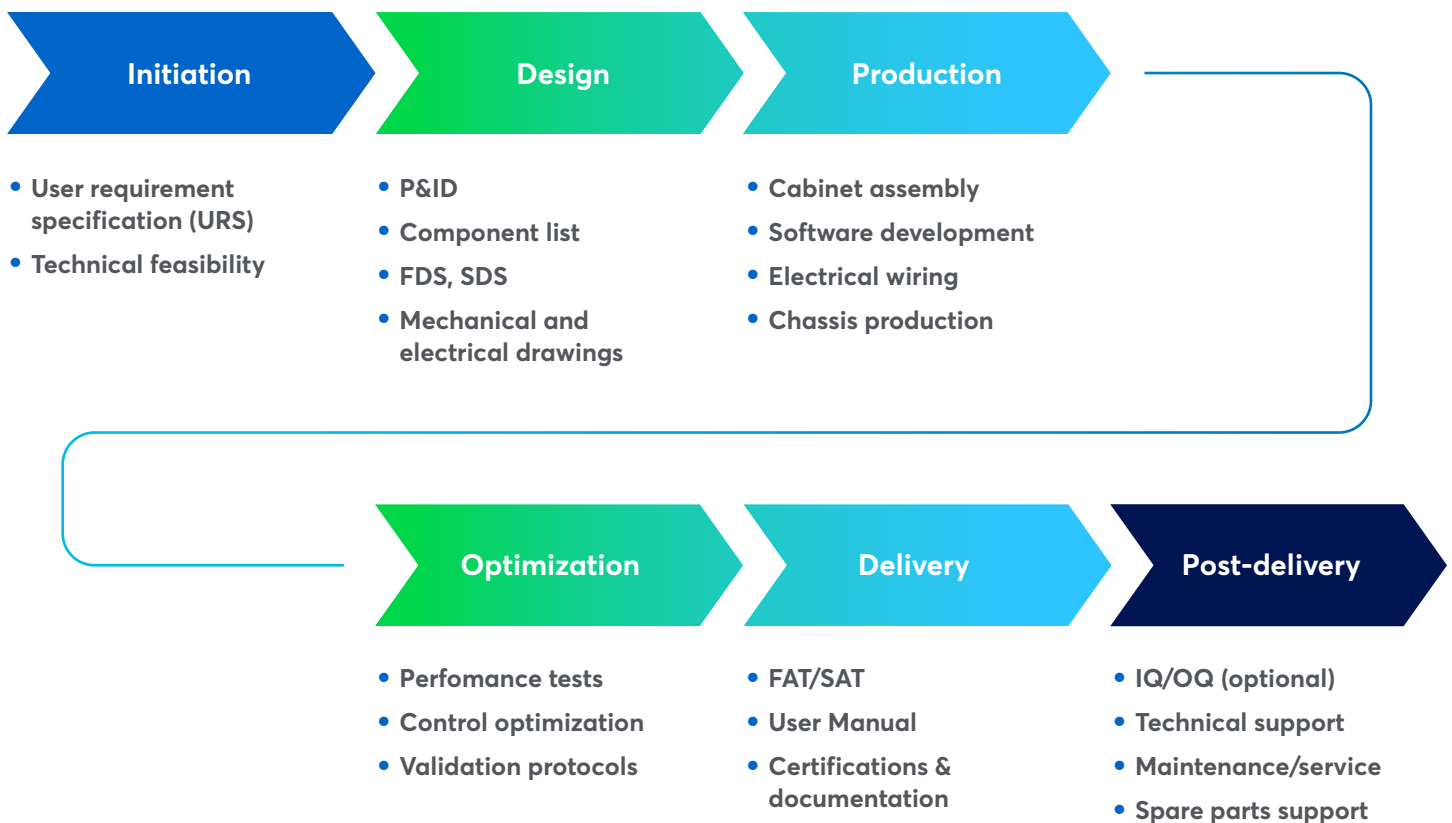
Engineered-to-Order Expertise and Process

HIGHLIGHTS

- Completed **over 200** projects and delivered **over 850** systems globally
- ISO 9001 certified manufacturing facility in the Netherlands
- Dedicated project manager for Engineer-to-Order projects



Avantor ETO project workflow



For more information,
visit avantosciences.com

or contact an
[Avantor](#) expert.