



CSR[®]
Custom Single Run

Scalable Single-Use Solutions



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SCALABLE SINGLE-USE SOLUTIONS

ABEC's Custom Single Run (CSR®) product line is the new benchmark for single-use implementation. Leveraging our long experience in equipment design, customized approach, and exclusive focus on production scale bioprocessing, CSR technology sets new standards in single-use performance.

MAXIMUM PROCESS FLEXIBILITY

ABEC is unique in the industry with the capability to provide fully customizable single-use and stainless steel process solutions with comparable performance. Similar to our approach for over 40 years with stainless steel systems, CSR systems can be designed to meet specific process, facility, and operational requirements. Mixing and mass transfer can be optimized for particular cell lines, equipment can be arranged to accommodate space constraints and utility access, and control systems can be adapted to seamlessly integrate into plant control architecture. The higher volume capacity of CSR better enables flexible multi-product operations, therefore supply demands can be met with fewer batches, maximizing manufacturing facility utilization.

CSR is the only single-use solution to provide scientists and process engineers with the ability to adapt designs, accommodating user, process and material of construction requirements to provide solutions that seamlessly scale up/down; to/from existing processes.

LARGEST PRODUCTION VOLUMES

The CSR product line leads the industry with bioreactor volumes up to 6,000L V_w , fermenter volumes up to 1,000L V_w , and liquid mixing systems up to 7,000L V_w , delivering significantly more capacity per unit area of floor space; a key metric in high-value multi-product biopharmaceutical facilities.

INCREASED PRODUCTIVITY

CSR brings true economy of scale to single-use processing. Capacity is doubled within a similar footprint to the 2,000L systems currently on the market. The economic benefit is significant, with total cost of goods sold (COGS) lowered due to increased productivity, while facility depreciation and labor costs are reduced.

ROBUST, NON-PROPRIETARY SUPPLY CHAIN

Implementing new product contact materials in a cGMP operation can create significant challenges related to sourcing, change management, quality assurance, and validation. The CSR product line meets those challenges by only using non-proprietary, commercially available raw materials, instruments, and components. Users can develop and manage their supply chain to standards that align with their requirements, rather than being forced into a single source of supply. The design and selection of materials used in the fabrication of the CSR Disposable Container is collaborative in order to leverage users existing material qualification and validation efforts. This strategy enables flexibility in component selection across different unit operations to minimize process, quality and supply chain risk. Clients are also able to significantly consolidate product contact materials used throughout the entire bioprocess to minimize inherent risks associated with raw material supply.

To further ensure a robust supply chain, ABEC has multi-site global ISO-7 clean rooms to provide short disposable container lead times and redundancy of supply. All disposable containers are built with industry-proven product contact materials offering clients unprecedented transparency and control of the container and component supply chain, resulting in improved material management, quality assurance and change management.

EFFICIENT DISPOSABLE CONTAINER LOADING

Reducing risk of container failure and minimizing system turnaround time are critical for a single-use manufacturing operation. The CSR product line features innovative, safe and ergonomic solutions for packaging and handling of disposable containers, no matter its size. Disposable containers are packaged to prevent mishandling that might adversely impact film integrity. Once the disposable container reaches the equipment, simple tools are used to assist installation; even the largest disposable container can be installed by one operator in less than an hour.

UPSTREAM / DOWNSTREAM APPLICATIONS

CSR UPSTREAM

- Bioreactor working volumes up to 6,000L
- Fermenter working volumes up to 1,000L
- Mixing and mass transfer optimized to support high yield processes

CSR GENERAL MIXER

- Large working volume up to 7,000L for high titer intensified processes
- Harvest, Purification Pooling, Viral Inactivation
- 10:1 turndown volume flexibility for low titer continuous processes
- Full integration with filtration systems including pumps and sensors

CSR BUFFER HOLD

- Multiple buffers each up to 4,000L
- Stable buffer delivery at high flow rates
- Reduced floor space and consolidated tubing runs
- Self-deploying disposable containers requiring minimal operator involvement

CSR TANGENTIAL FLOW FILTRATION (TFF)

- Large-scale UF/DF up to 40m² filter area
- Fully single-use flow paths for rapid batch-to-batch and campaign-to-campaign changeovers
- Cone-bottom mixing vessel for high turndown ratios
- Low operating and hold-up volumes for maximum product concentrations
- Customizable for specific applications and filter types



750L V_w CSR® Dual Purpose System (750L Fermenter / 500L Bioreactor)

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4,000L V_w CSR[®] Bioreactor Train (50L V_w, 250L V_w, 1,000L V_w and 2 x 4,000L V_w)

Since 1974, ABEC has been a leader in delivering engineered process solutions and services for manufacturing in the biotech industry. The majority of the world's pharmaceutical and biotech companies are ABEC customers; with many of today's leading therapies manufactured by processes and equipment engineered, manufactured, installed and serviced by ABEC.

ABEC's unique value is based on long experience, complete in-house capabilities, a custom, flexible approach, and long-term credibility. Whether adding capacity or improving existing facilities, ABEC's turn-key solutions and support reduce overall cost and time to market while delivering maximum productivity.

To learn more about ABEC, visit abec.com or email info@abec.com.



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