



kSep[®] Systems

Advanced, scalable, single-use automated centrifugation systems

Introduction

Sartorius kSep[®] systems provide robust, single-use bioprocessing solutions in the areas of recombinant therapeutics, cell therapy, vaccine manufacturing, and blood processing. As per your process requirements, our fully-automated systems are optimized to recover supernatant or solids (cells | particles) in a continuous manner.

kSep[®] systems solve the problems of traditional centrifugation and filtration based technologies by handling very high cell densities while providing high recoveries and product quality.



Description

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Patented kSep[®] systems technology is the only current technology that provides significant advantages for users that want to either harvest cells as product or discard cells as by-product during manufacturing.

Through the balance of centrifugal and fluid flow forces, the kSep[®] retains particles such as cells or microcarriers, as a concentrated fluidized bed under a continuous flow of media or buffer. These are the only bowl centrifuges that do not stop rotating while discharging. The system can be operated under sterile conditions and all consumables are delivered pre-sterilized.

Benefits

Smart Bioprocessing

- Integrates and | or reduces processing steps and time
- Improves recoveries of both solids and liquids
- Provides option to selectively remove small particulate impurities, e.g. plastic generated, cell debris, extracellular viruses
- Built-in scalability (4-6 fold) for development and manufacturing using the same system
- Automated with option to run in complete manual mode
- No hardware change for different applications
- Handles low to high cell density cultures (>150 million cells/mL) equally well

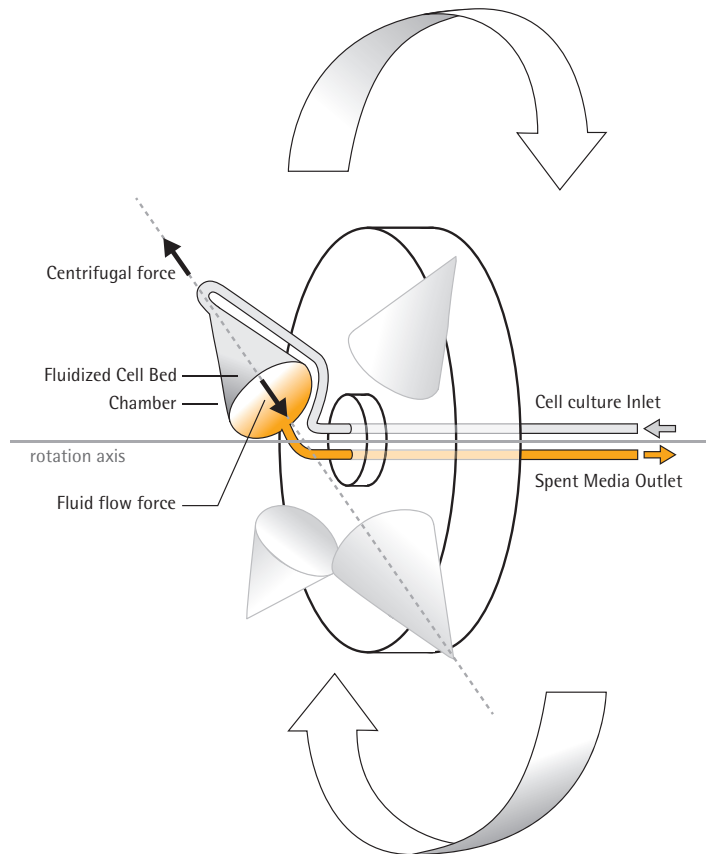
Advanced Cell Handling

- Imparts low shear on cells and keeps the cells intact
- Maintains a healthy environment to sustain cell viability
- Complete supernatant product recovery from slurry without dilution
- Reduces intracellular protein contamination for harvest applications by keeping the cells intact

Ensures cGMP Manufacturing

- Closed system with single-use class VI product contact surfaces
- Simple, robust, and scalable
- One software for all systems
- Clog-free and continuous operation

Functional principle kSep® centrifuge



Applications

- Harvest | Clarification
- Cell Therapy
- Vaccine Manufacturing
- Blood Processing

Concentrate-Wash-Harvest

kSep® systems concentrate cells with high recovery while maintaining high viability. Additionally, kSep® systems can remove cell debris, light particulate impurities, all while significantly reducing any aggregation of cells. kSep® systems do not contain any rotary seals (providing completely closed system) or filters (for reduced issues from clogging). These features are critical for cell therapy manufacturing. Once captured and concentrated, the cells can efficiently be washed, manipulated, and harvested. kSep® is a breakthrough for applications requiring maintenance of cellular integrity during processing. This automated sequence is currently being used for cell therapy manufacturing, perfusion, cell banking, and vaccine manufacturing processes. This is the only perfusion technology where the bleeding of cells does not cause loss of recovery.

Harvest clarification

kSep® systems are the first single-use centrifugation systems that are completely closed. These systems are fully-automated and designed to recover >97% of product by efficient product displacement from slurry. This process is independent of cell density. In addition, low-shear process ensures reduced downstream contamination (due to cellular debris or proteolytic enzymes) and high product quality.

Additional Applications

We are continually working with clients and have developed a wide range of additional applications including microcarrier separation and coating, blood separation, infection, and transfection.

Technical Specifications



kSep[®] 400



kSep[®] 6000S

Functional		
Max g-force	1,000 g	2,000 g
Max Flow Rate	114 L/hr	720 L/hr
Volume	400 mL (4 × 100 mL)	6000 mL (6 × 1,000 mL)
Cell Capacity per Cycle (CHO)	Up to 80 Billion	Up to 1200 Billion
Processing Volumes	0.1 – 500 L	10 – 6,000 L
Physical		
Height	140 cm	179 cm
Length	107.5 cm	225 cm
Width	72 cm	106 cm
Weight	350 kg	2141 kg
Process Connections		
All	3/8" × 1/4" C-Flex [®]	5/8" × 3/8" C-Flex [®]
Utility Requirements		
Voltage	208 – 240 V 1 Ph	208 – 240 V 3 Ph (US) 400 V 3 Ph (EU)
Current	20 A	60 A
Process Air	Not required	90 psi – 1/2" NPT
Connection	NEMA L6 – 20	Customer supplied
Chilled Water (Optional)	1/2" NPT	3/4" NPT



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