



Gentle efficiency

Optimize your cell culture-based drug production with Alfa Laval Culturefuge separators





The key to success

Separating target proteins from cells is a critical process step in cell culture-based drug production. The separation system has a major impact on product quality and total production cost. Choosing the right equipment is crucial for your profitability.

Alfa Laval's Culturefuge range of centrifugal separators is specifically developed for handling fragile mammalian cells and offers unrivalled separation performance thanks to its unique design. With an Alfa Laval Culturefuge you maximize output and quality while minimizing costs for downstream purification.

We offer complete separation systems built around our Culturefuge separators, tailored to your specific operating conditions. Visit www.alfalaval.com/Culturefuge or contact your local Alfa Laval representative to see how we can help you improve your cell harvesting stage.



Handling with care

Drug production using mammalian cell cultures poses a range of challenges when it comes to separating the target protein molecules from the cells. To maximize production output you must have an efficient separation process, yet ensure fragile mammalian cells are kept intact to avoid challenging downstream processing.

The small volumes and high value of pharmaceuticals produced with mammalian cell cultures means reliable output and product quality are extremely important. There are no margins for unnecessary product loss in the process, and increasing output by a few grams per day can have a huge impact on your profitability.

Separating out cells without contaminating the product

Product quality, process yield and cost for purification are largely influenced by the cell harvesting stage. If the cells in the fermentation broth break while being separated from the product, the solution with the target proteins will be contaminated by intracellular proteins, resulting in high purification costs and lower quality.

Peak separation

A Culturefuge centrifugal disc stack separator is perfect for cell harvesting thanks to its unique combination of high separation efficiency and gentle handling of cells and target molecules.

A Culturefuge separation system is an efficient, compact solution that has the



flexibility to handle multiple product lines. The optimized bowl geometry in a Culturefuge separator gives it a very high capacity and small footprint.

Reliable performance – from pilot to full-scale plant

With the often long and costly fermentation processes involved in biopharma production, you cannot risk spoiling a batch due to contamination

of intracellular proteins. With Alfa Laval Culturefuge you get a cell harvesting system that you can rely on and that can be used in any size plant, from pilot or demo to the largest full-scale operation.

Ahead of the game

The outstanding performance of an Alfa Laval Culturefuge is the result of a design that combines gentle acceleration and separation of the broth in a truly hermetic, air-free environment.

Gentle acceleration minimizes contamination

The unique hollow spindle inlet accelerates the fragile mammalian cells in the feed very gently, minimizing shear forces acting on them. This prevents the cells from breaking and the product from being contaminated with debris and dissolved intracellular proteins, thus simplifying downstream product recovery.

Fully hermetic design

The completely hermetic design means there are no air-liquid interfaces, thereby minimizing the risk of breaking the fragile mammalian cells. In addition it minimizes foaming and improves the reliability of turbidity monitoring.



Full-bore inlet

The hermetic design also allows for an open, full-bore inlet without any pumps or control valves between the bioreactor and the separator.

With a full-bore inlet the fragile cells do not have to pass through any equipment which imposes unnecessary shear. Flow control devices are located on the outlet line after clarification has taken place.

Instead of pumps, the fermentation broth is transferred from the bioreactor to the Culturefuge by overpressure in the bioreactor or by taking advantage of the siphon effect in the centrifuge itself.

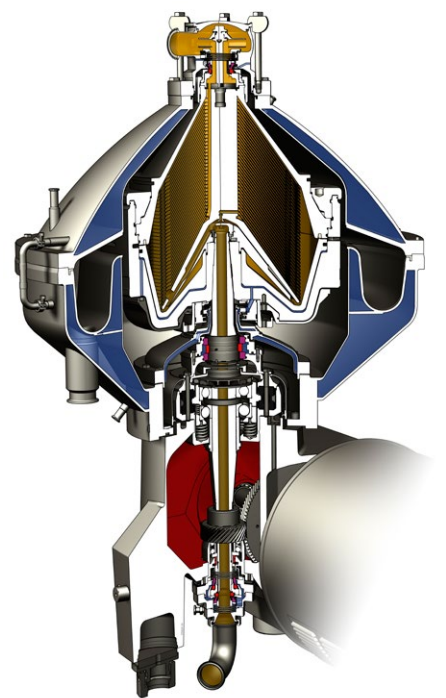
Hygienic design

The Culturefuge is designed to meet the most stringent hygienic requirements and is manufactured using materials approved for the biotech industry.

It can be automatically cleaned and sanitized without disassembly using sterilization-in-place (SIP) and cleaning-in-place (CIP) systems. In addition, flushing nozzles spray the outside of the centrifuge bowl, cyclone and inside the frame hood to ensure the highest degree of cleanliness.

Supporting your business all the way

Regardless of whether you are building a pilot or full-scale production plant we have the right separation system for you. Our Culturefuge range covers the



entire capacity span and makes scaling up, with predictable results, easy.

We deliver Culturefuge as part of complete skid-mounted separation systems where everything is tailored to your operating conditions and preferences.

Our engineering teams around the world are ready to assist in finding the perfect solution for you. We offer full validation support and our FAT facilities are available for complete pre-delivery testing.



Alfa Laval Service – Extending performance

Regular maintenance is key to achieving optimal operating efficiency and return on investment. Alfa Laval Service offers a wide range of services and products that cover the entire lifecycle of your Culturefuge separator. Examples include installation and commissioning, regular maintenance, genuine spare parts, monitoring systems, reconditioning and condition/performance audits.

With Alfa Laval as your service partner, you get full support on a global scale. Over the past 130 years, we have built a global service network with a strong local focus. We have service specialists ready to assist you in nearly 100 countries and our efficient logistics chain makes sure you get the spare parts you need.



Model range



Culturefuge 100

For pilot plants and small-scale production with capacities ranging from 200 to 1,000 l/hr.



Culturefuge 200

For medium scale production with capacities ranging from 1,000 to 5,000 l/hr.



Culturefuge 300

For medium to large scale production with capacities ranging from 2,000 to 8,000 l/hr.



Culturefuge 400

For large scale production with capacities ranging from 5,000 to 20,000 l/hr.

Alfa Laval in brief

Alfa Laval is a leading global provider of specialized products and engineering solutions.

Our equipment, systems and services are dedicated to helping customers to optimize the performance of their processes. Time and time again.

We help our customers to heat, cool, separate and transport products such as oil, water, chemicals, beverages, foodstuffs, starch and pharmaceuticals.

Our worldwide organization works closely with customers in almost 100 countries to help them stay ahead.

How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com.



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