



Powering results in harvest and clarification process

When harvest and clarification operations limit process throughput

In intensified or standard mAb processes, increases in cell density and titer may shift the process bottleneck to harvest and clarification. Higher solids load and process volumes drive increased filter demand, process liquid usage, and downstream impurity burden.

The challenge is to efficiently remove cells and debris while maintaining filtration efficiency and achieving consistent and high effluent quality.



An integrated harvest and clarification workflow uses centrifugation and chromatographic clarification to reduce filter burden ahead of downstream processing.

Conventional harvest and clarification process:

- Two-stage depth filtration
- High filter area requirements
- Increasing filter consumption at higher cell densities
- High process liquid and water usage

Integrated harvest and clarification process:

- ✓ Centrifugation + chromatographic clarification combined based on process needs
- ✓ Reduced solids load improves filtration efficiency
- ✓ Lower overall consumable and process liquid demand
- ✓ Simplified harvest operations

Thermo Scientific™ DynaSpin™ Single-Use Centrifuge System can help you achieve streamlined large volume clarification operations while reducing manufacturing space and consumables*



~150% increase
in filter capacity



~50% reduction
in water usage



~76% reduction
in process footprint

***Results from intensified upstream process economic modelling**
[Optimizing monoclonal antibody production: high-yield upstream process intensification strategies](#)

Upstream workflow at a glance



Our integrated solutions offer choices for efficient downstream impurity burden reduction.

Harvest by centrifugation

Thermo Scientific™ Dynaspin™ Single-Use Centrifuge System

- Reduces bulk solids prior to filtration
- Decreases filter area requirements while improving filter performance
- Supports scalable and closed operation

Centrate clarification

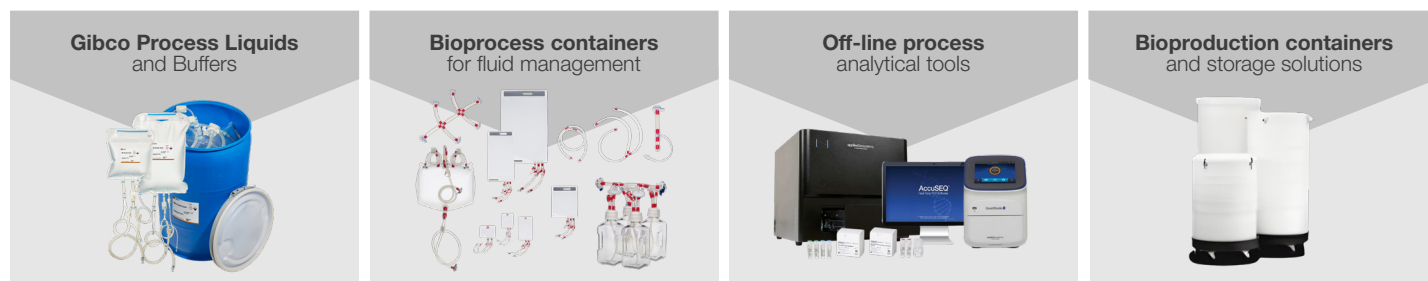
Thermo Scientific™ Harvest RC Chromatographic Clarifier Platform

- High-capacity, synthetic, single-use clarification platform
- Scalable and flexible configurations based on process needs:
 - ➔ Harvest RC clarifier for direct clarification
 - ➔ DynaSpin Centrifuge System integrated with Harvest RC centrate clarifier



Supporting technologies across the upstream workflow

Components that support consistent and scalable upstream performance:



Learn more at thermofisher.com/mAbs

***Disclaimer:** The data shown here represents an illustrative example of how an intensified mAb process differs from a standard mAb process. The process data, modeled using BioSolve Process™ software, show how Thermo Fisher Scientific's bioprocessing technologies can help demonstrate the value of process intensification in both upstream and Aand standard cost inputs (e.g., labor, capital, and pricing), unless otherwise noted. For more information on the study parameters, please read [Optimizing monoclonal antibody production: high-yield upstream process intensification strategies](#). Results are based on lab-generated data (up to 500 L scale) and modeled case studies and are proved for illustrative purposes only. Actual customer results may vary depending on process design, scale, and site-specific conditions.

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