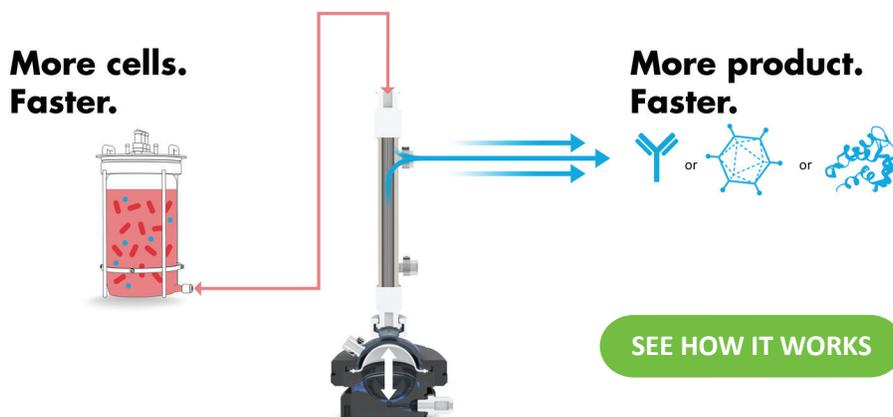


Intensification delivers more cells, more product, faster.

XCell ATF® technology helps develop fast and simple intensified upstream processes that deliver more product, faster. Intensified processes achieve higher cell densities, require smaller bioreactors and consume less suite time. Increase throughput, productivity, and capacity in both clinical and commercial manufacturing towards maximizing your facility utilization, accelerating program advancement and transforming your business decisions.



DELIVER MORE, FASTER

Increase throughput:
more programs, more molecules

Increase productivity:
more product per batch

Increase capacity:
more batches per facility

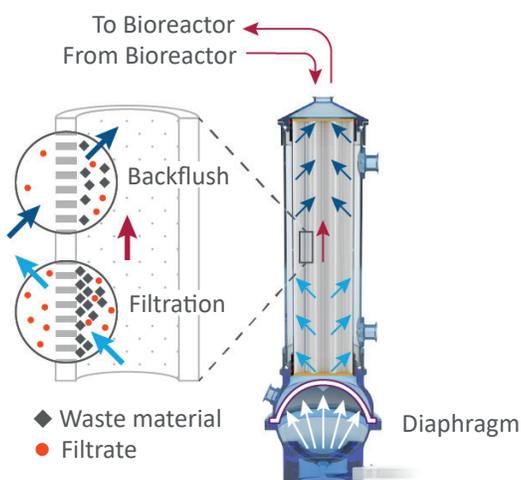


EXECUTE HIGH ROI BUSINESS DECISIONS

Reduce bioreactor size up to 10 fold
from 10,000 L to 1,000 L

Accelerate your program
with smaller, flexible intensified processes

Re-think facility expansion
lower cost, lower risk, faster results



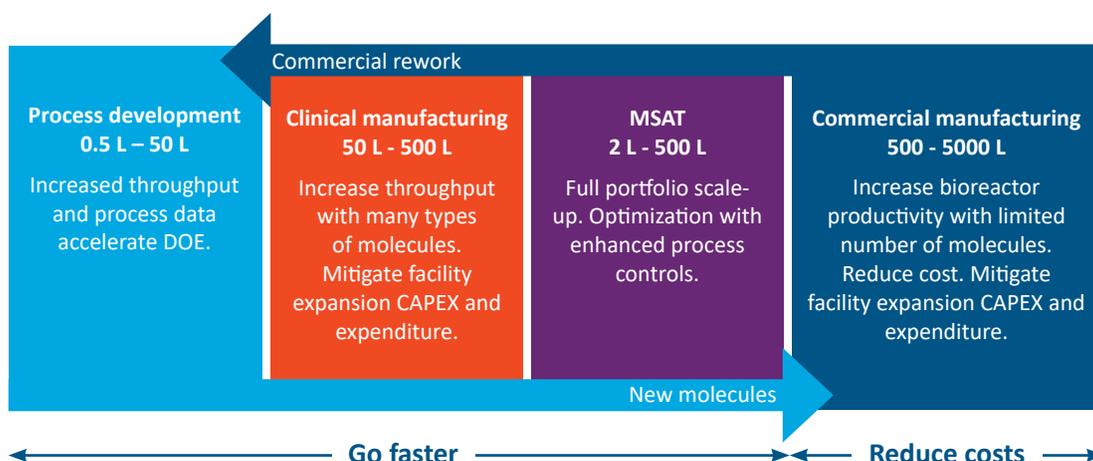
Alternating flow generates robustness

XCell ATF® technology extends filter lifetime by utilizing the innovative principle of alternating tangential flow. Positive air pressure to a diaphragm pump moves cell culture suspension from the device to the bioreactor in an upstroke while application of a vacuum to the diaphragm moves cell culture suspension from the bioreactor to the device in an opposing down-stroke. In contrast to traditional TFF methods, alternating flow creates a beneficial backflush across the filter surface where filtered media flows from the outside to the inside of the fiber. The reverse flow dislodges film and facilitates filter self-cleaning.



Intensification from PD to commercial

Simplify and fast-track upstream intensification from process development (PD) to commercial scale. The controller and associated low-volume devices generate detailed data for increased process understanding essential for future scale-up. Pilot and process scale systems support robust, linear scale-up studies for manufacturing volumes up to 5000 L with increased product yield in less time.



Linear scaling from process development (PD) to manufacturing

XCell ATF® Systems provide an integrated solution that scales with a consistent flow rate per fiber from PD to commercial scale. Manufactured in an ISO 9001:2015 certified facility, single-use and stainless-steel XCell ATF® Devices, in conjunction with an XCell™ Controller and software, support diverse applications across development from 2 L - 5000 L.



	XCell ATF® 1	XCell ATF® 2	XCell ATF® 4	XCell ATF® 6	XCell ATF® 10
Typical bioreactor size	0.5 - 2	2 - 10 L	10 - 50 L	50 - 200 L	200 - 1000 L
Format	SU	SU, SS	SS	SU, SS	SU, SS
Chemistry	Polyethersulfone, Polysulfone				
Typical pore sizes SU	0.2 µ				
Typical pore sizes SS	0.2 µ, 0.5 µ, 50 kDa				
Effective surface area	0.022 m²	0.13 m²	0.77 m²	2.5 m²	11 m²
Filter height	60 cm	60 cm	30 cm	60 cm	60 cm
Displacement volume	0.017 L	0.1 L	0.4 L	1.3 L	6 L
ATF flow range	0.008 - 0.140 Lpm	0.3 - 1.5 Lpm	3 - 8 Lpm	10 - 20 Lpm	30 - 80 Lpm
Typical scalable flow/fiber and filtrate rate	12 mL/min/fiber and 4 - 6 LMH	12 mL/min/fiber and 4 - 6 LMH			
XCell™ Lab Controller	Supports XCell ATF® 1, 2 and 4				
XCell™ C410 Controller				Supports XCell ATF® 4, 6 and 10	