



Simplifying Progress

Partner Webinar:  
The Future of TFF for the Lab

John Cashman | September 2024

**SARTORIUS**

# Biomolecular Separation Workflows

More Intuitive, Efficient and Sustainable Research



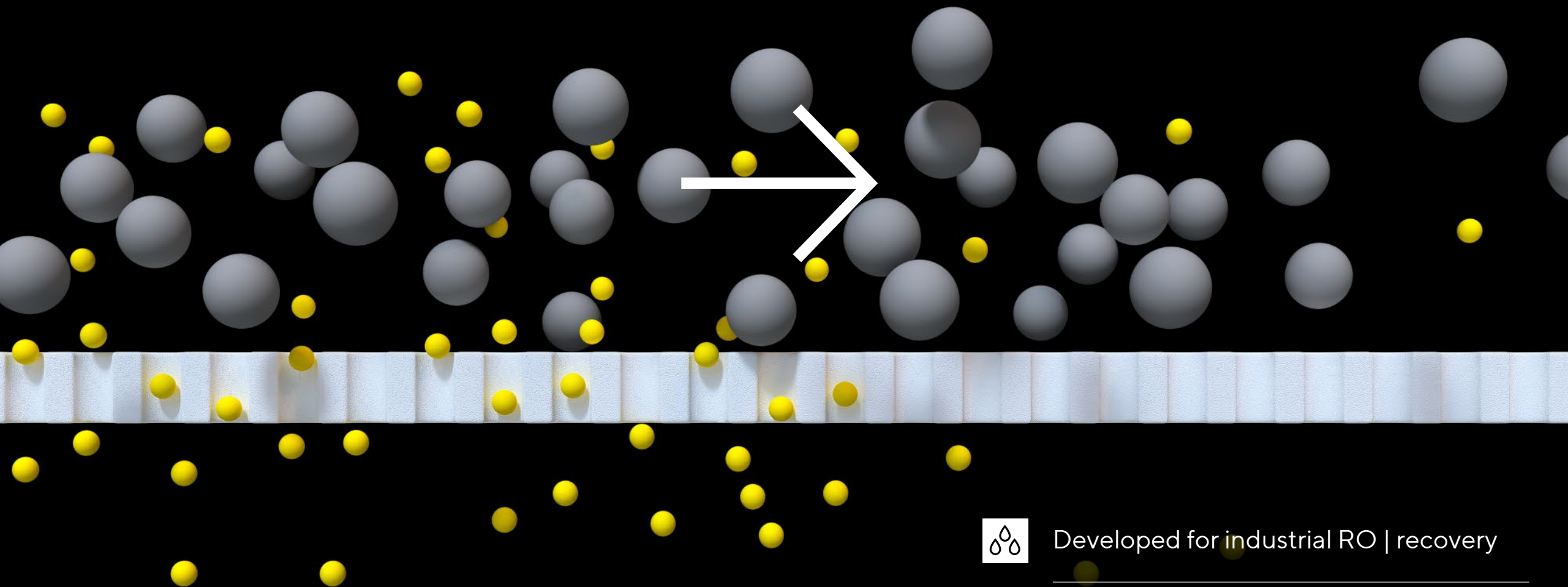
# The Challenge

## Large Feed Volumes in Research



Spin filters are cumbersome and slow

---



# Tangential Flow Filtration



Developed for industrial RO | recovery



Protein concentration since 1960s



Applied to spin filters by Vivascience

# The Challenge

## Large Feed Volumes in Research



Spin filters are cumbersome and slow



Scale-down TFF has high running costs



Setup and optimization are complicated



Contaminants and hazardous reagents

# The Current Solution

## Vivaflow® 50



Plug and Play



No Added Costs



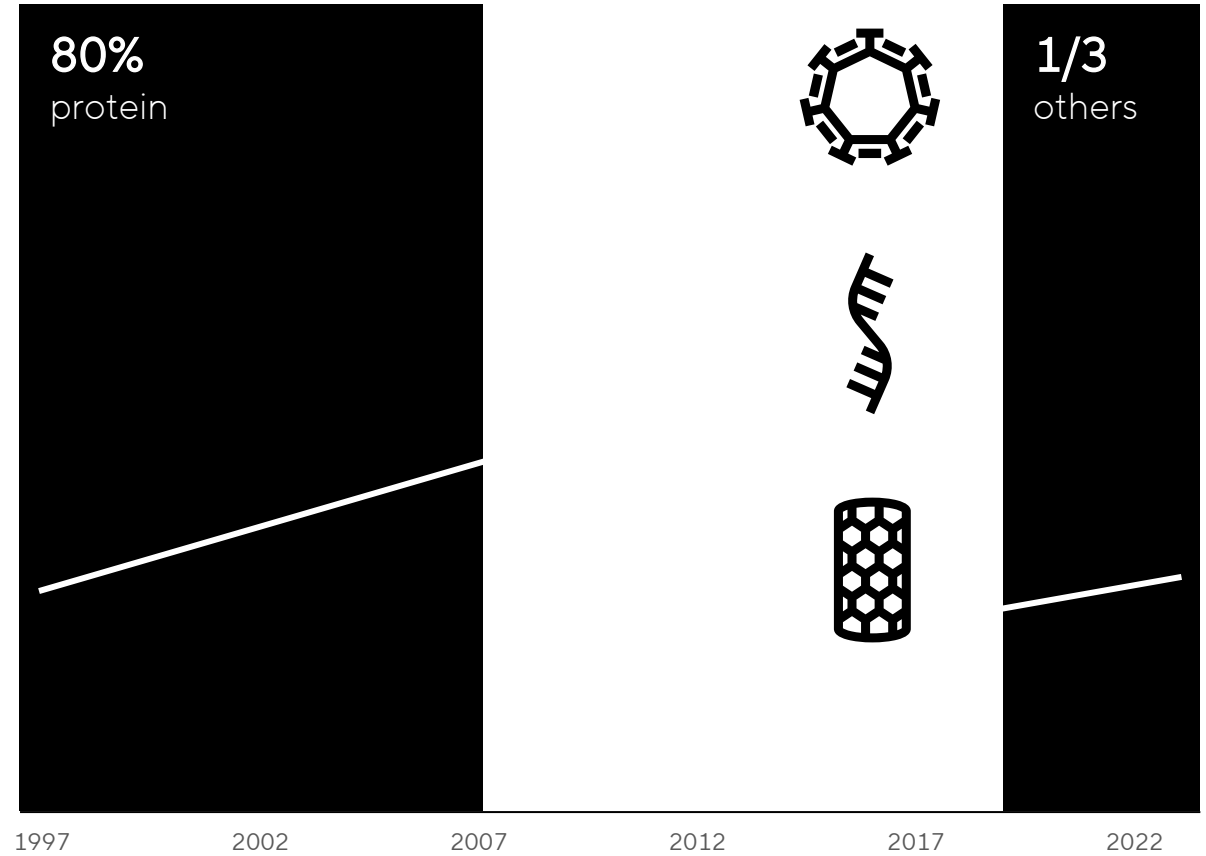
High Performance



Safely Streamlined

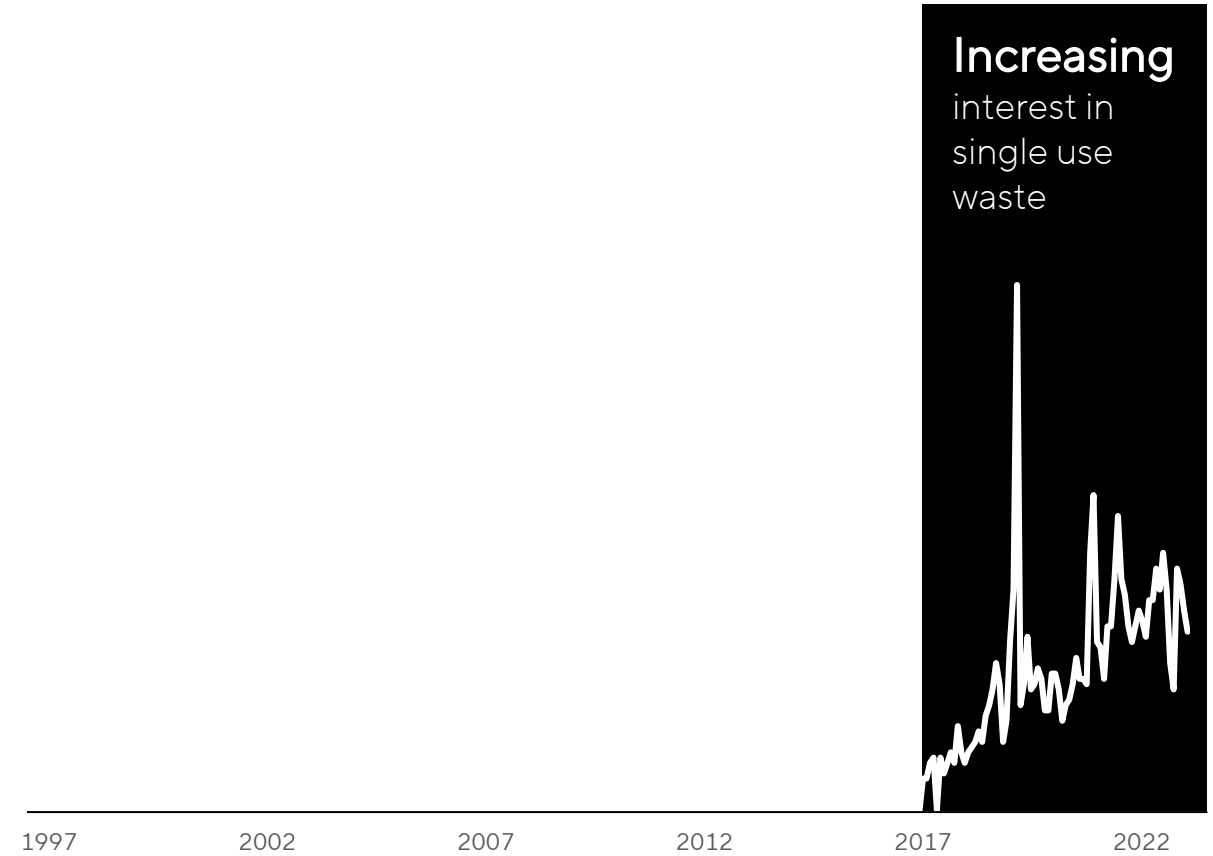
# The Current Solution

## Vivaflow® 50



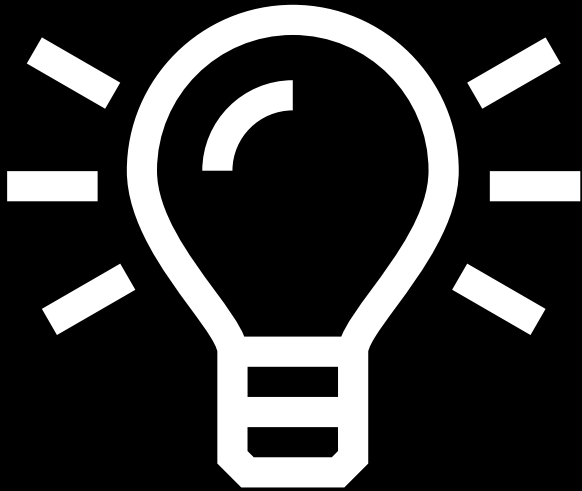
# The Current Solution

## Vivaflow® 50



# The New Solution

## Next Generation TFF for the Lab



Offer a More Intuitive Setup



Retain an Economical Solution



Enhance the Performance



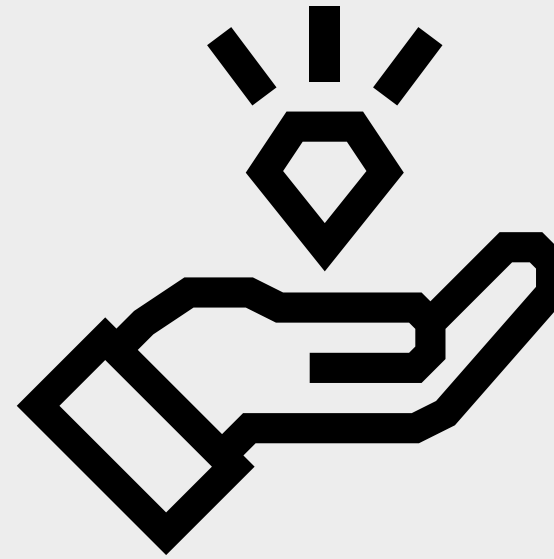
Cater to More Applications



Avoid Cleaning and Carryover



Improve the Sustainability



## Go Against the Flow: Intuitive, Efficient and Sustainable TFF for the Lab

Rapidly concentrate and rebuffer any molecule from 0.1 to 1 L feed volumes - without optimization - while significantly reducing single use waste.

Order  
Complete



All-in-One



No  
Carryover



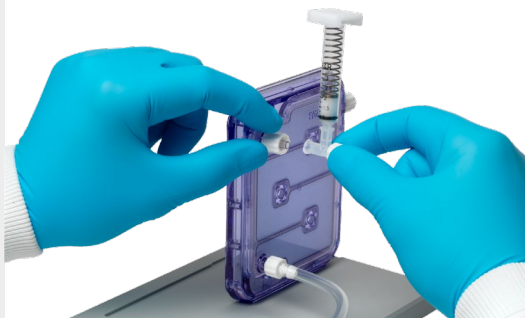
1.4X  
Faster



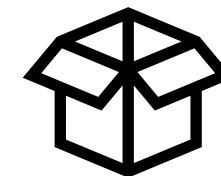
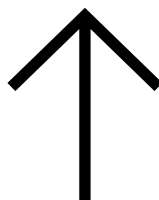
Tailored  
Tubing Kits



Pressure Indicator



Up to **99%**  
Recovery



Paper-Rich  
Packaging

8,500 km  
Cut



Save  
**>30 L**  
Water



↓ **30.5%**  
Plastic Reduction

Directional  
Connectors



**14**  
Membranes



Effortless  
Scaleup



Safely  
Collapse  
Workflows

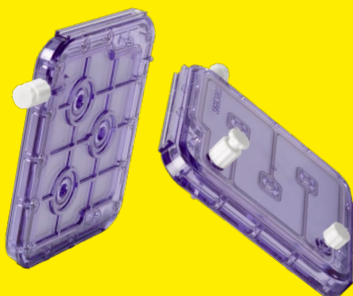


SARTORIUS

Order  
Complete



All-in-One



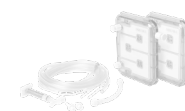
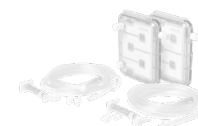
No  
Carryover



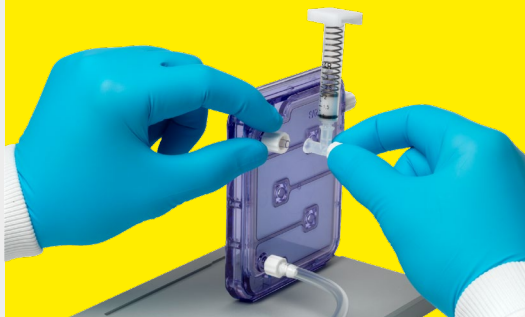
1.4X  
Faster



Tailored  
Tubing Kits



Pressure Indicator



Up to **99%**  
Recovery



Paper-Rich  
Packaging

8,500 km  
Cut



Save  
>30 L  
Water



Directional  
Connectors



14  
Membranes



Effortless  
Scaleup



Safely  
Collapse  
Workflows



↓ **30.5%**  
Plastic Reduction



SARTORIUS

# Intuitive and Efficient True Plug and Play



Choice of complete, ready-to-use kits



Product selection based on feed volume



Directional and flexible Luer lock ports

Improvements relative to previous generation Vivaflow® 50.

## Order Complete



SARTORIUS

# Intuitive and Efficient

## No Added Costs



Complete housing and membrane



Designed to run on a standard pump



Pressure indicator now included

Improvements relative to previous generation Vivaflow® 50.

## All-in-One



# Intuitive and Efficient Performance Optimized



Brand new, advanced flow path



Simply set the recommended flow rate

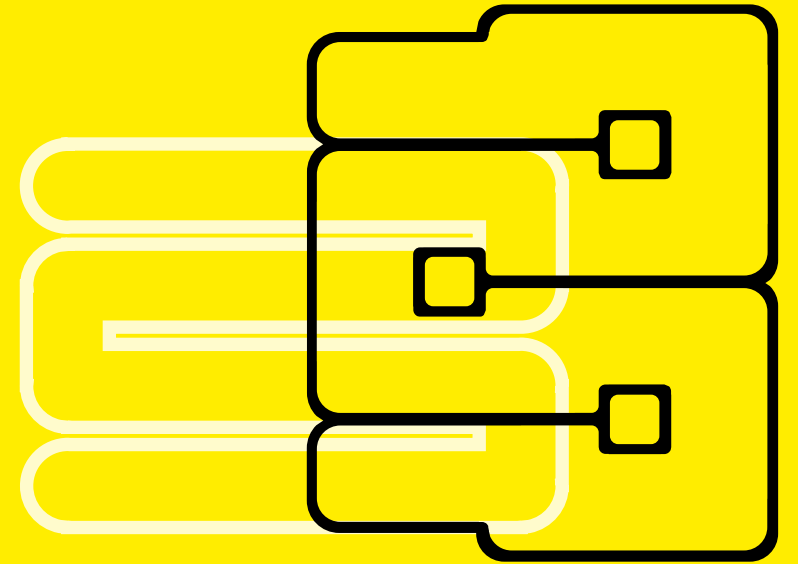


Effortless scale up from spin ultrafilters

Improvements relative to previous generation Vivaflow® 50.

Average speed advantage calculated from pre-production test data.

**1.4X**  
Faster



SARTORIUS

# Intuitive and Efficient Process Any Sample



Seven new-to-SU membrane options



High performance PES and RC

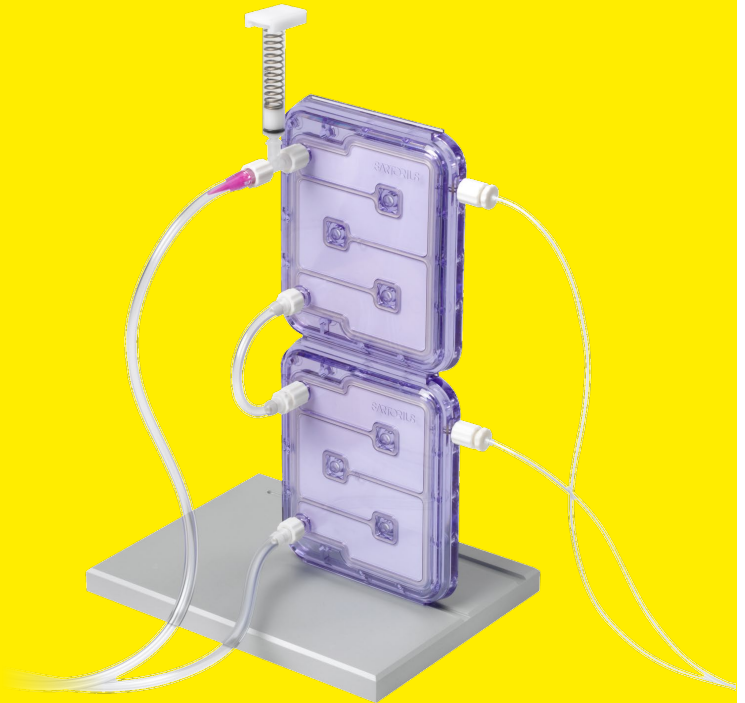


Easily accelerate or increase capacity

Improvements relative to previous generation Vivaflow® 50.

Recoveries calculated from pre-production test data.

Up to **99%**  
Recovery



SARTORIUS

# Intuitive and Efficient Safely Streamlined



Pre-use washing is now optional



Single use cassettes prevent carryover

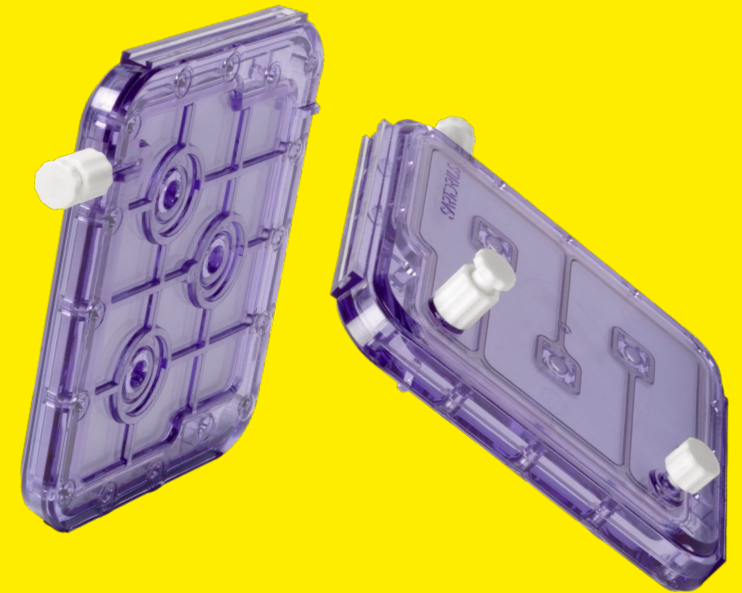


Eliminate harmful chemical cleaning

Improvements relative to previous generation Vivaflow® 50.

Water saving calculated as the sum of recommended pre-washing (0.1 L) and cleaning (1.2 L) solution volumes.

Save **1.3 L**  
Water



SARTORIUS

## Intuitive and Efficient Summary

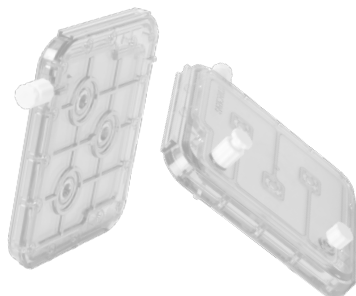


Easier to order and offering a more intuitive setup that is still economical, simple and safe in use, while delivering improved performance for any molecule.

Order  
Complete



All-in-One



No  
Carryover



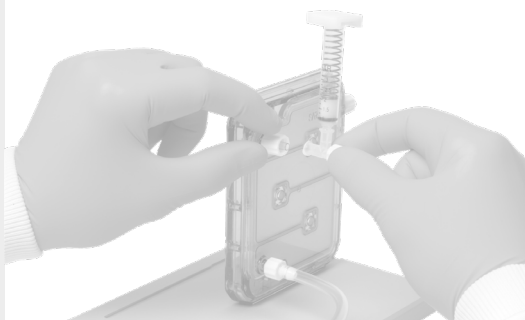
1.4X  
Faster



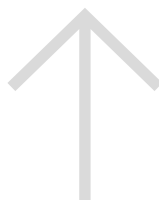
Tailored  
Tubing Kits



Pressure Indicator



Up to 99%  
Recovery



Directional  
Connectors



14  
Membranes



Effortless  
Scaleup



Safely  
Collapse  
Workflows



Paper-Rich  
Packaging

8,500 km  
Cut



Save  
>30 L  
Water

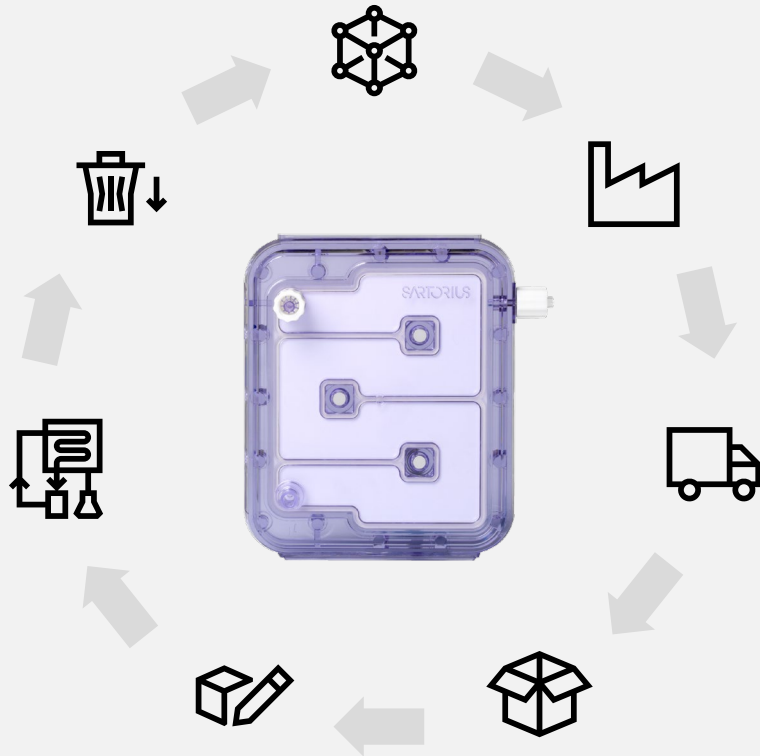


↓ 30.5%  
Plastic Reduction



SARTORIUS

# Sustainable Life Cycle Analysis



A Holistic View from Raw  
Materials to End of Life

# Sustainable Materials



Medical grade polycarbonate



Polyethylene membrane support



Re-designed, heat-staked housing

Improvements relative to previous generation Vivaflow® 50.

Plastic reduction calculated from cassette weights.

**30.5%** Plastic  
Reduction



# Sustainable Logistics



Local raw material sourcing



In-house injection moulding



Ambient storage and shipping

Improvements relative to previous generation Vivaflow® 50.

Distances calculated as the crow flies.

**8,500 km** Cut in  
Sourcing and  
Production



# Sustainable Packaging



Plastic replaced by a cardboard insert



User manual in digital-only format

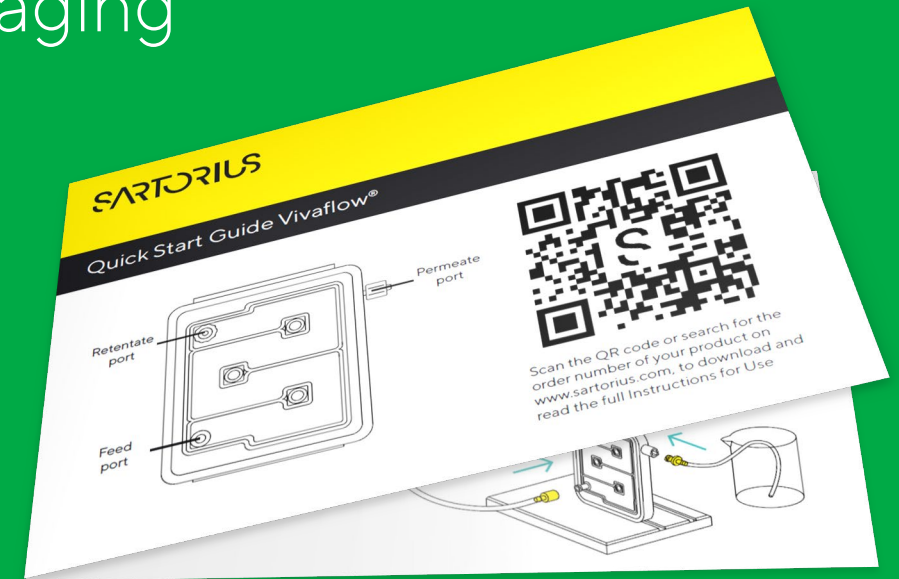


No change to overall packaging volume

Improvements relative to previous generation Vivaflow® 50.

Plastic packaging content not currently reduced for tubing kits.

## Paper-Rich Packaging



SARTORIUS

# Sustainable Use



Supplied with tailored tubing kits



Avoid pre-use washing and cleaning



Continuous DF instead of dialysis

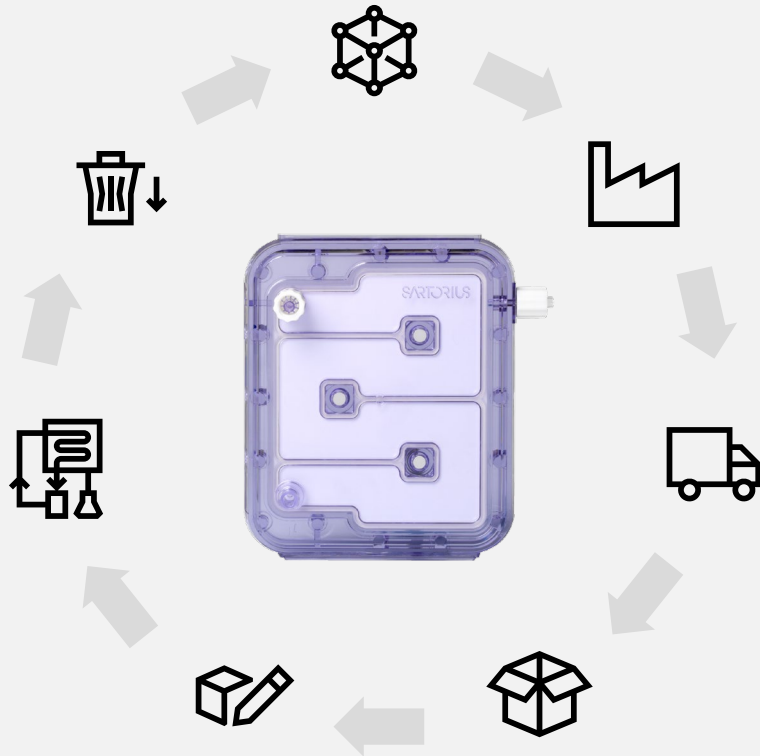
Improvements relative to previous generation Vivaflow® 50.

Water saving based on one run including diafiltration for a 50 mL sample. Calculated as the sum of pre-washing (0.1 L), cleaning (1.2 L) and 3 x 200 diavolumes of exchange buffer in equilibrium dialysis (30 L), minus 5 diavolumes of exchange buffer in diafiltration (250 mL).

Save **>31 L**  
Water per Run

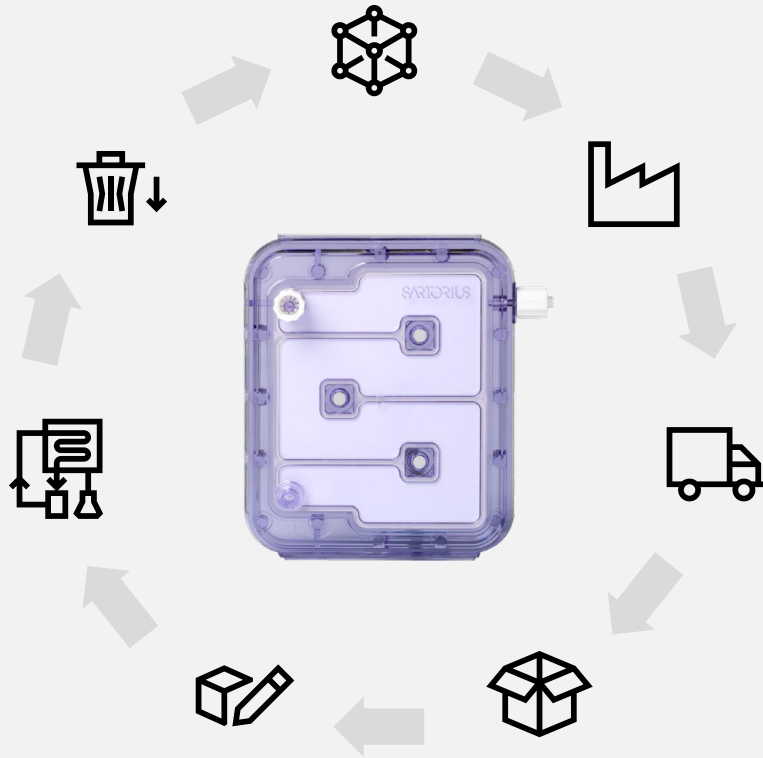


# Sustainable Summary



Redesigned housing with less plastic from closer-to-home, delivered in recyclable packaging with waste-free tubing kits and offering reduced water consumption.

# Sustainable Summary



Learn more in the Vivaflow® SU  
Sustainability Facts Sheet.

# Vivaflow® SU

## Key Selling Points



True Plug and Play



No Added Costs



Performance Optimized



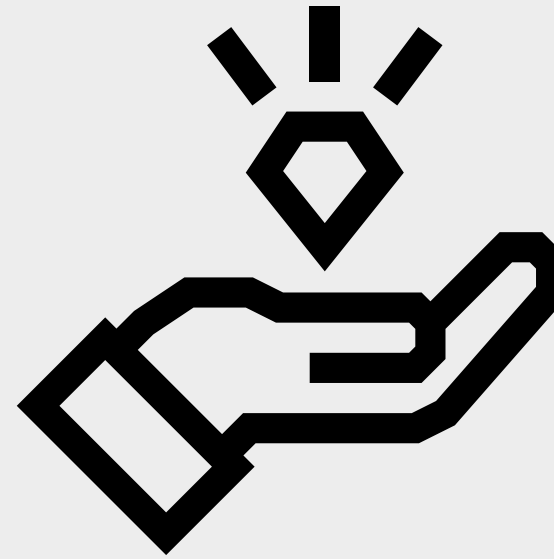
Process Any Molecule



Safely Streamlined



Less Single-Use Waste

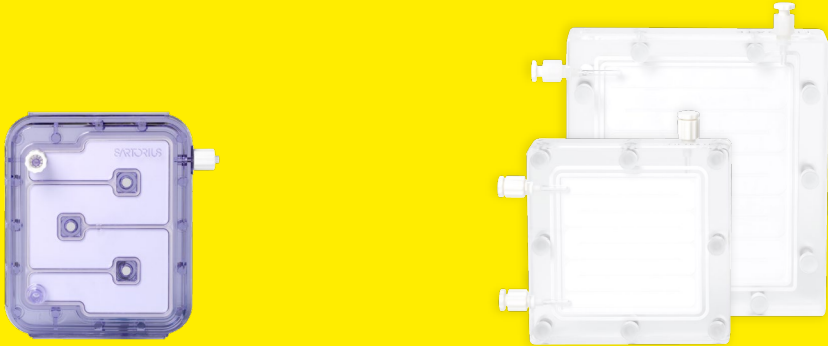


## Go Against the Flow: Intuitive, Efficient and Sustainable TFF for the Lab

Rapidly concentrate and rebuffer any molecule from 0.1 to 1 L feed volumes - without optimization - while significantly reducing single use waste.

# Vivaflow®

## Portfolio Overview

|              |                        |                                                                                     |   |
|--------------|------------------------|-------------------------------------------------------------------------------------|---|
|              |                        |  |   |
| Usability    | Single Use             | ■                                                                                   |   |
|              | Multi Use              |                                                                                     | ■ |
| Feed Volumes | 0.1 – 1 L              | ■                                                                                   | ■ |
|              | 0.5 – 5 L              |                                                                                     | ■ |
| Membranes    | Hydrosart® RC and PES  | ■                                                                                   | □ |
|              | 300 and 1,000 kDa MWCO | ■                                                                                   |   |

# Vivaflow® SU

## Market and Positioning

**19M** EUR market volume  
with 6.3% CAGR<sup>1</sup>



## Cytiva

Our main competitor, with others including:  
Cobetter, Formulatrix, Membrane Solutions<sup>2</sup>,  
Merck, Repligen, SANI, SPF, and UMTR Bio<sup>2</sup>



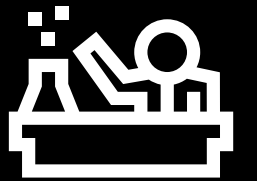
## 219 EUR

Value pricing model representing  
a low cost per sample with up to  
71% saving on consumables<sup>3</sup>



**5** Customer segments: academia, biopharma,  
biotech, environmental and research

**2** Key applications: ultrafiltration  
(UF) and diafiltration (DF)



<sup>1</sup> Sources: SDi, PubMed; <sup>2</sup> Producing | planning to produce reverse-engineered Vivaflow® 50; <sup>3</sup> Compared to Minimate EVO based on manufacturer list prices.

# Vivaflow® SU

## Competitor Comparison



# Vivaflow® SU

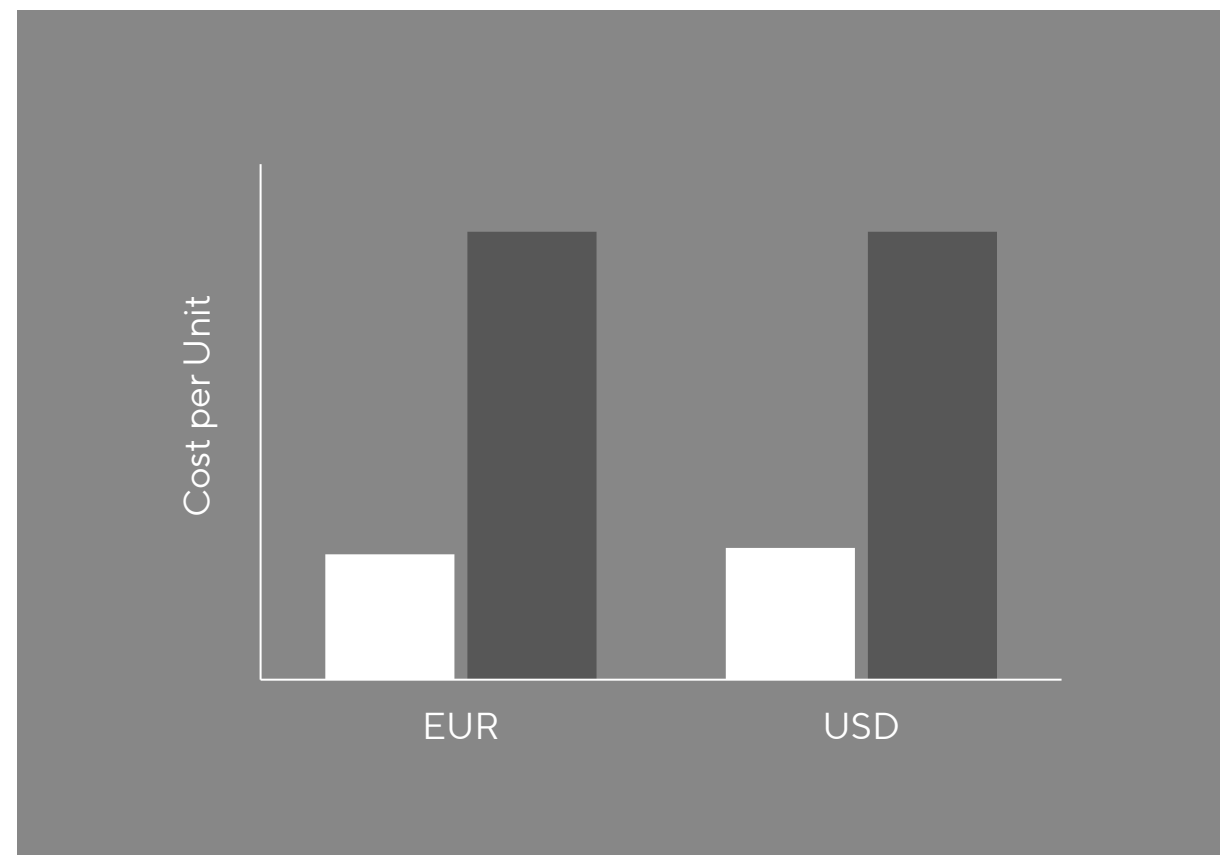
## Competitor Comparison



Save up to 71% on consumable costs

Vivaflow® SU (white) vs. Cytiva Minimate Evo (blue).

Shorter bars are best.



# Vivaflow® SU

## Competitor Comparison



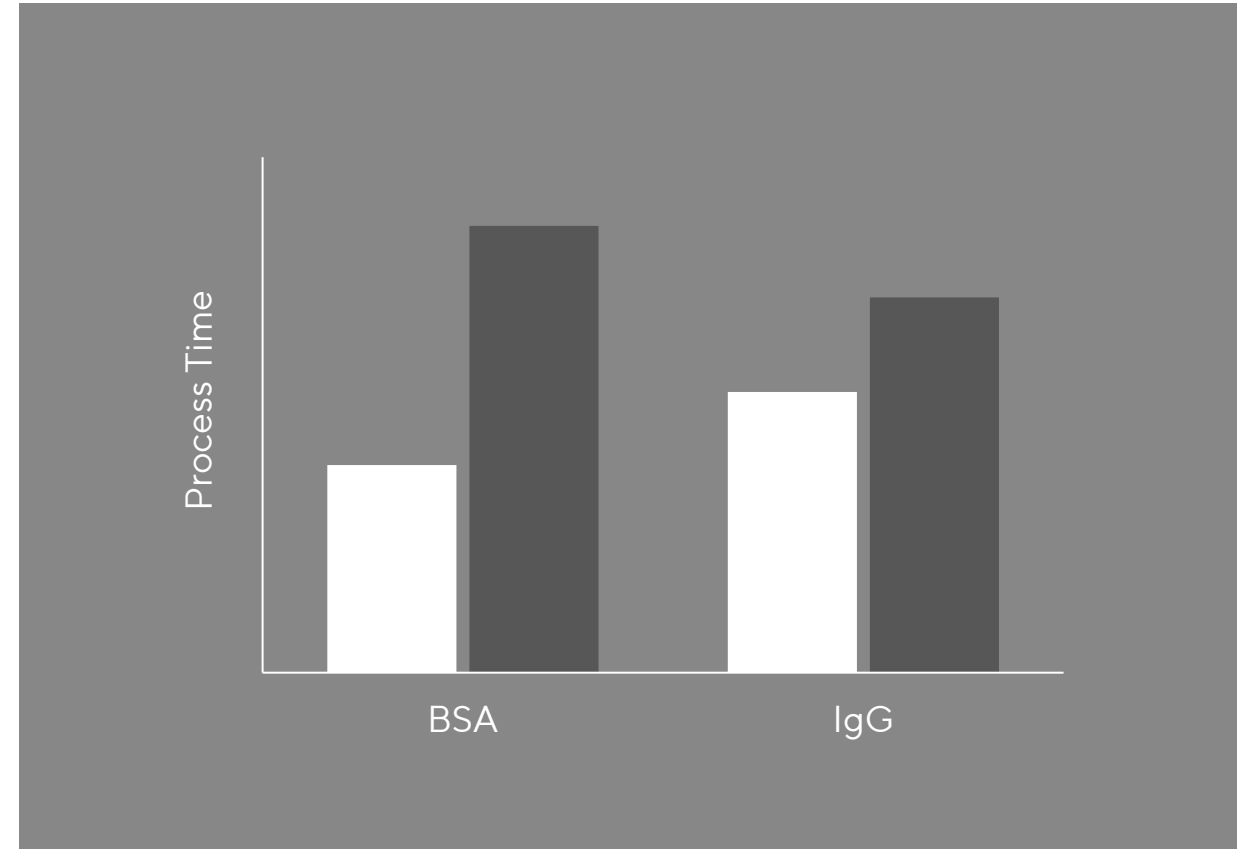
Save up to 71% on consumable costs



Cut process time by 29 minutes per run

Vivaflow® SU (white) vs. Cytiva Minimate Evo (blue).

Shorter bars are best.



# Vivaflow® SU

## Competitor Comparison



Save up to 71% on consumable costs



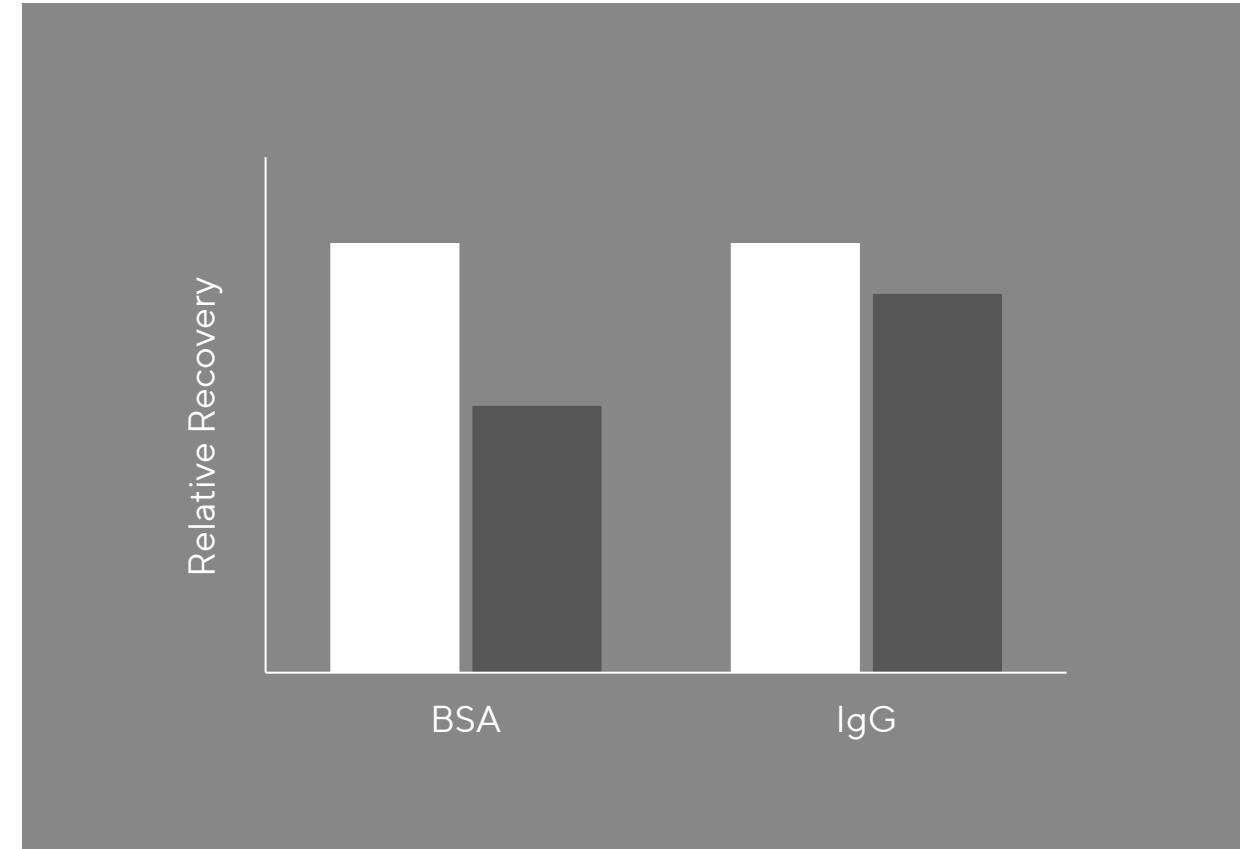
Cut process time by 29 minutes per run



Boost target recovery by as much as 61%

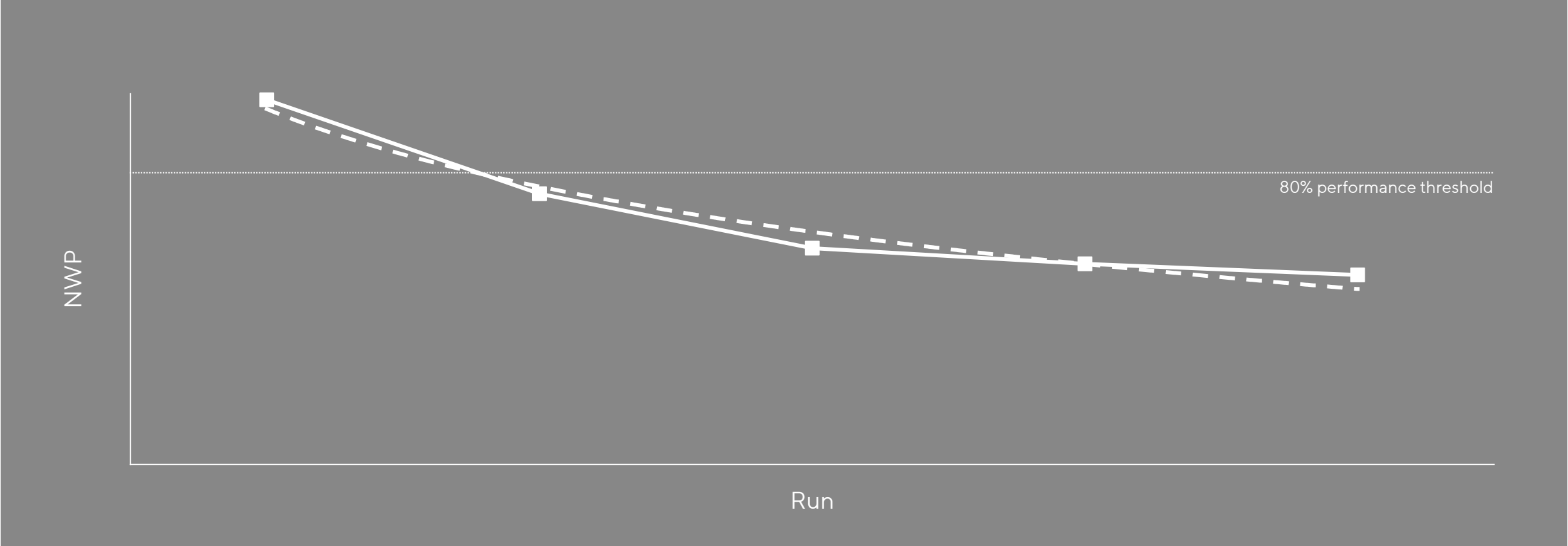
Vivaflow® SU (white) vs. Cytiva Minimate Evo (blue).

Taller bars are best.



# Vivaflow® SU

## Competitor Comparison



# Vivaflow® SU

## All-New TFF for the Lab

VF05P9  
VF05P1  
VF05P0  
VF05P2  
VF05P3  
VF05P4  
  
VF05P6  
VF05P7

|                 |                 |
|-----------------|-----------------|
| VF-S050P0005-IV | VF-S050P0005-SV |
| VF-S050P0010-IV | VF-S050P0010-SV |
| VF-S050P0030-IV | VF-S050P0030-SV |
| VF-S050P0050-IV | VF-S050P0050-SV |
| VF-S050P0100-IV | VF-S050P0100-SV |
| VF-S050P0300-IV | VF-S050P0300-SV |
| VF-S050P1000-IV | VF-S050P1000-SV |
| VF-S050P2000-IV | VF-S050P2000-SV |
| VF-S050H0002-IV | VF-S050H0002-SV |
| VF-S050H0005-IV | VF-S050H0005-SV |
| VF-S050H0010-IV | VF-S050H0010-SV |
| VF-S050H0030-IV | VF-S050H0030-SV |
| VF-S050H0100-IV | VF-S050H0100-SV |
| VF-S050H0300-IV | VF-S050H0300-SV |

# Vivaflow® SU

## All-New TFF for the Lab



# VF-S050P0005-IV

VF-S      Product family (**VF**: Vivaflow®, **S**: single use)  
050      Membrane area (50 cm<sup>2</sup>)  
P0005    Chemistry and cut-off (**P**: PES, **H**: Hydrosart® RC)  
-IV      Package contents (**I**: 2X 0.1-0.5 L, **S**: 1X 0.5-1 L feed)

|                 |                 |
|-----------------|-----------------|
| VF-S050P0005-IV | VF-S050P0005-SV |
| VF-S050P0010-IV | VF-S050P0010-SV |
| VF-S050P0030-IV | VF-S050P0030-SV |
| VF-S050P0050-IV | VF-S050P0050-SV |
| VF-S050P0100-IV | VF-S050P0100-SV |
| VF-S050P0300-IV | VF-S050P0300-SV |
| VF-S050P1000-IV | VF-S050P1000-SV |
| VF-S050P2000-IV | VF-S050P2000-SV |
| VF-S050H0002-IV | VF-S050H0002-SV |
| VF-S050H0005-IV | VF-S050H0005-SV |
| VF-S050H0010-IV | VF-S050H0010-SV |
| VF-S050H0030-IV | VF-S050H0030-SV |
| VF-S050H0100-IV | VF-S050H0100-SV |
| VF-S050H0300-IV | VF-S050H0300-SV |

# Vivaflow® SU

## Sales Tools



Product Info

Ultrafiltration  
Brochure



Datasheet,  
Manual, QSG



Images,  
Graphics, Videos



Others

App Notes,  
Interview



Facts Sheet and  
Recycling Guide



Flyers and  
Infographics

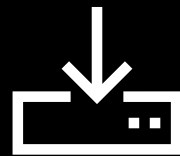


Internal

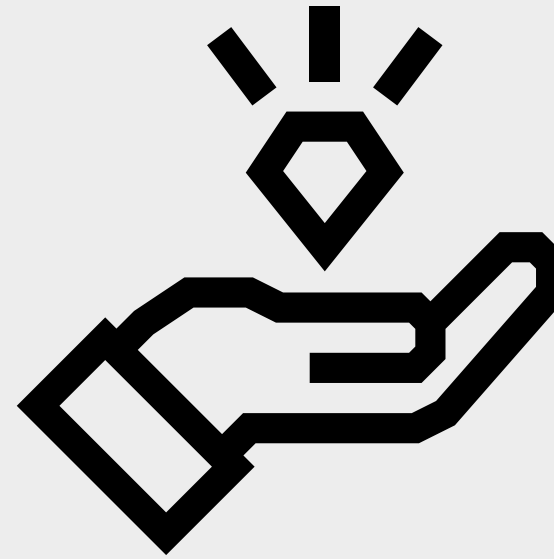
Flashcard,  
Cross Ref



Download everything  
you need from our  
Partner Landing Page



Statements (TSE/BSE and REACH) are available on each CoA, and several existing tools and internal resources have been revised, including posters and ultrafiltration FAQs.



## Go Against the Flow: Intuitive, Efficient and Sustainable TFF for the Lab

Rapidly concentrate and rebuffer any molecule from 0.1 to 1 L feed volumes - without optimization - while significantly reducing single use waste.

# Thank You

Dr. John Cashman  
Product Manager  
Product Management Lab Filtration  
+44 7896 664061  
[john.cashman@sartorius.com](mailto:john.cashman@sartorius.com)

The Sartorius logo is displayed in a bold, black, sans-serif font. The letters are closely spaced, and the 'S' and 'A' are particularly prominent. The logo is centered within a bright yellow rectangular area that occupies the bottom right portion of the slide.