Asahi**KASEI**
BIOPROCESS

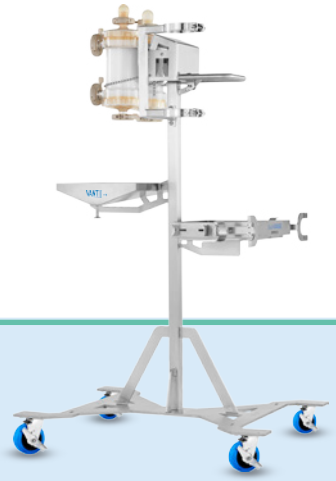
VANTIJ®

VANTIJ® *Virus Filtration Solutions*

PLANOVA™
Assurance Beyond Expectation

Built For You.

Asahi Kasei Bioprocess is dedicated to unlocking efficiencies and driving productivity within your biopharmaceutical and plasma derivative virus filtration processes.

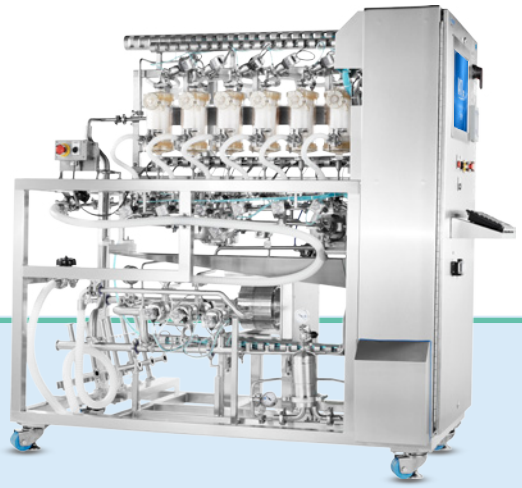


VANTIJ® VFR

VANTIJ® Virus Filtration Rack

VANTIJ® VFC

VANTIJ® Virus Filtration Controller



VANTIJ® VFS

VANTIJ® Virus Filtration Systems

Multi-Use Solutions

Viral safety is a fundamental regulatory requirement for the production of mammalian cell-based or plasma-based protein therapeutics. Our virus filtration fluid management solutions include several risk-mitigating features to ensure that your high-value biotherapeutic is safely, reproducibly and reliably filtered with our trusted Planova™ 15N, 20N, 35N, S20N, FG1, or BioEX filters.

Multi-Use Equipment

For large-scale production of monoclonal antibodies in batch or fed-batch mode, or within high-volume plasma derivative facilities, stainless steel systems remain an essential fixture. From manual holders to fully automated GMP-compliant systems, we offer a range of multi-use systems for your large-scale virus filtration needs – as well as a small-scale Planova Pressure Reservoir for lab-scale virus filtration studies.

Built For You.

We also understand that the adaptability and reduced capital expense afforded by single-use systems are preferred in many facilities.

VANTIJ® SU-VFC

VANTIJ® Single-Use Virus Filtration Controller

VANTIJ® SU-VFS

VANTIJ® Single-Use Virus Filtration System

Single-Use Solutions

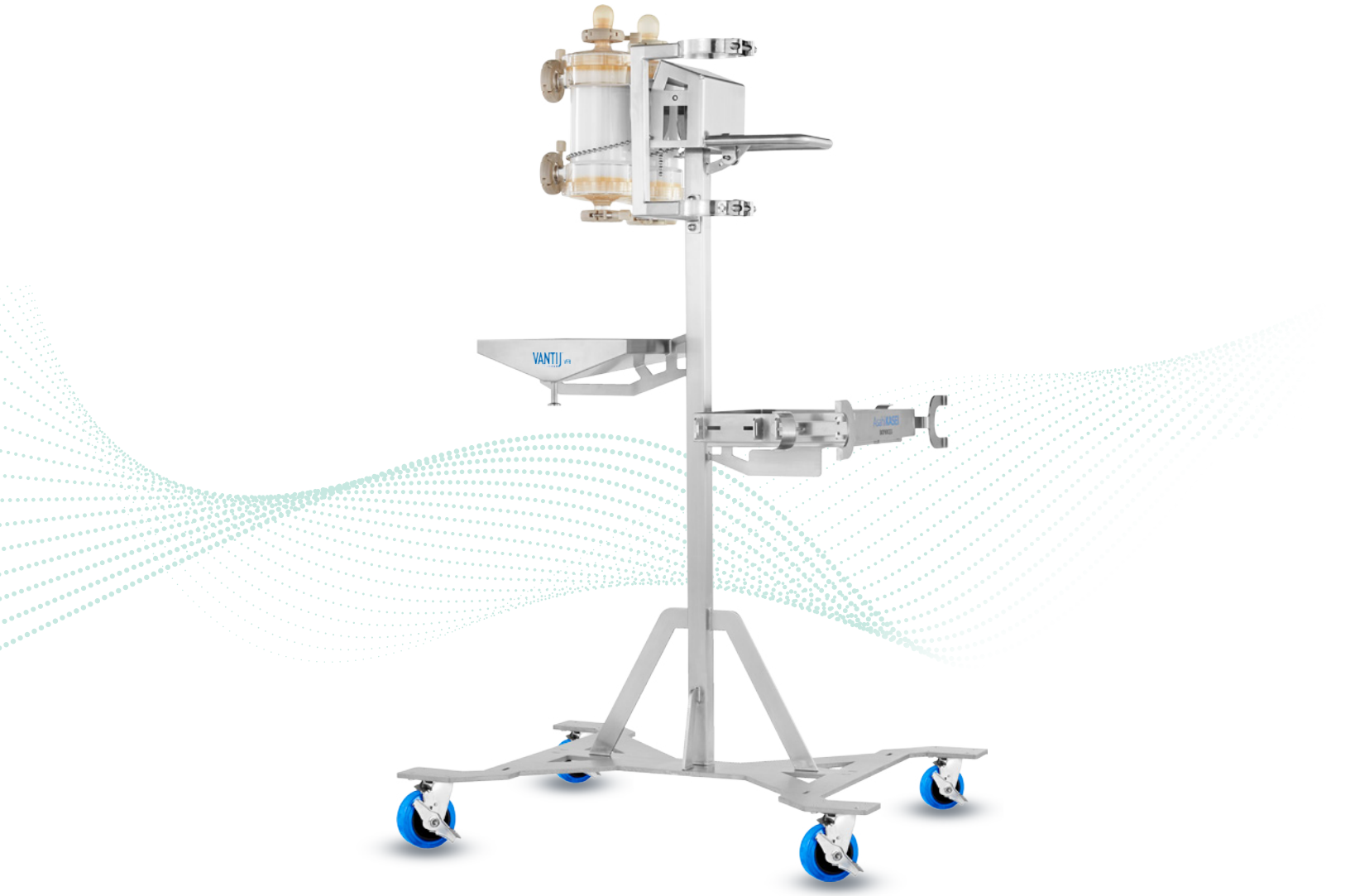
By uniting single-use technology with our virus safety know-how, we can help you achieve peace of mind through the implementation of our tried-and-true Planova™ 15N, 20N, 35N, S20N, FG1, or BioEX filters in a simple and flexible manner.

Single-Use Systems

In today's clinical and multi-product manufacturing facilities, having flexibility for fast changeover is paramount. To better meet these demands, Asahi Kasei Bioprocess has designed a suite of single-use fluid management solutions to support our range of Planova virus filters. We offer a range of fully automated 21 CFR Part 11 compliant units for mid- and large-scale virus filtration.

VANTIJ® Virus Filtration Rack (VFR)

Designed to minimize filter handling during pilot or clinical-scale manual virus filtration operation, the VANTIJ® Virus Filtration Rack (VFR) can be used to ergonomically mount 4.0 m^2, 1.0 m^2, 0.3 m^2 and 0.12 m^2 Planova N Series or Planova BioEX filters while aiding the execution of the pre- and post-use visual leakage test (VLT).



Using the VANTIJ VFR

For those instances when manual Planova virus filtration will suffice, the VFR is a cost-effective way to easily mount up to two Planova virus filters. Connect your existing product feed to the filter(s) mounted on the VFR for simplified operation. Conduct the visual leakage test, pre-use flush, buffer equilibration and product filtration. In order to optimize efficiency, the VFR offers flexibility to mount Planova virus filters in one of three positions: vertical, +10° or -10°.

VFR Features

Product Features

- 890 mm (35 in.) length x 710 mm (28 in.) width x 1420 mm (56 in.) height
- Durable 304L stainless steel with welded and polished construction
- Drip pan and parts tray included
- Two (2) or four (4) 4.0 m2 Planova filter holders
- Two (2) or four (4) 1.0 m2 Planova filter holder adaptors
- Optional 0.3 m2 and 0.12 m2 Planova filter holder adaptors
- Holders tilt filters 10° for visual leakage test (VLT)
- Optional mounting bracket for 4” diameter pre-filter

Ordering Information

VANTIJ® VFR

Catalog No.	Product Description
VFR-2F	VANTIJ Virus Filtration Rack (two filters)
VFR-2F-PF	VANTIJ Virus Filtration Rack with pre-filter bracket (two filters)
VFR-4F	VANTIJ Virus Filtration Rack (four filters)
VFR-4F-PF	VANTIJ Virus Filtration Rack with pre-filter bracket (four filters)

Operating ranges

Planova Filter	Number and Size of Filter
Planova 15N, 20N, 35N or BioEX	1 x 0.3 m^2; 2 x 0.3 m^2
	4 x 0.3 m^2
	1 x 0.12 m^2; 2 x 0.12 m^2
	4 x 0.12 m^2
	1 x 1.0 m^2; 2 x 1.0 m^2
	4 x 1.0 m^2
	1 x 4.0 m^2; 2 x 4.0 m^2
	4 x 4.0 m^2
Planova S20N	1 x 0.1 m^2; 2 x 0.1 m^2; 4 x 0.1 m^2
	1 x 1.0 m^2; 2 x 1.0 m^2
	4 x 1.0 m^2
	1 x 4.0 m^2; 2 x 4.0 m^2
	4 x 4.0 m^2
Planova FG1	1 x 0.3 m^2; 2 x 0.3 m^2
	4 x 0.3 m^2
	1 x 0.1 m^2; 2 x 0.1 m^2
	4 x 0.1 m^2

VANTIJ® Virus Filtration Controller (VFC)

For time-saving viral clearance our VANTIJ VFC automates your virus filtration unit operation. With a broad operating range, 21 CFR Part 11 compliant OCELOT® System Control, and integrated visual leakage test (VLT), the VANTIJ VFC enables reliable virus filtration for Planova 15N, 20N, 35N, S20N, FG1, and BioEX filters in a small format for clinical and commercial cGMP manufacturing areas.

Using the VANTIJ® VFC

The VANTIJ VFC is a compact, fully automated virus filtration system that permits simplified implementation of Planova filters in your manufacturing process. Pre-use and post-use VLTs can be performed on the system itself, minimizing filter handling. Automation permits seamless transfer between virus filtration and buffer chase (Figure 1). Bar code scanning enables filter identification information to be automatically populated in the batch report.

VFC Features

Product Features:

- Average footprint: 1140 mm (45 in.) length x 810 mm (32 in.) width x 1630 mm (64 in.) height
- Operating system flow rate: 0.08 to 10.00 L/min
- Maximum operating pressure: 4.41 barg at 40° C
- Material of Construction: 316L SS / 0.5 µm Ra
- Connections: Five (5) inlets and three (3) outlets
- Modes: Automated pump-fed or pressure-fed filtration
- Control method: Filter differential pressure control or flow control
- Operator interface: Local touchscreen HMI
- Software compliance: 21 CFR Part 11 compliant
- Available with an upgrade to Automated Leakage Testing - or ALT - which allows the system to perform integrity testing from start to finish, hands-free

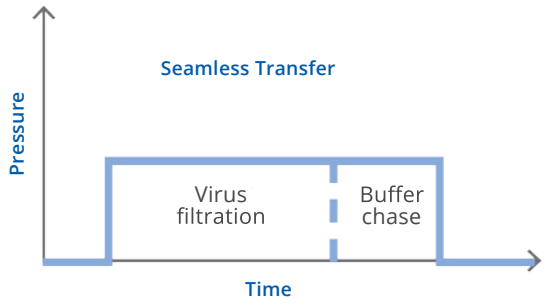


Figure 1. Transfer seamlessly between product and buffer chase, eliminating the pause between steps.

Ordering Information

VANTIJ® VFC

Catalog No.	Product Description
VFC-01F	One Filter
VFC-02F	Two Filters

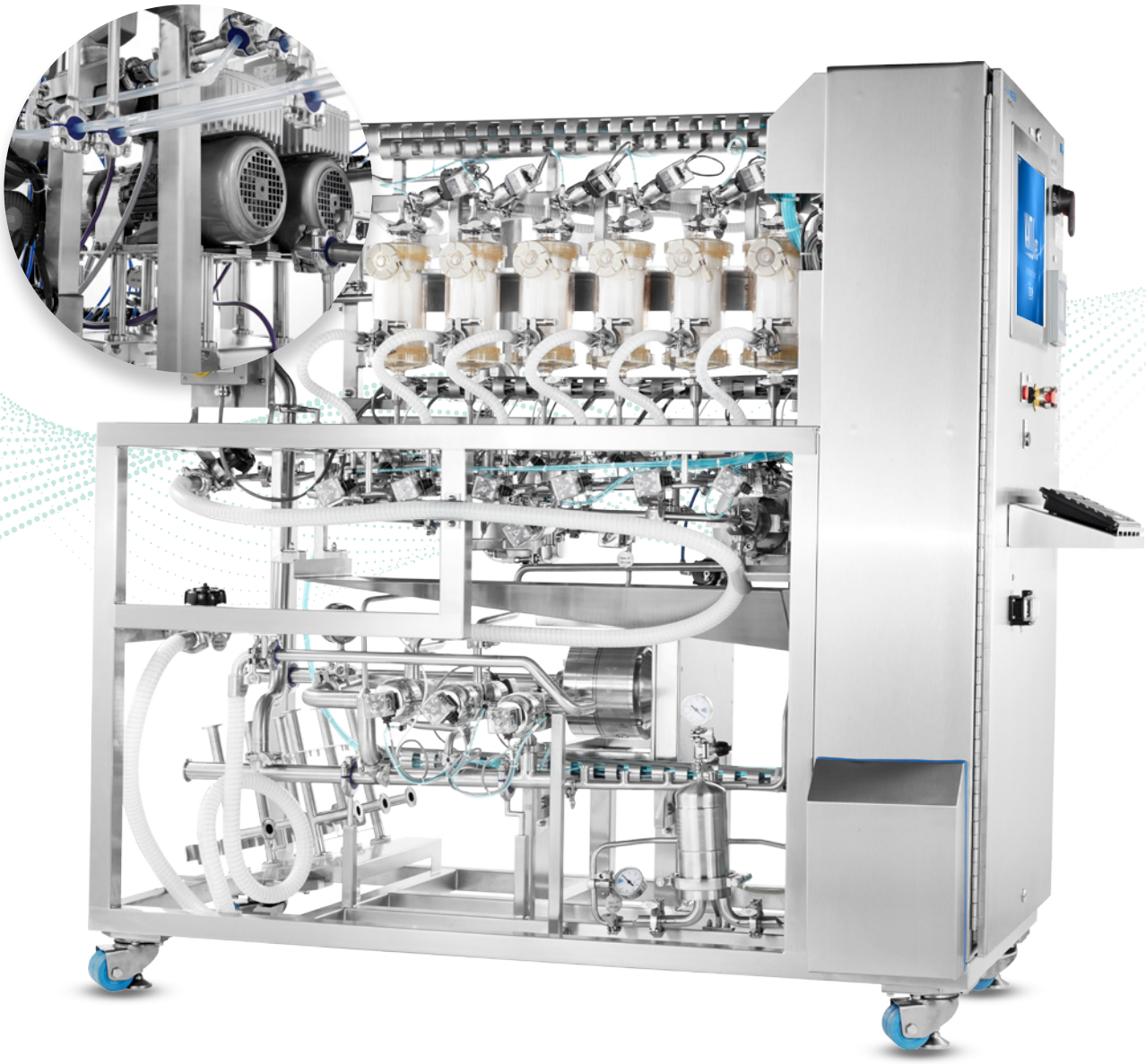
Operating ranges

Filter Type	Number of Filters	Effective Surface Area
Planova 15N or 20N	1 or 2 in parallel	1.0 m^2
	1 or 2 in parallel	4.0 m^2
Planova 35N	1 or 2 in parallel	1.0 m^2
Planova BioEX	1 or 2 in parallel	1.0 m^2
	1	4.0 m^2
Planova S20N	1 or 2	1.0 m^2
	1 or 2	4.0 m^2
Planova FG1	1	1.0 m^2

VANTIJ® Virus Filtration System (VFS)

When you have a large-scale virus filtration application that exceeds the capacity of our VANTIJ VFC, the stainless steel VANTIJ VFS platform is the appropriate solution. Customized systems are available with capacity to hold from one (1) to ten (10) Planova 15N, 20N, 35N, S20N, FG1, or BioEX filters in parallel. Zero static valve manifolds are installed on the filter feed side to minimize pressure loss within the multi-filter system.

The VANTIJ VFS is an ASME BPE stainless-steel system that accommodates feeds from single-use bags allowing buffers to be stored in the format of your choice.



VFS Features

Flexibility, Thoughtful Design

- Automatic feedback control of onboard buffer/ product pump
- Delivered with validated OCELOT™ System Control software for GMP manufacturing or “automation ready” to use with your plant DCS software
- Accurate pre- and post-filter pressure transmitters typically located at same level for precise TMP measurement and control
- Pressure control valve on permeate line for fine-tuned control of TMP
- Especially helpful in cases of transfer line pressure rises or if broad operating ranges are required

VANTIJ® VFS Options

- Planova N Series or BioEX filters
- Constant pressure or constant flow operation
- Pre-filter
- Bubble trap
- Positioning for visual leakage test (VLT)
- Conductivity monitoring
- SIP configurations

Ordering Information

VANTIJ® VFS

Catalog No.	Product Description
VFS-01F	One Filter
VFS-02F	Two Filters
VFS-04F	Four Filters
VFS-06F	Six Filters
VFS-08F	Eight Filters
VFS-10F	Ten Filters

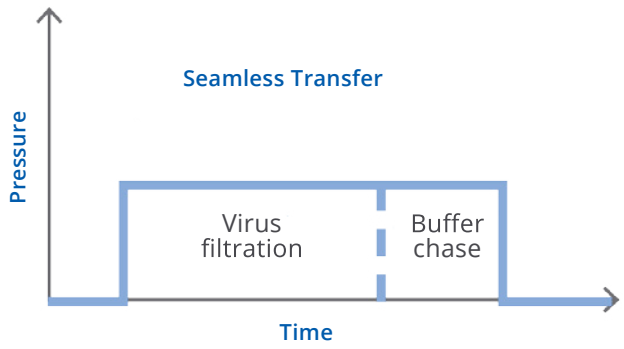


Figure 2. Transfer seamlessly between product and buffer chase, eliminating the pause between steps.

VANTIJ® Single-Use Virus Filtration Controller (SU-VFC)

Our VANTIJ SU-VFC automates the virus filtration unit operation in a single-use format. With a flexible operating range, 21 CFR Part 11 compliant OCELOT System Control and gamma-irradiated tubing sets, the VANTIJ SU-VFC enables reliable virus filtration for Planova 15N, 20N, 35N, S20N, FG1, or BioEX filters in a small footprint that is ideal for single-use cGMP manufacturing areas.

The VANTIJ® SU-VFC includes several risk-mitigating features and design elements to ensure that your high-value biotherapeutic is safely, reproducibly and reliably filtered batch after batch. OCELOT® System Control - our universally compatible automation platform - allows for intuitive configuration of all virus filtration process steps.

Transfer seamlessly between product and buffer chase, eliminating the pause after product filtration. With a compact footprint, the VANTIJ SU-VFC can be installed in almost any downstream processing area. Universal tubing sets can be used for any of the compatible Planova filters. By incorporating the capability to perform integrity testing, the automated, pump-fed VANTIJ SU-VFC permits simplified implementation of Planova filters in your process.

SU-VFC Features

Product Features

- Dimensions: 1020 mm (40 in.) W x 660 mm (26 in.) D x 2130 mm (84 in.) H
- Operating system flow rate: approx. 20 to 1200 L/h
- Maximum operating pressure: 4 barg at 40° C
- Material of Construction: C-Flex thermoplastic elastomer (TPE) tubing; braided and unbraided
- Connections: Three (3) inlets and four (4) outlets
- Product feed: Onboard single-use diaphragm pump
- Control method: Filter differential pressure control or flow control
- Operator interface: Local touchscreen HMI
- Software compliance: 21 CFR Part 11 compliant

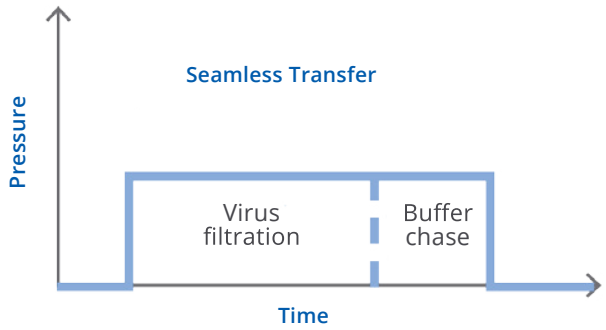


Figure 3. Transfer seamlessly between product and buffer chase, eliminating the pause between steps.

Ordering Information

VANTIJ® SU-VFC

Catalog No.	Product Description
SU-VFC-1F	VANTIJ SU-VFC (one filter)
SU-VFC-2F	VANTIJ SU-VFC (two filters)
SU-VFC-6F	VANTIJ SU-VFC (six filters)
TS-SUVF-311	1 x 1.0 m^2 SUVF Tubing Set Kit
TS-SUVF-321	2 x 1.0 m^2 SUVF Tubing Set Kit
TS-SUVF-314	1 x 4.0 m^2 SUVF Tubing Set Kit
TS-SUVF-324	2 x 4.0 m^2 SUVF Tubing Set Kit

Operating ranges

Filter Type	Number	Effective Surface Area
Planova 15N, 20N	1 or 2	1.0 m^2
	1 or 2	4.0 m^2
Planova 35N. BioEX	1 or 2	1.0 m^2
	1	4.0 m^2
Planova S20N	1 or 2	1.0m^2
	1 or 2	4.0m^2
Planova FG	1	1.0m^2

Note: Universal tubing sets accommodate the full operating range of the SU-VFC.

VANTIJ® Single-Use Virus Filtration System (SU-VFS)

When you have a large-scale single-use virus filtration application that exceeds the capacity of our VANTIJ Single-Use Virus Filtration Controller (SU-VFC), or if you require heavily customized features for your application, the VANTIJ SU-VFS platform is the appropriate selection for you. Available in capacities from two (2) filters to six (6) filters of 4.0 m^2 in parallel, these systems are designed to tailor the implementation of Planova filters to your specific needs while enjoying the benefits of single-use technology at scale.

The VANTIJ SU-VFS can be built for your unique requirements, balancing your current production levels against anticipated future demand. We can also design customized gamma-irradiated tubing sets specific to your application (minimum orders may apply).

SU-VFS Features

VANTIJ® SU-VFS Flexibility and Thoughtful Design

- Automatic feedback control of onboard buffer/product pump
- Valve and tubing manifolds on filter feed side
- Minimize pressure loss
- Delivered with validated OCELOT® System Control software for GMP manufacturing or "automation ready" to use with your plant DCS software
- Accurate pre- and post-filter pressure sensors located at similar level for precise TMP measurement and control

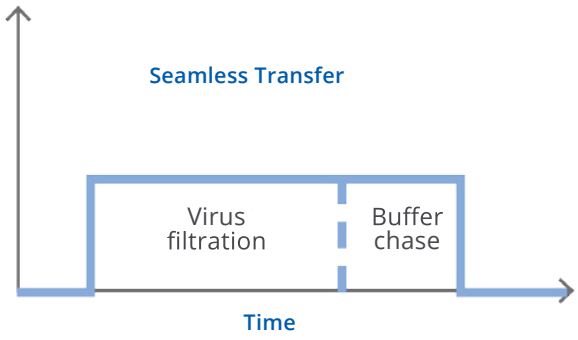


Figure 4. Transfer seamlessly between product and buffer chase, eliminating the pause between steps.

Typical System Phases

VANTIJ SU-VFS software can be configured to operate the following steps:

- Install tubing set
- Tare pressure sensors
- Pause
- Prime all inlets
- Prime pre-filter (optional)
- Flowmeter verification (optional)
- Pre-use VLT
- Pre-use flush upflow
- Pre-use flush filtrate
- Filtration
- Recovery flush (optional)
- Post-use VLT
- Shell drain (for Planova 15N, 20N, 35N, and S20N filters only)

Software

- Post-use VLT
- Filter wash
- Gold particle test (GPT) pre-wash steps (for Planova 15N, 20N and 35N filters only)
- System integrity test prior to operation

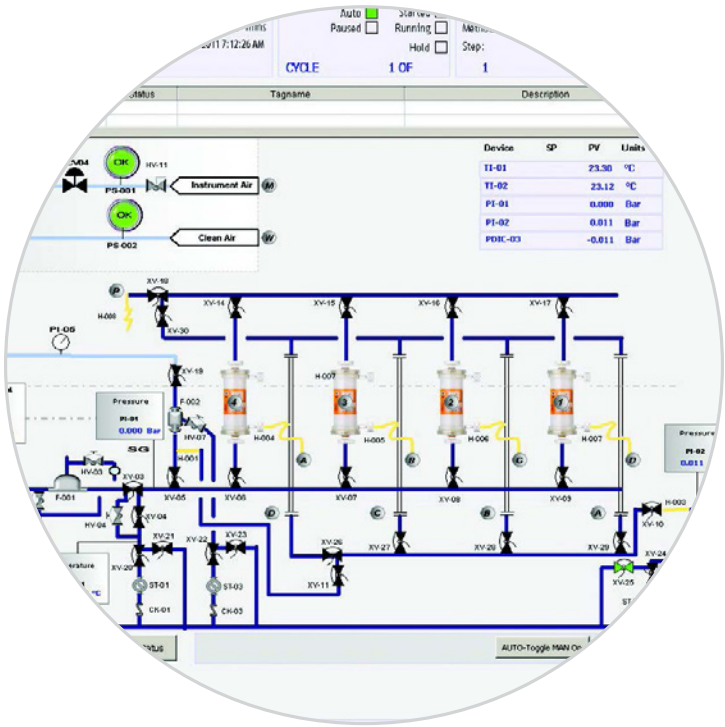
OCELOT® System Control

All automated systems offered by Asahi Kasei Bioprocess now include the latest in control software – OCELOT. In an easy-to-use universally compatible format, OCELOT can integrate and/or interface with your plant-wide control system, allowing for far-reaching data collection and analysis.

VANTIJ® SU-VFC software can be configured to operate the following steps:

- Install tubing set
- Tare pressure sensors
- Pause
- Prime all inlets
- Prime pre-filter (optional)
- Flowmeter verification (optional)
- Pre-use VLT
- Pre-use flush upflow
- Pre-use flush filtrate
- Filtration
- Recovery flush (optional)
- Post-use VLT
- Shell drain

OCELOT® SYSTEM CONTROL



OCELOT Page

Learn more about the OCELOT System Control in our websi below.

VISIT OUR WEBSITE

Our Expertise, Your Confidence

The Fluid Management Business Unit of Asahi Kasei Bioprocess is devoted to solving therapeutic product safety, efficiency and purity challenges within the pharmaceutical and bioprocessing industries.

With technology platforms for virus filtration, inline buffer formulation, chromatography, and oligonucleotide synthesis, our bioprocessing systems, columns, and automation solutions advance GMP manufacturing of critical drug substances around the world. Built with pride, built with quality, built to exceed your high expectations. “Built for You.”

847 Continuum Program®

Technical Support Network

A reliable technical support network is available throughout North and South America, Europe and Asia.

Warranty

We offer an extendable 1-year warranty, service contracts and a personalized level of service for peace of mind and timely support when you need it.

REQUEST A QUOTE >

Technical Client Services

Technical Client Services (TCS), is a customer-centric interface to our product and science experts. Our TCS team will guide your process and engineering needs as your personal liaison for inquiries.

Contact us to learn more about how TCS can support your virus filtration and downstream processing equipment needs.

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