AsahiKASEI
BIOPROCESS

PLANOVA™ FG1

Promise of Unrivaled Performance

Rapid filtration enabling highly efficient processing

Reliable solution for consistent virus removal

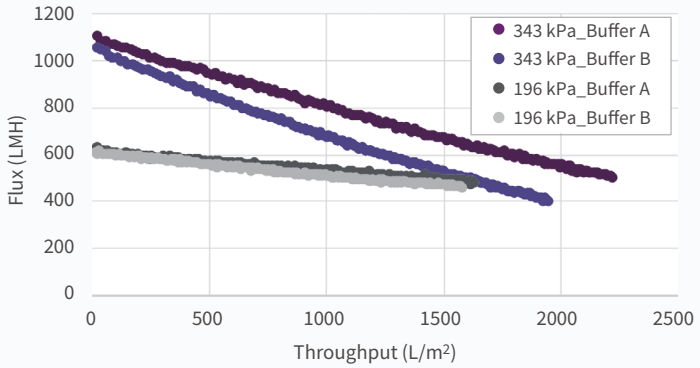


PLANOVA™
Assurance Beyond Expectation

Rapid filtration enabling highly efficient processing

AsahiKASEI BIOPROCESS

Planova FG1 showed >1,000 LMH initial flux and reached ~2,000 L/m² throughput in 3 h at 343 kPa under various buffer conditions



Throughput in 3 h

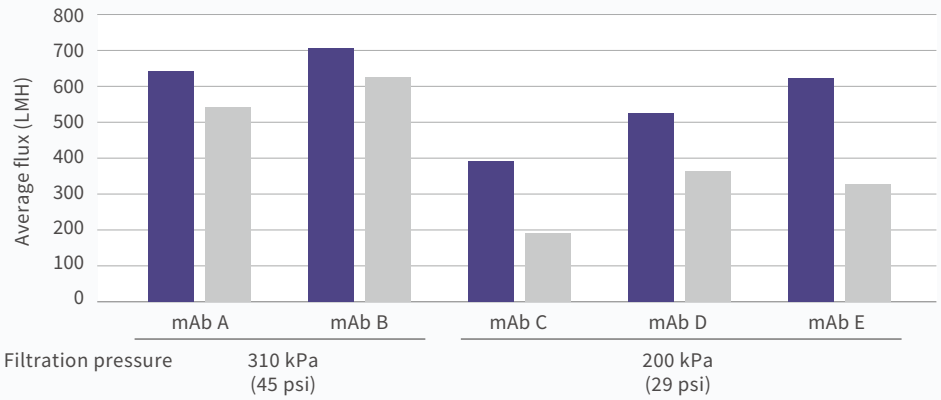
Filtration pressure	343 kPa (49.7 psi)		196 kPa (28.4 psi)	
Buffer	A	B	A	B
Mass throughput (kg/m²)	22.2	21.2	16.3	15.8
Throughput (L/m²)	2,222	1,945	1,629	1,580

Filtration conditions

Product	Concentration	Buffer	Filtration pressure	Filtration time	Prefilter (PF)
mAb	10 mg/mL* *10.9 mg/mL for 343 kPa_Buffer B	A: 50 mM Tris-HCl, pH 7.0, 5 mS/cm B: 50 mM acetate buffer, pH 5.0, 15 mS/cm	196 kPa (28.4 psi) 343 kPa (49.7 psi)	3 h	Buffer A: No adsorptive PF Buffer B: Adsorptive PF

Internal data

Unrivaled flux of FG1 confirmed through customer evaluations



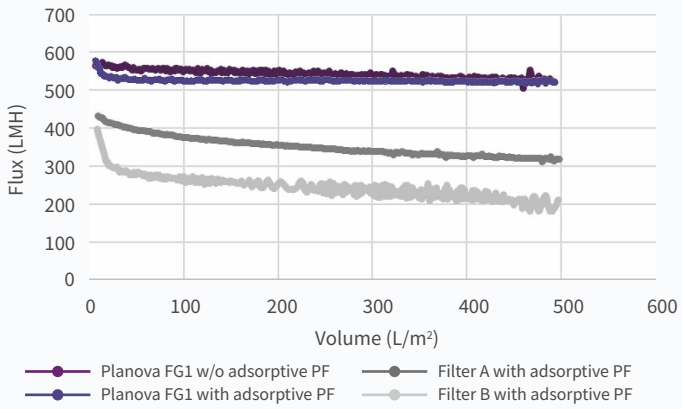
Planova FG1 achieved higher average flux compared to Filter A for multiple molecules

Flux was up to 2x that for Filter A

FG1 with adsorptive prefilter
Filter A with adsorptive prefilter

Data from pre-launch customer evaluations (April 2023 - February 2024)

Planova FG1 without an adsorptive prefilter showed higher and more stable flux than other filters



* 5 min moving average

Filtration conditions

Product	Concentration
mAb	2 mg/mL
Buffer	**Filtration pressure**
50 mM Tris, 20 mM NaCl, pH 7.5	200 kPa (29 psi)

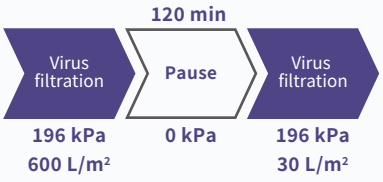
Data from pre-launch customer evaluations

Reliable solution for consistent virus removal

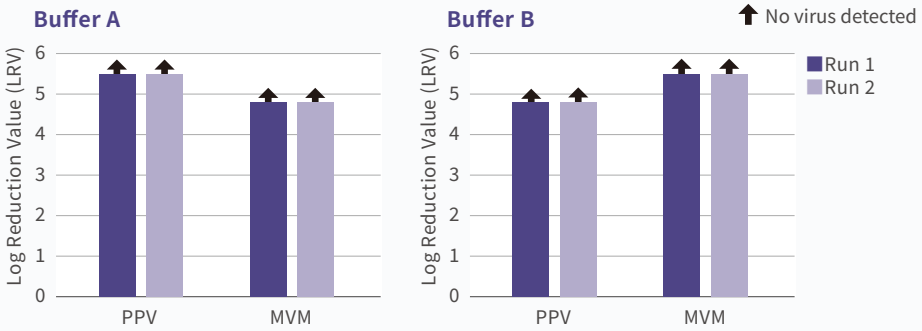
AsahiKASEI BIOPROCESS

■ Planova FG1 demonstrated robust virus removal capability with no virus detected even with process pauses

Viral clearance study with porcine parvovirus (PPV) and minute virus of mice (MVM) spiked in mAb at 196 kPa



Filtration condition: mAb, Concentration 10 mg/ml



Buffer A: 50 mM acetate buffer, Conductivity 15 mS/cm, pH 5.0

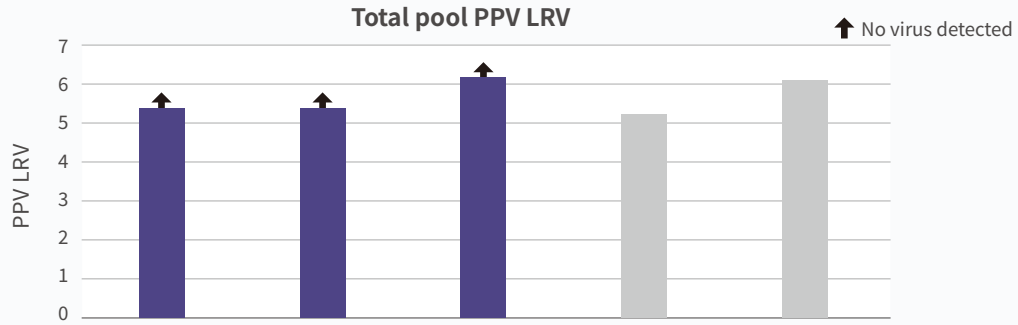
Buffer B: 50 mM Tris-HCl, Conductivity 5 mS/cm, pH 7.0

Internal data

■ Unrivaled virus removal capability of Planova FG1 confirmed through customer evaluations

Viral clearance study for the 2,000 L/m² loading challenge spiked with PPV, with three 30 min process pauses

Product	Concentration	Buffer	Filtration pressure
mAb	10.7 mg/mL	20 mM sodium acetate, pH 6.8	310 kPa (45 psi)



Filter run number	FG1_1	FG1_2	FG1_3	Filter A_1	Filter A_2
Total throughput (L/m²)	211.3	211.0	2,000.3	810.3	785.5
Number of process pauses	1	2	3	1	3

Data from pre-launch customer evaluations

■ No effect of clean-in-place (CIP) or steam-in-place (SIP) on filter performance

Water flux before and after CIP or SIP with exaggerated conditions was compared

CIP treatment: Three cycles of the following CIP treatment: 2 h of filtration with recirculation and 18 h of soak with 1 N NaOH

SIP treatment: Three cycles of the following SIP treatment: 134 °C for 30 min

Change in water flux after CIP with NaOH

Filter	Change in water flux (%)
FG1_1	0.7
FG1_2	0.3
FG1_3	-0.9

Data are based on testing with 0.3 m²

Change in water flux after SIP

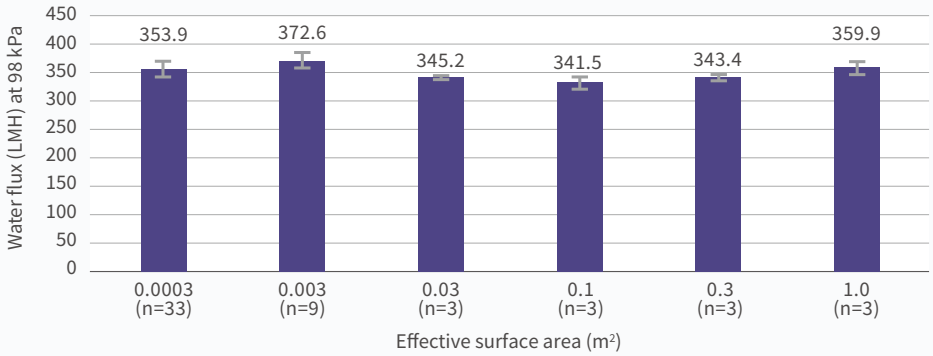
Filter	Change in water flux (%)
FG1_1	0.4
FG1_2	-0.4
FG1_3	-0.4

TAS34187. Sterilization of Planova FG1 Filters by Steam-in-Place (SIP)
TAS34188. Compatibility of Planova FG1 Filters to Clean-in-Place (CIP) with Sodium Hydroxide

Traditional Planova Qualities

AsahiKASEI BIOPROCESS

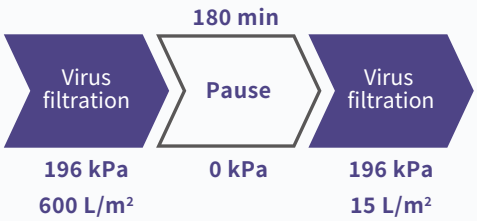
Excellent scalability–Consistent water flux for small-scale and large-scale filters

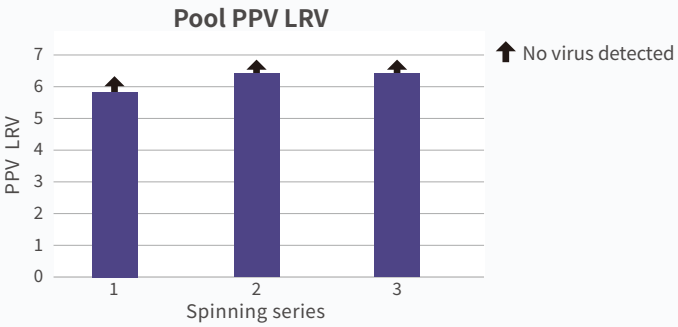


* Error bars indicate standard deviation
* Purified water was filtered on each filter under dead-end, constant pressure at a filtration pressure of 98 kPa (14.2 psi) and 25 °C .

TAS34177. Validation Report for Planova™ FG1 Filters

High lot-to-lot consistency–Consistent virus removal across different lots (spinning series)





Filtration conditions

Product	Concentration	Buffer	Filtration pressure	Prefilter	Virus	Load titer
h-IgG	15 mg/mL	100 mM NaCl, pH 4.6	196 kPa (28.4 psi)	Planova 35N	PPV	6.5 log $TCID_{50}$/mL for series 1 7.0 log $TCID_{50}$/mL for series 2,3

Internal data

Specifications & Operating Ranges		Effective surface area (m²)					
		1.0	0.3	0.1	0.03	0.003	0.0003
Catalog numbers		FG1-LF10	FG1-3000	FG1-1000	FG1-0300	FG1-0030	FG1-0003
Component	Hollow fiber membrane	Hydrophilic modified polyethersulfone					
	Housing and headers	Polyphenylsulfone				Polycarbonate	
	Sealant	Polyurethane					
	Other components	Silicone Polycarbonate Polysulfone Polypropylene		Silicone Polycarbonate Polypropylene		Silicone Polypropylene	
Supplied as		Ready to use (autoclaved, filled with purified water)					
CIP with NaOH/SIP		Compatible				—	
Diffusion test		Compatible				—	
Operating pressure (TMP)		≤343 kPa (49.7 psi)					
Operating pH		3–9					

Visit us on the Web

TAE31247E-4.0

Planova is a trademark of Asahi Kasei Life Science Corporation
© 2026 Asahi Kasei Life Science Corporation All rights reserved.