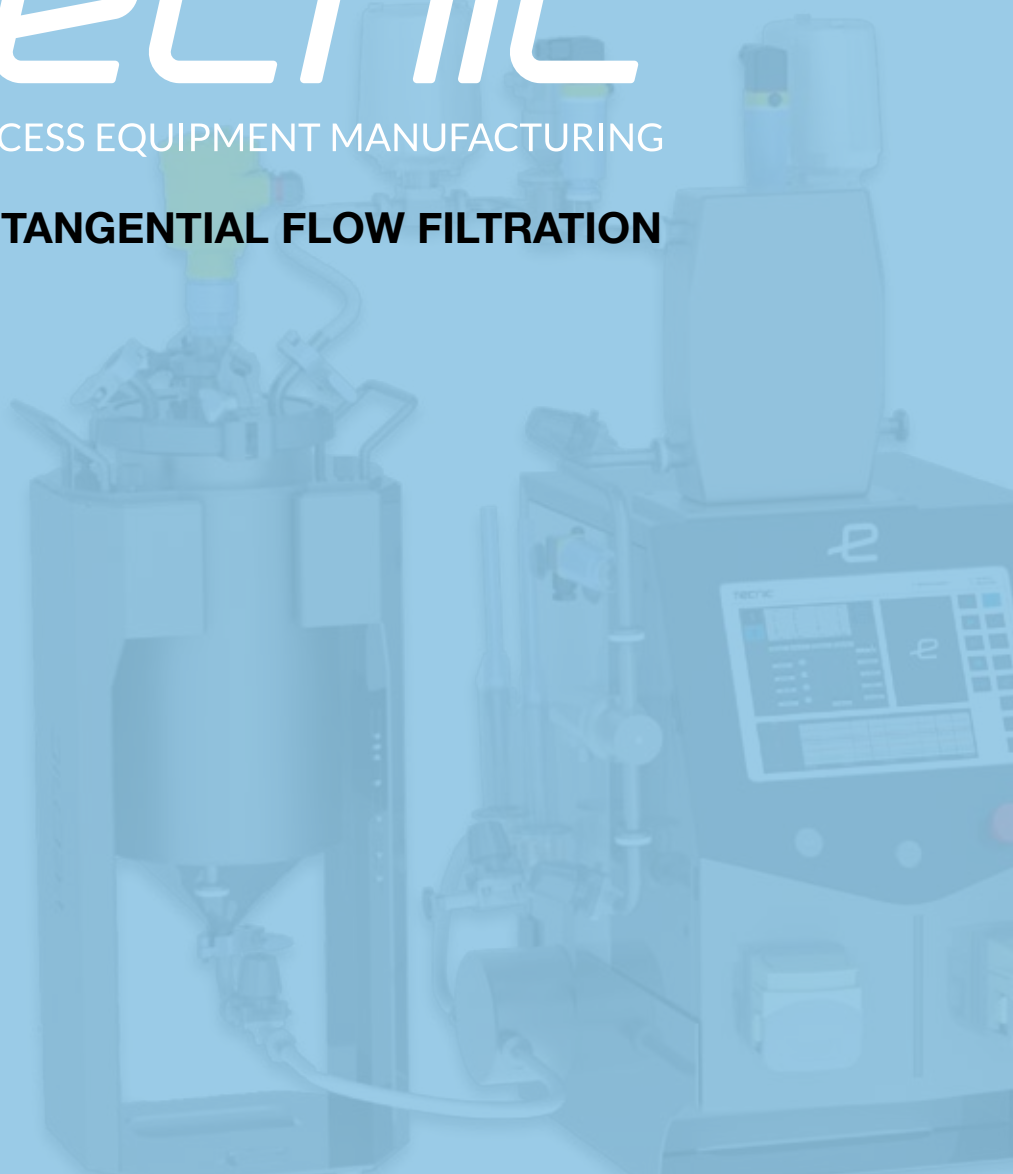# Tecnic

BIOPROCESS EQUIPMENT MANUFACTURING

eLAB
ePILOT

TANGENTIAL FLOW FILTRATION

TECNIC's fully automatic tangential flow filtration equipment has a control unit for processing and a vessel (optional) for media concentration or diafiltration. This vessel is available in stainless steel for reusable or in polycarbonate for single-use applications. The full design and production process is performed at our facilities in Riudarenes (Girona), Spain.

Available for laboratory, pilot and production applications, our equipment fit in all processes from small scale to final product production.
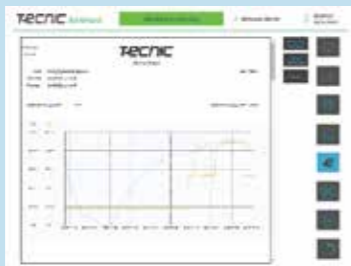
eSCADA

Based on a Supervising Control And Data Acquisition (SCADA) type system and built of the Wonderware System Platform architecture, this software allows the management of basic process control parameters up to advanced recipes and report management.

By means of loops, this software allows to control variables such as pH (acid, base, CO2), pO2 (up to 4 cascades including gases and agitation), temperature and antifoaming, as well as the prediction of cell behaviour at metabolic level with in-situ cell viability sensors

eSCADA BASIC (optional)

The standard software that runs the equipment, where the process can be controlled, visualized and graphed, as well as export results in an efficient way.

eSCADA ADVANCED

The upgraded version for process automation that allows recipes management and control loops. Both versions can include GMP and CFR 21 Part 11 modules.

Flow Sensor

eLAB Vessel (optional)
The vessel is made of stainless steel and is available in 5 and 10 liters. Its bottom has been designed to optimize the minimum volume when harvesting. As the temperature is an important process parameter, double wall tanks are also available. Double wall temperature is regulated by a thermostat system with external chiller for cooling.

Stainless steel vessels are self-cleaning as 360o spray balls are integrated so Cleaning in Place (CIP) module is included in the TFF system.

Polycarbonate vessels are also available if the process requires Single-Use containers.

Automatic Control Valves

Pressure Sensor

Holder and cassettes

10" Capacitive touch screen with the software **e**SCADA

Two Peristaltic Pumps: one has fixed speed and another one variable

Light indicator for a quick status view (green, orange and red)

Transmembrane Pressure (TMP) Control

This process parameter is the average applied pressure from the feed on the permeate side of the membrane.

$$TMP\ [bar] = \left(\frac{P_{feed} + P_{retentate}}{2} \right) - P_{permeate}$$

This **e**LAB crossflow system is fully automated, so TMP can be defined previously and will be controlled by acting on the retentate valve throughout the process.

Permeate Flux Constant

Filtrate flux is the filtrate flow rate normalized for the area of the porous membrane through which it passes. By controlling permeate valve, the system will automatically regulate all the process.

ΔP Control

ΔP is a process parameter that is defined as the difference between feed inlet and retentate outlet pressure of the membrane.

$$\Delta P\ [bar] = P_{feed} - P_{retentate}$$

This value is controlled automatically once the set point is set by the recirculation pump.

eLAB Control Unit

Hardware

Housing	Stainless Steel, AISI 304L (SF4 according to ASME BPE)
Display	Capacitive touch Screen, 10", glass

Software

eSCADA Basic	Included
eSCADA Advanced	Optional
CFR 21.11	Optional
Remote access	Optional

Documentation Package

GMP	Optional

Built-in peristaltic pumps

Fixed speed	1x fixed speed: 90 rpm
Feed, permeate, diafiltration	
Variable speed	1x variable speed: 100 rpm
Feed, permeate, diafiltration	
Recirculation pump	1x sanitary four-piston pump: up to 1400 L/h
External pumps optional	

Process Control Sensors

Level (vessel)	Guided radar sensor
Flow sensor	2x flow sensor for feed/permeate
Pressure	3x pressure sensor for feed/retentate/permeate
Temperature (vessel)	Optional (Pt100 / Pt1000)
Load Cells (vessel)	Optional
pH Sensor (feed)	Optional
Conductivity (feed)	Optional
Magnetic agitation (vessel)	Optional

Temperature module

Single wall	No temperature control. Visualization
Double wall	Thermostat system with external chiller for cooling

Tangential Flow Filtration System

Holder	eHOLDER by TECNIC
	Sartorius & Pall & Millipore compatible
Porous membrane	Microfiltration / Ultrafiltration / Nanofiltration
Cut off	0.2 | 0.45 µm / 2 |5 | 10 | 30 | 100 | 300 kDa
Filter area	0.1 – 2 m^2
Cassettes	1 to 5
Typology depends on product	
Minimum recirculation volume	~ 150 mL
Maximum inlet pressure (SS piping)	4 bar

Other filtration modules

Ceramic membranes	Optional
Hollow Fiber	Optional

Utilities

Power supply	230 V
Water for cooling	Water supply pressure 1 bar

eLAB Vessel (optional)

Stainless Steel	Optional
Material	Wetted parts: SS AISI 316L (SF1 according to ASME BPE)
	Other parts: SS AISI 304L (SF4 according ASME BPE)
Volume	5 L
Customized volume available	100 L
Bottom	Conical, 45º
Single wall	Without temperature control loop
Double wall	Optional
Lightning	Optional
Sight glass	Optional
Single Use	Optional

● STD ○ OPT

TANGENCIAL FLOW FILTRATION CONFIGURATION

Other customized options available

	eLAB MANUAL	eLAB AUTO	ePILOT AUTO
1.VESSEL			
Without	00 ●	00	●
Standard 5 / 10L (h:d, 3:1)	01, 05, 10 ○	05, 10	○ *Permeat Tank optional (See Buffers datasheet) Agitation (Optional)*
Customized (> 10L)	○		○
Single Wall	●		●
Double Wall	○		○
2.FILTER			
Cassette	MF, UF, NF ●	#01, 02, 03, 04, 05	●
Ceramic	○		○
Hollow Fiber	○		○
3.TEMPERATURE			
Pt100 Sensor	○		○
Pt1000 Sensor	○		○
4.CONTROL			
Level Sensor	●		○
Load Cells	○		●
Flow Sensor (2x)	●		●
Pressure (3x)	●		●
pH Sensor	○		○
Conductivity	○		○
Agitation	○		●
5.SOFTWARE			
eSCADA Basic	○		○
eSCADA Advanced	●		●
CFR21.11	○		○
Remote Access	○		○
6.DOCUMENTATION			
GMP	○		○