

## Roxia Tower Press Series™

Reliable Partner for the Full Filter Life Cycle

STUDY & TESTING

PROCESS DESIGN

DELIVERY PROJECT

OPERATION SUPPORT & SERVICES

MODERNISATION



# Pioneering Expertise, Innovations, Customer-Driven Design

Roxia has more than 40 years of world-leading experience in solid-liquid separation. Our professional and experienced filtration team combines extensive practical knowledge from the field with a commitment to understanding and addressing our customers' unique needs. We offer a complete package of dewatering solutions and services, from a detailed analysis of the process for project feasibility studies to complete delivery and dedicated support throughout the entire equipment life cycle.

With local supplier channels, we have developed top-quality products and ensured competitive delivery times, even for large assemblies. This operational model allows us to meet stricter quality requirements, helping our customers achieve greater cost-effectiveness and sustainability in their operations.

## Roxia Tower Press Filter™ - Fully Automatic and Reliable Operation

Roxia Tower Press™ (TP) is a fully automatic pressure filter excellent for any process that requires efficient solid-liquid separation or cake washing. The Tower Press technology has proven its excellence in many applications where traditional chamber filter technology has difficulties to perform.

Roxia TP filter series represents the latest filtration technology and incorporates design improvements based on customer feedback, application experience and especially vast digital technology development. As a result we can offer a reliable production machine that delivers high performance in varying process conditions

### Horizontal Pressure Filtration Benefits:

- × Uniform cake formation in the chamber enables the most efficient cake wash and air drying.
- × High-pressure diaphragm pressing ensures even and driest cake.
- × A single and continuous filter cloth design provides excellent filtration and reliable cake discharge without operator intervention. Combined with an efficient cloth wash at each cycle and alternating the filtration direction ensures high performance over cloth life cycle.



Roxia TP16™ Tower Press Filter

## Roxia Malibu™ IIoT Oline Process Monitoring, Maintenance and Analysis Tool

Roxia connects industrial filters to the Roxia Malibu™ online portal and enables remote monitoring of performance.

With Malibu, operators management can analyse and optimize filtration process, and production volume and detect failures before they even occur. All that can be done from anywhere with any computer, smart phone or other handheld device with internet connection.

# TP Models with Main Dimensions

Filter type	Chamber	TP 16										TP 60									
		16	19	22	25	28	32	35	38	41	44	60	72	84	96	108	120	132	144	156	168
Filtration area (m²)	45 mm	16	19	22	25	28	32	35	38	41	44	60	72	84	96	108	120	132	144	156	168
	60 mm	16	19	22	25	28	32	35	38	-	-	60	72	84	96	108	120	132	144	-	-
Frame size (m²)		19		25		32		28		44		72		96		120		144		168	
Chambers (pc)		10	12	14	16	18	20	22	24	26	28	10	12	14	16	18	20	22	24	25	28
Length (m)		4,3*										7,2									
Width (m)		3,8										6,1									
Height (m)	45 mm	3,8	4,2	4,7	4,8	5,4	5,6	6,2	6,3	6,9	7,0	5,5	5,8	6,4	6,6	6,9	7,0	7,6	7,8	-	-
	60 mm	4,6	5,3	5,4	6,1	6,3	6,9	7,2	-	-	-	5,5	6,3	7,0	7,2	7,9	8,1	-	-	-	-
Weight (tn)	45 mm	16	17	18	19	20	21	22	23	24	25	61	63	68	72	77	80	84	88	91	94
	60 mm	17	18	19	20	21	22	23	24	-	-	62	66	70	73	77	84	88	91	-	-

\* with service platform ladders 5,1



Roxia Tower Press TP16™



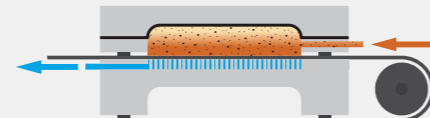
Roxia Tower Press TP60™



# Pressure Filtration Principle

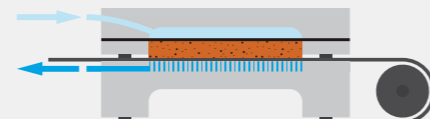
## Slurry feed and filtration

- × Closed filter plate pack forms filter chambers.
- × As the slurry is pumped into the chambers, liquid passes through the filter cloth and solids remain at the top of the cloth.
- × Filtrate flows out from the filter chamber's filtrate ports.
- × Solid particles start to build up forming the filter cake above the filter cloth.
- × Slurry feed continues until optimal cake thickness is achieved.



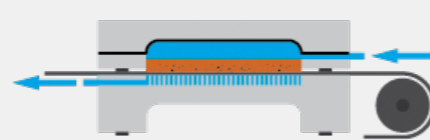
## Diaphragm pressing I

- × Using pressurized water or compressed air, diaphragms squeeze the cake and finalize cake forming.
- × Pressing continues and more filtrate is discharged.
- × This step ends when the optimal cake structure is reached.



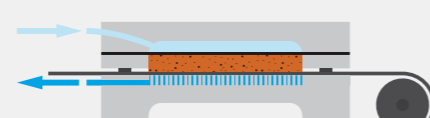
## Cake washing (optional)

- × Wash liquid is fed into the filter chamber on top of the cake.
- × Pressure drives the wash liquid into the cake. The mother liquid is displaced and other substances from the mother liquid are removed.
- × This step ends when desired wash result is achieved.



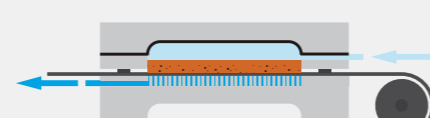
## Diaphragm pressing II (optional)

- × Using pressurized water or compressed air, diaphragms squeeze the remaining free wash liquid within the chamber through the cake.
- × Pressing continues and discharges more filtrate.
- × This step ends when an optimal cake structure is reached.



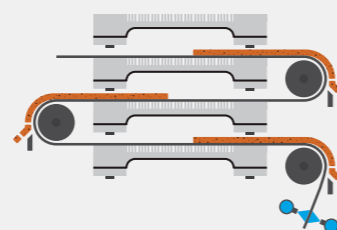
## Air drying

- × Pressurized air is fed into the chamber above the cake.
- × Air passes through the cake and dries it by displacing part of the liquid with air.
- × This continues until the desired cake dryness is reached.



## Cake discharge and cloth washing

- × Filter plate pack opens.
- × Filter cloth acts as a conveyor belt and simultaneously discharges cakes from each chamber in less than 30 seconds.
- × During cake discharge, the filter cloth is washed from both sides.
- × After this step is finished, the entire cycle is repeated.



# Safety Features

Roxia TP filter safety features are designed in accordance with the European Machinery Directive. Safety requirements of other countries are carefully followed during each delivery project.

## Safety interlocks integrated into the automation program

- × Protect operators and the filter from accidents, failures, and unintended misuse.

## Perimeter protection with safety interlocked doors

- × When any of the doors open, the filter automatically stops. This prevents access to the potentially hazardous areas during the filter's operation.
- × The see-through construction minimizes the need to open the door and approach the filter while it's running.
- × Emergency stop buttons are located on each corner of the filter.

## Safe working at height

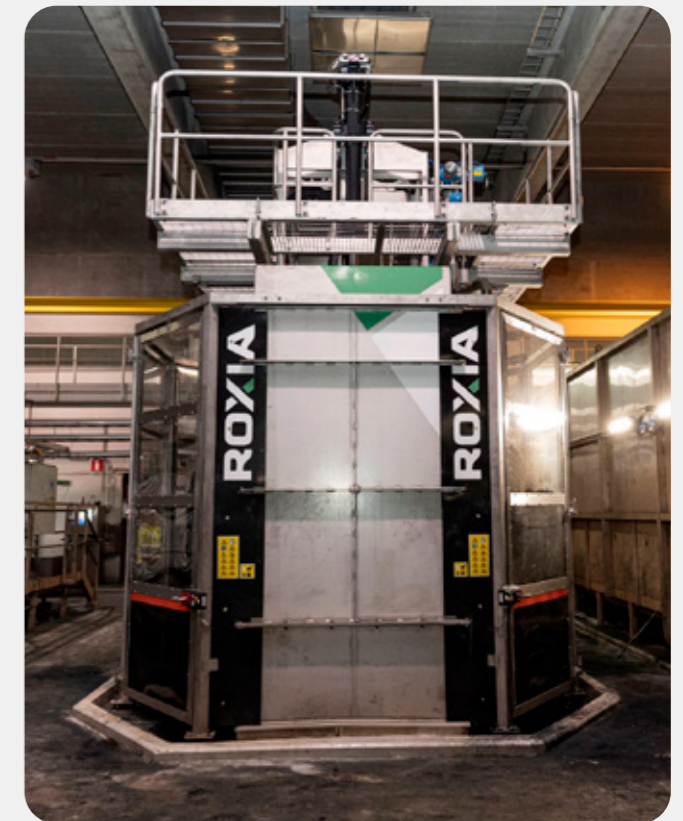
- × The filter is equipped with a caged ladder and a fall arrest system.
- × Railings around the top maintenance platform protect users from falling.
- × Personnel lifts provide a safe and ergonomic working environment for plate pack maintenance.

## Safe use

- × The filter delivery includes a user manual with safety instructions for safe operation and working procedures.
- × Before use, operators and maintenance crew receive safety training.
- × The operator interface guides users to safe use during daily operation. It also includes warnings about possible safety threats.
- × Password-protected user roles secure critical filter parameters.

## Easy and safe maintenance

- × The filter cloth is changed from a single access point located outside the filter.
- × The design includes extra space around the filter, enabling easy access.
- × Inspection and maintenance points are easily accessible and positioned away from the most corrosive areas.
- × A remote handheld unit is included for safe maintenance and troubleshooting.



Perimeter protection prevents access during filter's operation, but leaves enough room for safe maintenance.

# Filtration Life Cycle Support

**“Reliable estimate on filtration needs, performance, and investment cost.”**

Detailed process testing for project feasibility studies.

- × Experience from similar type of processes
- × Testing at Roxia lab or at customer facility
- × Filtration technology selection
- × Preliminary process design
- × CAPEX, OPEX and TCO of an investment
- × Budgetary proposal
- × Filtration expert advisory related to filtration function design

**“Finetuning filtration solution to design.”**

An experienced partner to support design:

- × Testing before final sizing of filtration
- × Binding sizing of filter(s) and auxiliaries
- × Material selections for long-lasting and safe solution
- × Listening customer needs
- × Automation system selection to fit plant SCADA
- × Interphase analysis
- × Consultation related to piping and lay-out
- × Product documentation including 3D models available
- × Preparation of smooth project delivery

**“Supporting optimal performance and reliability during operations.”**

**Spare parts**

Filter frames, plates, seals, diaphragms, feed hoses, rollers, scrapers, vats, mounting components, sliding pieces, grids, cloths...

**Maintenance**

Our team provides thorough maintenance, creates detailed reports with optimisation recommendations, and ensures a prompt response time.

- × Inspections
- × Shut down maintenance
- × Urgent one-time visits
- × Service agreements

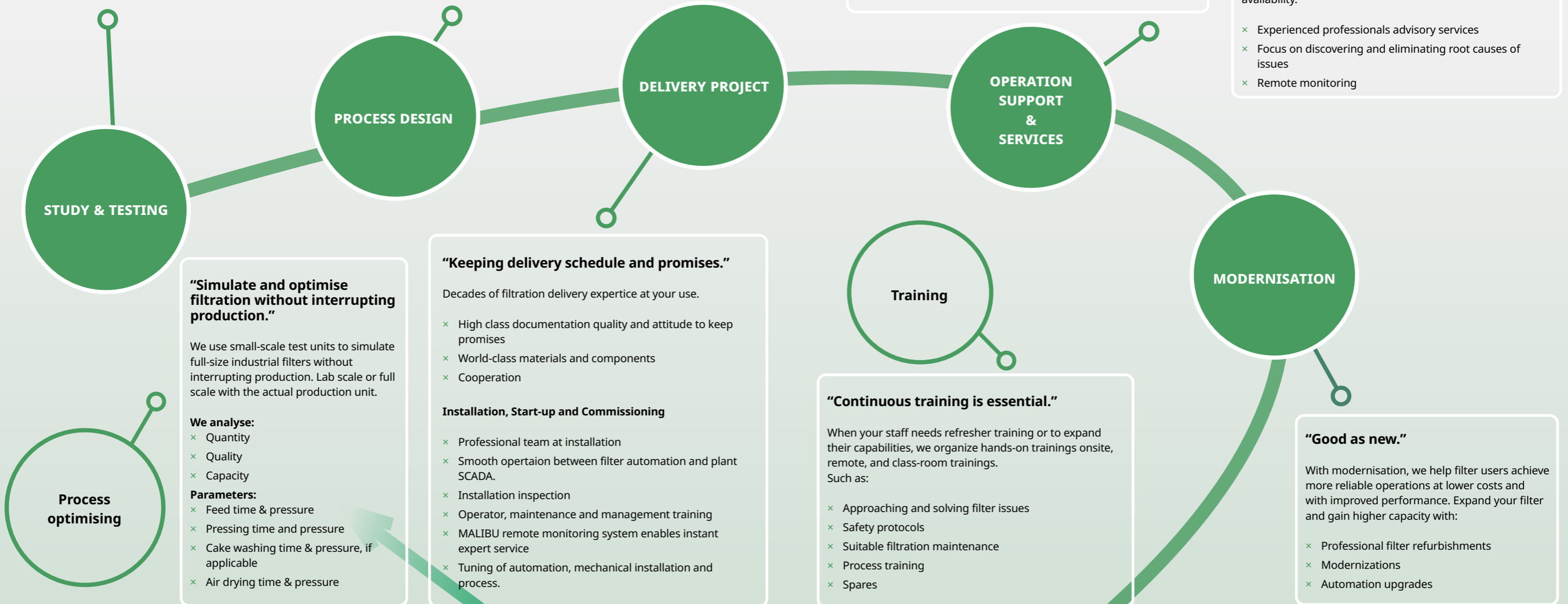


**“We know what to look for.”**

**Troubleshooting**

We improve customer process' production, quality and availability.

- × Experienced professionals advisory services
- × Focus on discovering and eliminating root causes of issues
- × Remote monitoring



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Training

Process optimising

**“Simulate and optimise filtration without interrupting production.”**

We use small-scale test units to simulate full-size industrial filters without interrupting production. Lab scale or full scale with the actual production unit.

**We analyse:**

- × Quantity
- × Quality
- × Capacity

**Parameters:**

- × Feed time & pressure
- × Pressing time and pressure
- × Cake washing time & pressure, if applicable
- × Air drying time & pressure

**“Keeping delivery schedule and promises.”**

Decades of filtration delivery expertise at your use.

- × High class documentation quality and attitude to keep promises
- × World-class materials and components
- × Cooperation

**Installation, Start-up and Commissioning**

- × Professional team at installation
- × Smooth operation between filter automation and plant SCADA.
- × Installation inspection
- × Operator, maintenance and management training
- × MALIBU remote monitoring system enables instant expert service
- × Tuning of automation, mechanical installation and process.

**“Continuous training is essential.”**

When your staff needs refresher training or to expand their capabilities, we organize hands-on trainings onsite, remote, and class-room trainings. Such as:

- × Approaching and solving filter issues
- × Safety protocols
- × Suitable filtration maintenance
- × Process training
- × Spares

**“Good as new.”**

With modernisation, we help filter users achieve more reliable operations at lower costs and with improved performance. Expand your filter and gain higher capacity with:

- × Professional filter refurbishments
- × Modernizations
- × Automation upgrades



# Roxia Spare Parts for Tower Press Filters

Roxia provides high-quality, latest-design spares for all tower press-type filters. We support filter availability and reliability through regular inspections, predictive maintenance, proactive monitoring, timely spare part supplies through efficient supply chains, and refurbishment. Our job is to ensure you the most optimal and trouble-free operations throughout the entire operational life of the filter.

## Frames

Sizes: For 1,6m<sup>2</sup> and 6,0m<sup>2</sup> plate sizes.  
Chamber heights: 45mm and 60mm.  
Materials: AISI 304L, AISI 316L, SAF2205.

- × High-quality surface finish and dimensional accuracy
- × Manufactured with precise dimensional tolerances
- × Available in various austenitic materials and model variations



## Plates

Sizes: For 1,6m<sup>2</sup> and 6,0m<sup>2</sup> plate sizes.  
Chamber heights: 45mm and 60mm.  
Materials: AISI 304L, AISI 316L, AISI 316L, SAF2205.

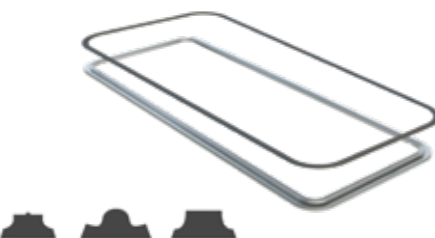
- × High-quality cutting, bending, and forming of plates
- × Manufactured using modern tools and professional welders



## Frame seals

Materials: NR, EPDM

- × Design of seals benefits from long-term product knowledge
- × Optimised material requirements and high-performance standards



## Diaphragms

Sizes: Flat diaphragms for 1,6m<sup>2</sup>, 2,5m<sup>2</sup> and 6,0m<sup>2</sup> plate sizes. Cup diaphragms for 1,6m<sup>2</sup> plate sizes.

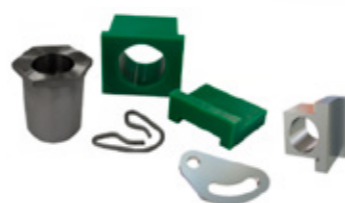
Materials: NR, EPDM, IIR.

- × Modern manufacturing methods and advanced design
- × Customized rubber composition
- × Suitable for the most demanding applications



## Mounting components

Safety pins, suspension plates, sliding pieces, accessories.  
High-quality materials e.g high-molecular weight polymers are selected for the optimal plate pack movement.



## Rollers

Drive rollers, tensioning rollers, tracking rollers and plate rollers with following coatings:  
PU, NR, EPDM, NBR and stainless steel.

- × Modern design and sealing solutions for rollers are exceptional
- × Efficient and dust-protected bearing solutions are durable
- × Coating options available to suit every application



## Scrapers

Cloth scraper and roller scrapers with following materials:  
PU, NR, EPDM, HDPE.

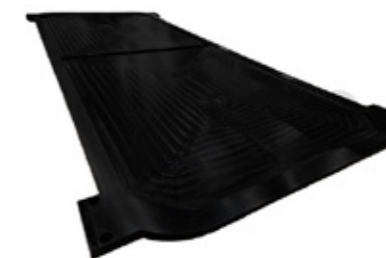
- × Frame and blade exchange options for scrapers come in several variants depending on the application
- × Modern solutions available for older scraper models



## Vats

Sizes: 6,0m<sup>2</sup>  
Various materials available.

- × A wide range of ultra-high molecular weight polymers for different applications
- × Suitable for challenging conditions and masses

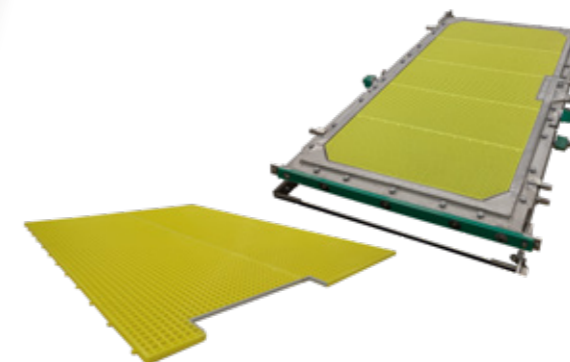


## Grids

Sizes: 1,6m<sup>2</sup>, 2,5m<sup>2</sup>, 6,0m<sup>2</sup>.

Materials: PP

- × Grid elements allow free flow of the filtrate for further processing under challenging conditions
- × Shape and materials chosen to withstand high pressures, high temperatures, and acidic/alkaline conditions
- × Easy installation
- × Modern plastic welding techniques used for the elimination of sharp edges



## Feed hoses

Materials: EPDM, metal wire enforcement  
Options in hose insert materials.

- × Hoses suitable for light to heavy chemical processes where excellent wear resistance is required.
- × Lengths selected according to filter size





## Plate Packs for Tower Press Filters

Roxia has re-engineered complete plate packs for tower press filters: from small to big, from old to new generation tower presses. Roxia Plate Packs meet the corrosion requirements for various applications and environments.

### Precision and Quality in Every Detail

Roxia Plate Packs meet the corrosion requirements for various applications and environments. Our products include high-quality materials like stainless and acid-resistant steels. For situations where steel isn't suitable, we offer options like polypropylene (PP).

Quality control is done systematically by our team to ensure high performance. Material choices impact filter maintenance and lifecycle, helping us meet stricter quality standards and improve cost-effectiveness.

We build our plate packs to customer specifications, respecting the operational principles of the filter. We are agile in implementing unique products based on customer feedback. Our experts check product compatibility to ensure high-quality assemblies.

With strong local supplier channels, we provide top-quality products with competitive delivery times. Continuous product development ensures our customers get the best.



Complete plate pack installation

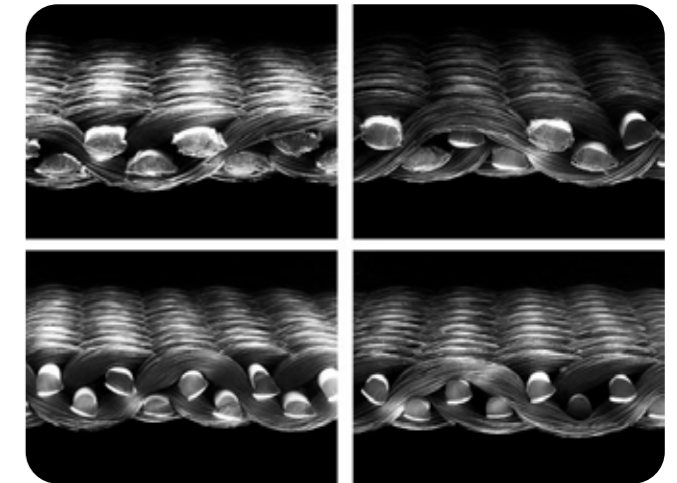
Technical Overview		
	Standard Plate Packs	PP Plate packs
Plate	AISI 304L (EN 1.4307), AISI316L (EN 1.4404) or S32205 (EN 1.4462)	Polypropylene PP, Inserts AISI 316L (EN 1.4404), S32205 (EN 1.4462), Hastelloy C276
Frame	AISI 304L (EN 1.4307), AISI316L (EN 1.4404) or S32205 (EN 1.4462)	AISI 304L (EN 1.4307) AISI316 (EN 1.4404), SAF 2507 (EN 1.4410)
Diaphragm	NR, EPDM, IIR or NBR	EPDM NR
Grid	Polypropylene, reinforced	Polypropylene PP, reinforced
Plate sealing	NR or EPDM, Frame: AISI 316	EPDM
Filter plate sliding pieces	HDPE	HDPE, POM
Cloth and roller scrapers	Polyurethane or rubber edge, AISI 316 frame	PU, NR, EPDM
Plate rollers	AISI 316, NR or EPDM coated	AISI 316, PU, NR or EPDM
Auxiliary drive rollers	NR or EPDM coated	
Suspension plates	S32205 (EN1.4462)	S32205 (EN 1.4462), SAF 2507 (EN 1.4410)
	*Special materials on separate request	

## Filter Cloths for Tower Press Filters

The new Roxia filter cloths are engineered to cover the full range of tower press applications. They are highest-tensile-strength and having mechanically melted edges on both sides as a standard. Our continuous design process ensures consistent improvements, often resulting in proven significant advancements compared to older cloth models. Roxia filter cloths cover the entire range and are continuously being developed further.

### Tackling Common Filtration Issues:

- × High filter cloth wear
- × Cloth blinding leading to decreased air permeability and Increased cake moisture and reduced production
- × Availability
- × Very small particles sometimes require very low air permeability
- × Differing applications and need for wide selection of filter cloths
- × Unique slurries that require precise air permeability
- × High temperatures and chemicals



The latest second-generation Roxia TP filter cloths were designed in 2024, whereas most commonly used tower press filter cloths on the market are 15 to 30 years old.

### Roxia's Tailor-made Solutions for Tower Press Applications

Roxia offers a wide selection of tailor-made tower press cloth solutions for each application, including innovative options for larger tower press type filter applications. Roxia collaborates closely with end users to develop optimal cloth solutions, featuring:

#### Edge Reinforcement

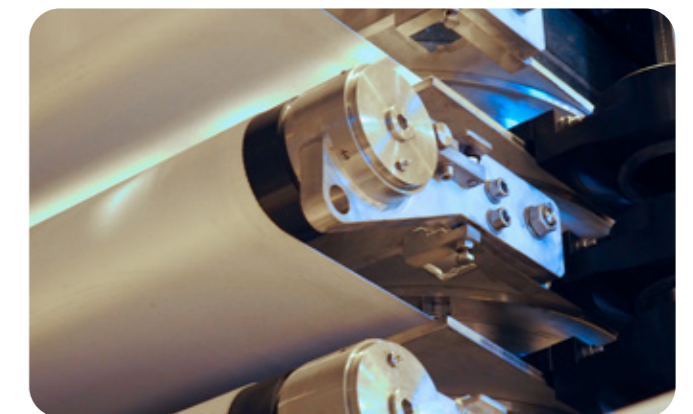
- × Super strong edges, like DRE, using real melting to address frayed edge issues.

#### New Seam Type and Special Reinforcement:

- × New seam types with unique reinforcement, metallic hooks, and glue reinforcement for extended lifespan.

#### Industrial Filter Cloth Patches and Seaming Machines

- × New seam types with unique reinforcement, metallic hooks, and glue reinforcement for extended lifespan.
- × Patching solutions to reduce cloth replacements
- × Training and quotations for seaming machines and tools.



Roxia filter cloths are designed for Roxia TP filters and for other tower press type filters.

#### Global Inventories and Emergency Delivery Services

- × Availability is the key factor for tower press filter cloths
- × Contact closest Roxia service center if running out of tower pressure filter cloths. We are here to help.

## About Us

Roxia is a Finnish family-owned OEM company focusing on solid-liquid separation. With decades of world-leading experience and expertise from the field, we offer the highest-quality filter solutions, and services. Roxia filter equipment and parts are built on the latest innovations, ensuring our customers receive the most advanced solutions in the industry.

We provide a complete package, from detailed process analysis for project feasibility studies to comprehensive delivery and service throughout the entire equipment lifecycle.

Our life-cycle approach improves the availability and reliability of filters. This includes regular inspections, predictive maintenance, proactive monitoring and optimisation, timely spare part supplies, refurbishment, and eventually replacement of the plates, the plate pack, or the whole filter.

We have ability to adapt quickly to changing needs and to tailor our solutions to meet each client's specific requirements. Through our local supplier channels, we develop top-quality products and ensure competitive delivery times, even for large assemblies. We deliver what you need, when you need it. This operational model allows us to meet stricter quality requirements and improve overall cost-effectiveness and sustainable development solutions.

We offer our support from our headquarters in Finland, Chile, China, Germany, Peru, South Africa, and the United States, and globally through our partners.

Roxia holds ISO 9001:2015 Quality and ISO 14001:2015 Environment multisite certificates.



*Image: Nuutinnokka, Roxia's guest house at Taipalsaari, Finland, on Lake Saimaa*

Tower Press Series, Brochure - Roxia (EN) / 02-2025

