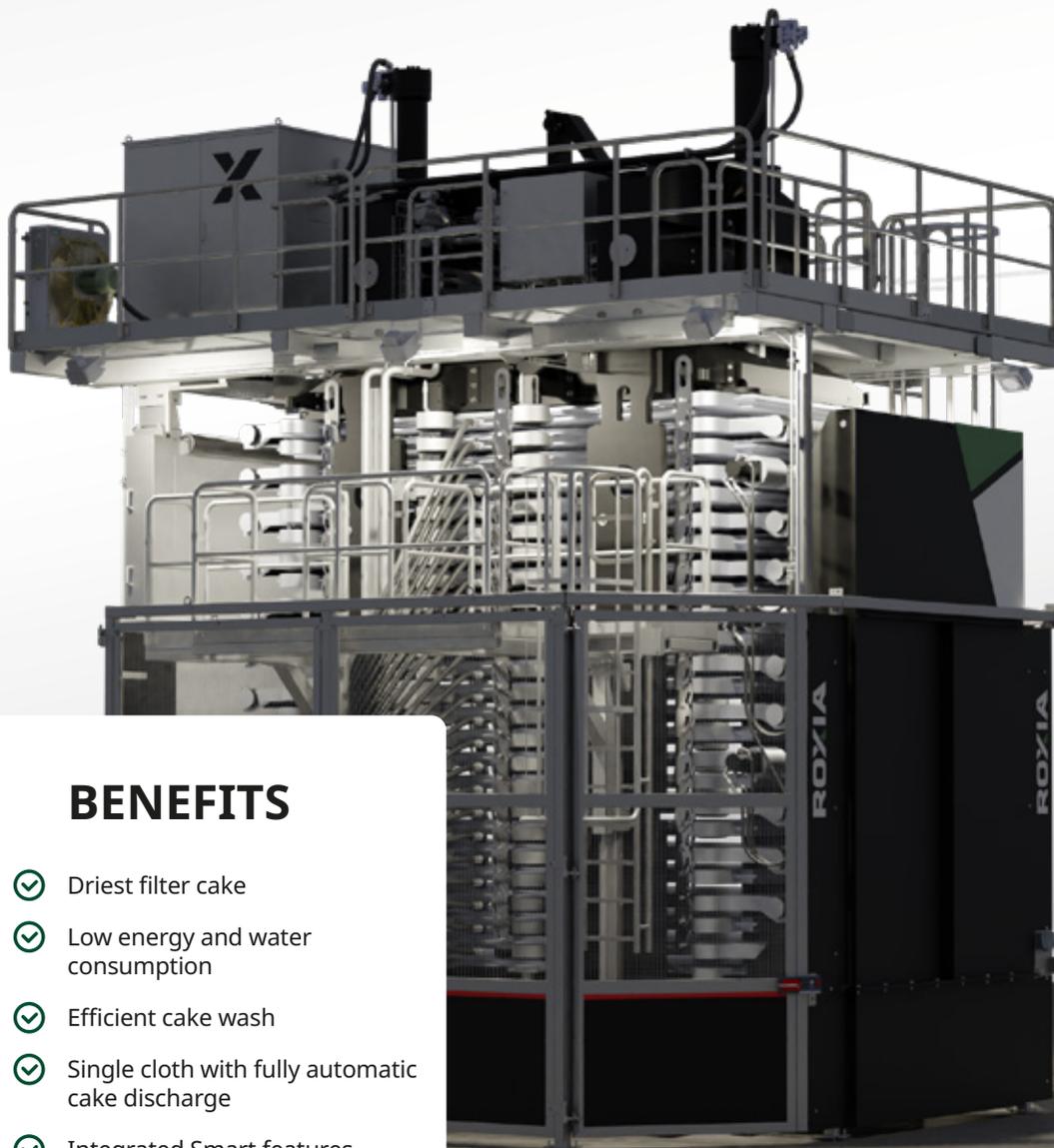


# Roxia Tower Press™



## BENEFITS

- ✓ Driest filter cake
- ✓ Low energy and water consumption
- ✓ Efficient cake wash
- ✓ Single cloth with fully automatic cake discharge
- ✓ Integrated Smart features

# Fully Automatic & Reliable Operation

Roxia Tower Press™ (TP) is a fully automatic pressure filter excellent for any process that requires efficient solid/liquid separation. The design follows 40 years of respected experience in the field. Roxia TP filter is a reliable production machine that delivers high performance over and over again. Horizontal pressure filtration technology provides the following benefits:

- × Uniform cake formation in the chamber enables efficient cake wash and air drying.
- × High-pressure diaphragm pressing ensures a more even and drier cake.
- × A single and continuous cloth design ensures a fast and reliable cake discharge without operator intervention.

## Complete filtration support

Roxia can also provide detailed analysis of the process, filtration testing, equipment selection and sizing. Get complete service through the entire filter life cycle, modernizations, refurbishments, spare parts and maintenance support.

## Roxia TP filter is ideal if you need:

- × High production capacity
- × Dry cake
- × Clear filtrate
- × Efficient cake washing
- × Reliable cake discharge
- × Fully automatic & safe operation
- × Low water and energy consumption
- × Small footprint



Roxia Tower Press is engineered to withstand demanding use and deliver reliable performance.

## Sizes and main dimensions

| Filter type      | Roxia TP 60 |    |     |     |     |     |     |     |
|------------------|-------------|----|-----|-----|-----|-----|-----|-----|
| Filter size (m²) | 60          | 72 | 84  | 96  | 108 | 120 | 132 | 144 |
| Frame size (m²)  | 72          |    | 96  |     | 120 |     | 144 |     |
| Filter chambers  | 10          | 12 | 14  | 16  | 18  | 20  | 22  | 24  |
| Length (m)       | 7.3         |    |     |     |     |     |     |     |
| Width (m)        | 6.2         |    |     |     |     |     |     |     |
| Height (m)       | 6           | 6  | 6.7 | 6.7 | 7.4 | 7.4 | 8   | 8   |
| Weight (t)       | 66          | 69 | 75  | 78  | 84  | 87  | 93  | 96  |

# Pressure Filtration Principle

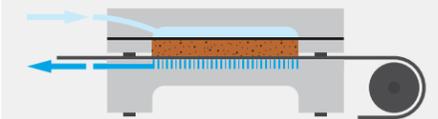
## Slurry feed and filtration

- × Filter plate pack closes, forms the filter chambers and slurry is fed inside.
- × As the liquid passes through the filter cloth, the filtrate is channelled out from the filter chambers.
- × The solids remain inside the chambers and form the filter cake.
- × The slurry feed continues until the optimal cake thickness is achieved.



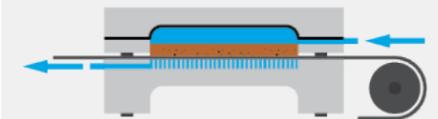
## Diaphragm pressing I

- × Using pressurized air, diaphragms press the cake and finalize cake forming.
- × Pressing continues and extracts more filtrate.
- × This step ends when the optimal pressing point is reached.



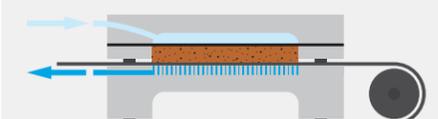
## Cake washing (optional)

- × Washing liquid is fed into the filter chamber on top of the cake.
- × Pressure pushes the washing liquid through the cake and washes out the mother liquid and other removable substances.
- × This step ends when the desired wash result is achieved.



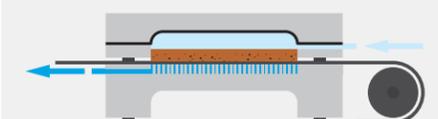
## Diaphragm pressing II (optional)

- × Using pressurized air, diaphragms press the remaining washing liquid in the chamber through the cake.
- × Pressing continues and extracts more filtrate.
- × This step ends when the optimal pressing point is reached.



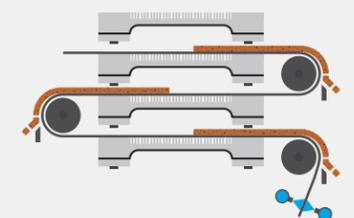
## Air drying

- × Pressurized air is flowing into the chamber above the cake.
- × Air passes through the cake and dries it.
- × 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 the cakes from each chamber in 30 seconds.
- × During cake discharge, the filter cloth is washed from both sides.
- × After this step is finished, the entire cycle repeats.



# Typical Application Areas

| Metal concentrators | Metal refineries | Chemical industry   |
|---------------------|------------------|---------------------|
| Fine ferrous        | Leach residues   | Titanium dioxide    |
| Base metals         | Battery metals   | Calcium carbonate   |
| Precious metals     |                  | Starch              |
| Tailings            |                  | Industrial minerals |

# Filtration Testing and Process Support

Testing the slurry is essential before choosing the correct filter type and size. In this way, we can ensure the best possible process performance and the most cost-efficient solution for each application. Filtration testing can be done on-site or in the Roxia filtration laboratory.



Tower press test unit simulates the operation of the full-size industrial filter.

We only require a minimum sample of 20 litres of slurry or 20 kg of dry solids.

## Obtained test results:

- × Recommendation of the most suitable filtration technology
- × Optimal filtration parameters
- × Filtration capacity, kgDS/m<sup>2</sup>
- × Cake moisture
- × Filtrate clarity
- × Cake washing efficiency (optional)
- × Filter media recommendation based on test results

## Typical concentrate slurries performance at Roxia TP filter:

| Material | Cycle time (min) | Capacity (kgDS/m <sup>2</sup> h) | Production with TP 144 (t/h) | Cake moisture (w/w%) |
|----------|------------------|----------------------------------|------------------------------|----------------------|
| FE       | 9 - 10           | 600                              | 75 - 85                      | 8,5                  |
| Copper   | 10 - 12          | 410                              | 50 - 60                      | 8                    |
| Nickel   | 10 - 12          | 440                              | 54 - 64                      | 7                    |
| Zinc     | 10 - 13          | 400                              | 30 - 60                      | 9 - 11               |
| Tailings | 10 - 15          | 150 - 250                        | 23 - 33                      | 13 - 18              |

# Safety Features

## Safety interlocks integrated into the automation programme

- × Protect the operators and the filter itself from 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 possibly hazardous areas during the filter's operation.
- × See-through construction minimises the need to open the door and approach the filter.
- × Emergency stop button located on each corner of the filter.

## Safe working at height

- × Caged ladder with fall arrest system
- × Railings around the top maintenance platform
- × Lifts for safe and ergonomic service of the plate pack area

## Safe use

- × Filters come with a user manual including safety instructions for safe operation and working procedures.
- × Before starting to use the filter, 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

- × Filter cloth change happens at only one access point outside the filter.
- × Filter design includes extra space around the filter and enables an easy approach.
- × Check and maintenance points are easily accessible and away from the most corrosive areas.
- × Includes a remote handheld unit for safe maintenance and troubleshooting.



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

# Smart Filtration

Roxia Smart Filtration is a turnkey solution. It enables remote, real-time insight into the filtration process and helps to troubleshoot and significantly optimize production. Smart Filtration utilizes existing control system and sensors and connects the filters to the Roxia Malibu™ online portal.

## Roxia Smart Filtration for All Filters

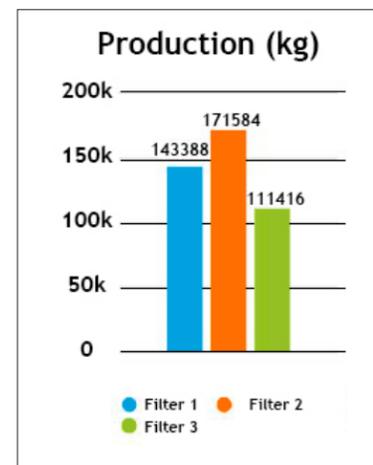
Roxia Smart Filtration can be installed on any filter and integrated with any other process equipment and control systems (DCS). Monitoring the filtration process online through Roxia Malibu™ portal is easy and user-friendly. Access is possible when- and wherever with any computer, smart phone or other handheld device connected to the internet. Malibu also automatically generates user defined reports which are easy to understand. Data analysis provided by Smart Filtration can be used for comparing filter's productivity, quality changes, energy consumption, production output, to determine reasons for its waiting time, alarms and more.

### Production Volume and Process Results Information

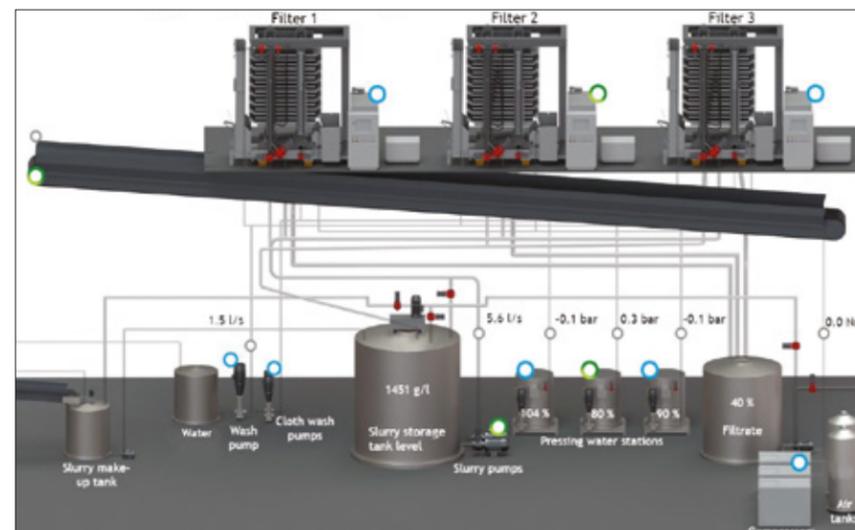
- × Fast analysis of production volume and process results
- × Performance comparison between multiple filters
- × Utilities comparison and OPEX reporting

### Runtime Monitoring

- × Generates utilization timeline
- × Extracts most common alarms and reasons for downtime
- × Reports of chosen time periods and measurements



In multiple filters installation, clear comparison of production between the filters is one of the most useful KPI's for everyday use.



Live and detailed online view of the filter process plant shown on Roxia Malibu™ portal.

## YOUR BENEFITS

- ✔ Improved performance by comprehensive process understanding
- ✔ Less unplanned downtime
- ✔ Quicker troubleshooting
- ✔ Efficient failure analysis

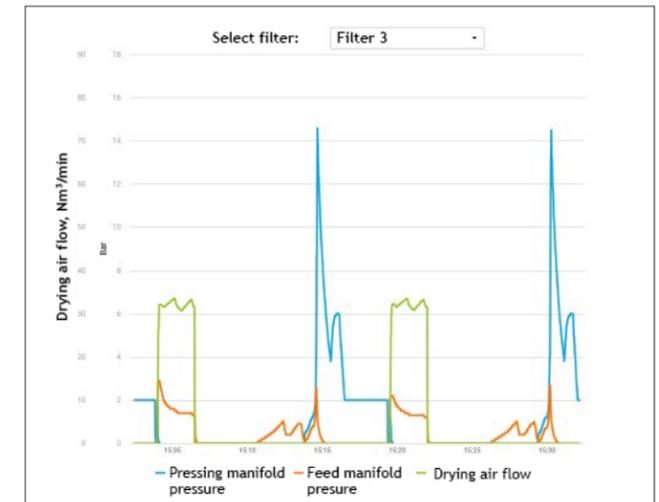
## Optimize Your Filtration Process

Roxia Smart Filtration includes complete evaluation of your filtration process. Roxia professionals will help you optimize the entire filtration process to reach targeted cake moisture and maximize filtering capacity.

Different alarm limits can be set to automatically notify you via email about changes in the process. Optionally, additional sensors and equipment can be added for more comprehensive analytics, observations of spare part replacement intervals and assistance with auxiliary synchronizing. The tool can even detect filtration problems originating from upstream and downstream of the filter.

## How Can You Benefit From Roxia Filtration Analysis?

- × Discover problems in drying by following abnormalities in air pressure curves. Efficiency in drying phase can be estimated from changes in pressure. Even possible cake cracking can be detected.
- × Detect cloth and membrane damages at early stage by analyzing water volume changes.
- × Ensure product quality by analyzing cake moisture or filtrate opacity and conductivity.
- × Discover indications of cloth damage and clogged grids and put a stop to decreased production, raised moisture and bending filter plates.
- × Determine the reasons for waiting times. Get a real-time insight into the process: how long are the waiting times, what are the filters waiting for (slurry, air, conveyor). Discover the real reasons for delays and instantly improve the filtration process.



Roxia troubleshooting tools and filtration analysis detect abnormalities in the process and automatically send alarms via email.



Key Performance Indicators - Tailored view according to user needs

## Complete Delivery: Filter and Auxiliaries

In addition to Roxia Tower Press, we also deliver complete solutions including the most important auxiliaries. All auxiliaries are selected to perfectly fit together. The goal is to ensure the best performance of the entire filtration operation.

Roxia TP filter

Slurry pumps

Filtrate pumps

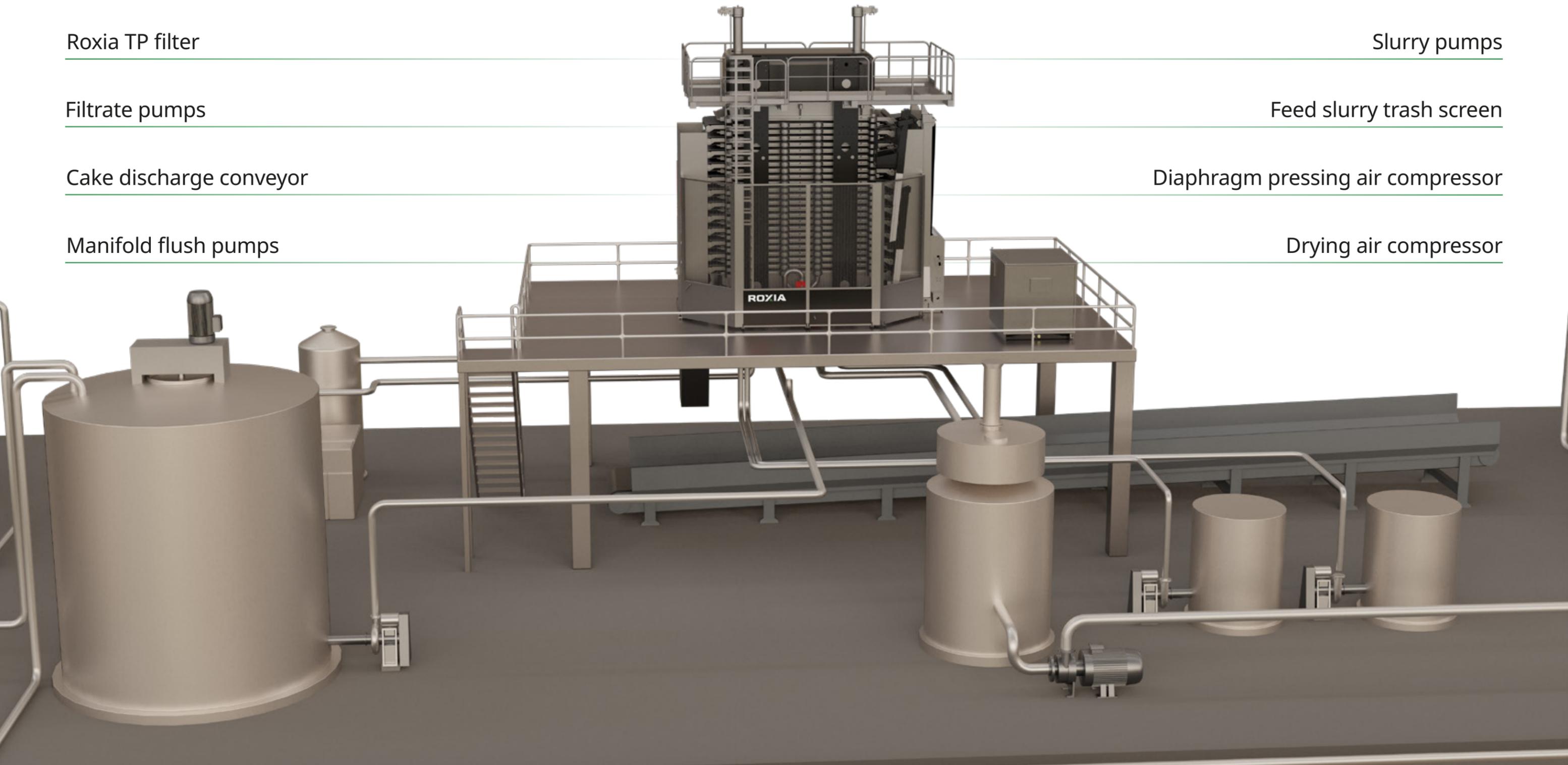
Feed slurry trash screen

Cake discharge conveyor

Diaphragm pressing air compressor

Manifold flush pumps

Drying air compressor



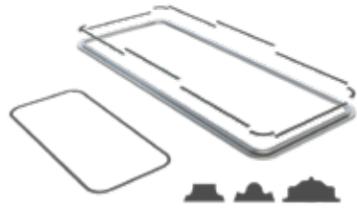


Plate seals



Mounting components for plate pack



Hydraulics



Hoses & collectors for plate pack

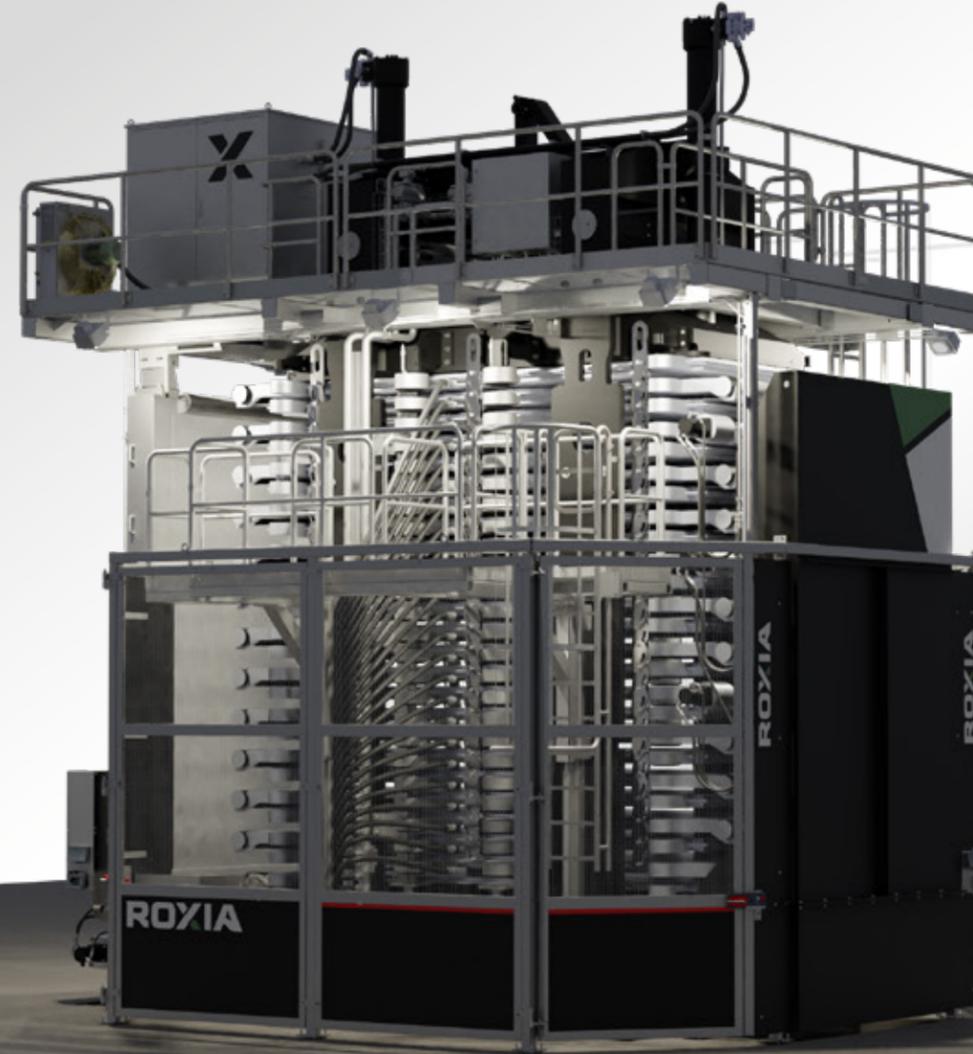


Rollers and scrapers



Filter cloths

## Genuine Roxia spare parts

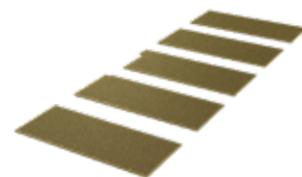


## Services & Service Agreements

- × Filtration testing and cycle optimization
- × Maintenance support
- × Modernizations, expansions and refurbishments
- × Shutdown services, installations and training



Filter plates and frames



Grids



Filtrate vats



Diaphragms



Pinch valves



Complete plate packs

## Performance – driven by people

Roxia delivers high-tech dewatering, industrial automation and environmental technologies. Specializing in mining, minerals, metallurgy, chemical, food and pharmaceutical industries, our team generates best performing solutions for each specific need.

We offer our support from Australia, Chile, China, Finland, Germany, Peru, Russia, South Africa, Sweden and the United States.



Tower Press Filter, Brochure - Roxia (EN, Imperial) / 12-2021

