

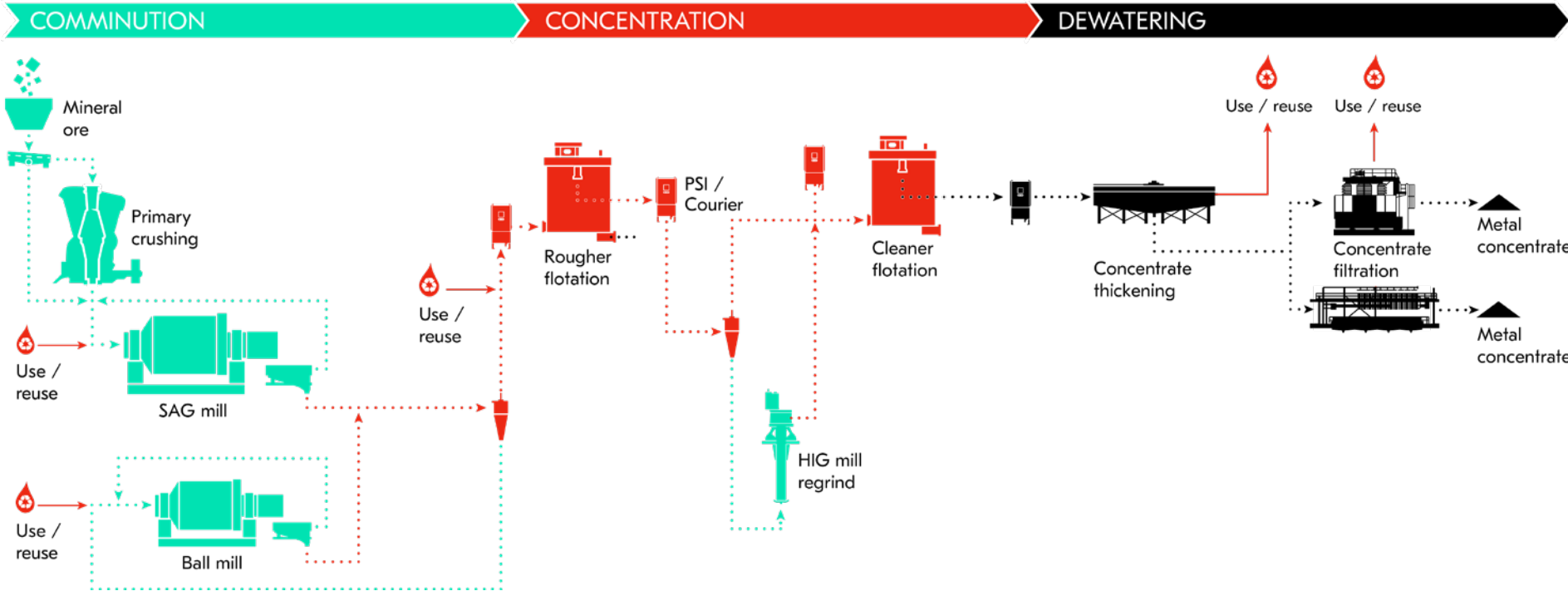
Metso

Leading sustainable dewatering innovations

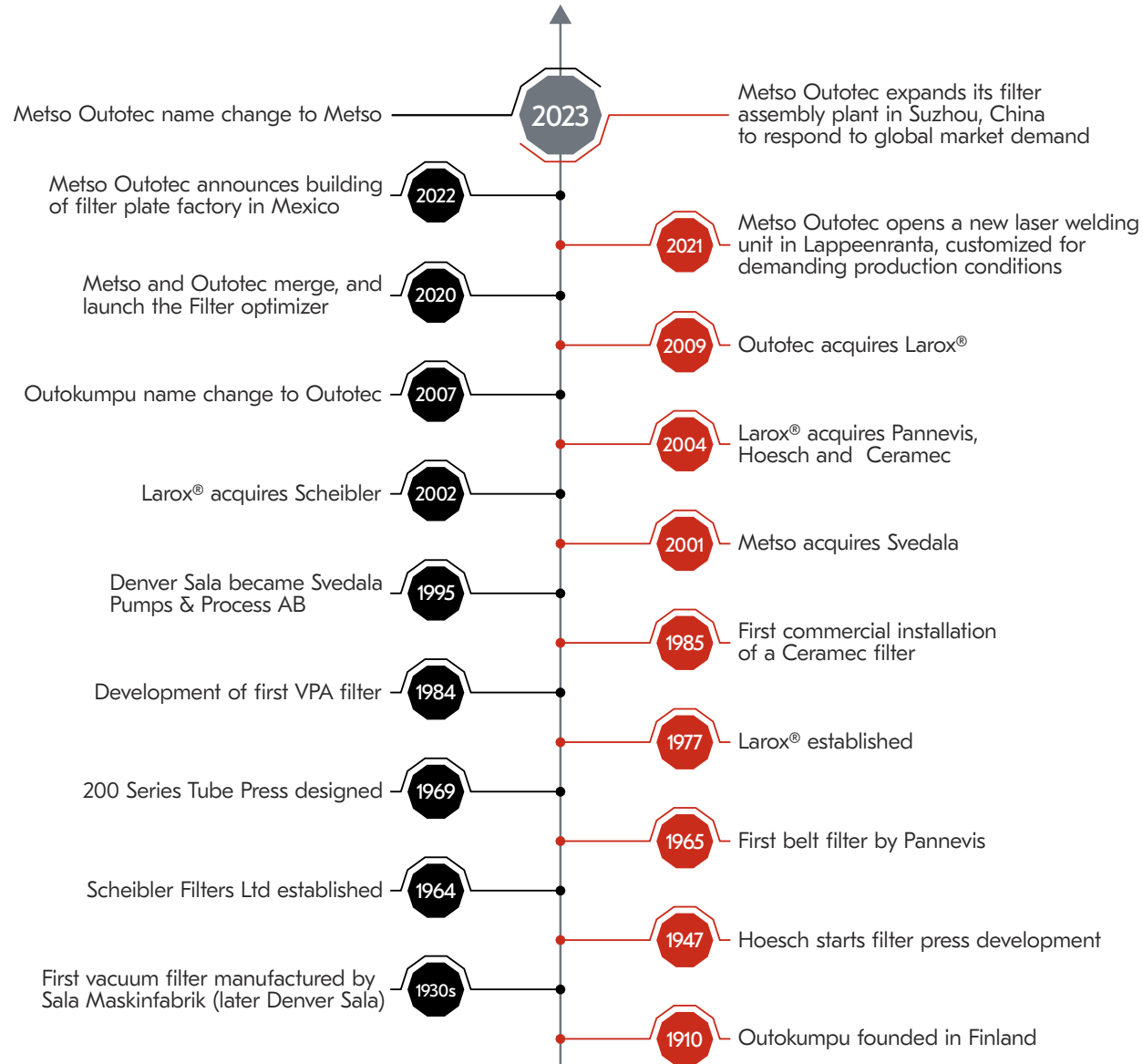
Concentrates filtration



Comminution to dewatering



Building our legacy



Key factors affecting filtration

Global mining is increasing the demands for filtration

- Declining head grades and high volumes
- Fine grinding required to liberate valuable metals
- Water recovery through low residual moisture in cake

Why choose Metso filtration?

Filtration Powerhouse



Most versatile product portfolio on the market for concentrates filtration

Pressure filtration to vacuum filtration



Different filtration technologies to meet your process requirements and budget

Horizontal and vertical plates



Full Life Cycle Services

From process optimization to spare parts, modernizations and technical services



Planet Positive portfolio

Enabling sustainable modern life

- All-encompassing approach to sustainability
- Covers the environmental, social and financial aspects of sustainability
- Planet Positive efforts enforce the company's purpose to enable sustainable modern life
- Planet Positive portfolio focuses on the most environmentally efficient technologies (>100) in the current portfolio
- Responds to customers' sustainability requirements related to energy or water efficiency, reduction of emissions, circularity and safety

Role of filtration in minerals processing



Pressure filtration



Larox® PF



Larox® PF-DS



Larox® FFP



VPA



Tube press



TPS



FP / FPS

Vacuum filtration



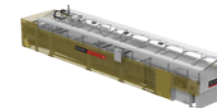
Larox® RT-GT



Larox® RT



CC



RB



SC

Polishing filtration



AC



DM



LSF

Industry's most comprehensive filtration portfolio

≈ 14,000 dewatering tests in database

> 5,000 filters delivered

Main locations in:

- Lappeenranta
- Suzhou
- Sala
- Turku

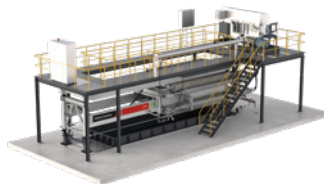
Portfolio

Concentrates filtration

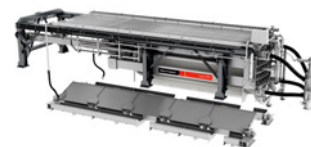
Larox® PF
Pressure filtration



VPA
Pressure filtration



Larox® FFP
Pressure filtration



FP
Pressure filtration



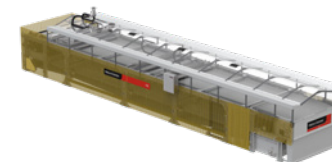
FPS
Pressure filtration



CC
Vacuum filters



RB
Vacuum filters



Larox[®] PF filter

Proven, flexible and reliable advanced filtration efficiency for a wide range of applications



Advanced filtration efficiency
Low energy and water consumption, highly efficient solids washing, dry filter cake with guaranteed discharge, clear filtrate, low footprint, high capacity.

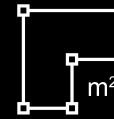
Process flexibility
Proven and reliable automatic filtration technology for consistent results in changing conditions, suitable for wide range of applications.

Ease of maintenance
Single cloth system, thorough cloth inspection can be done without equipment shutdown.

Key features



1-28
chambers installed



1,6 m² – 168 m²
filtration area



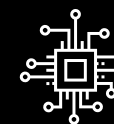
0,07 m³ – 9,9 m³
chamber volume



Up to 16 bars
operating pressure



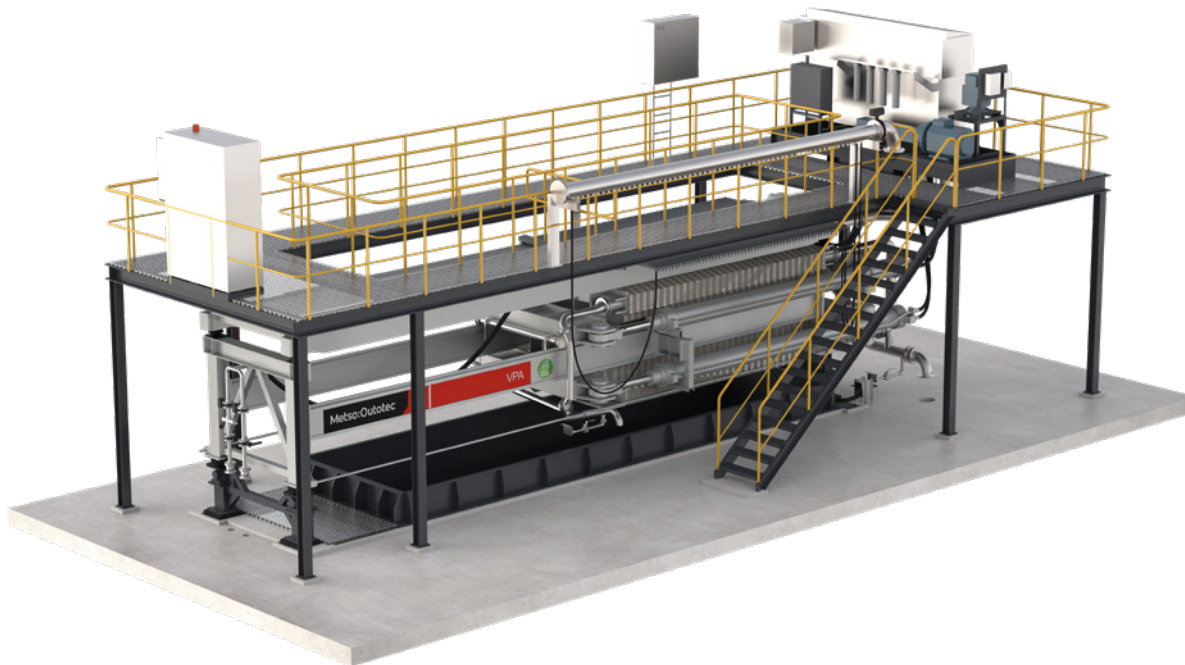
33, 45, 60 and
75 mm
chamber depth



Enhanced
automation system

VPA - Vertical plate pressure filter

Reliable and optimized dewatering solution with high volume processing for concentrate filtration



High capacity

Fast and reliable plate pack opening and closing, weighing system provides accurate product information and optimizes the filtration and drying steps.

Low operational costs

Developed for the Mining industry with a Heavy-Duty design, few moving parts, easy and quick filter cloth replacement, reduced compressed air consumption, etc.

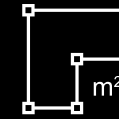
Environmentally friendly

Dry filtered concentrates are the most viable and long-term solution for concentrates, reduce volumes into dry filter cakes.

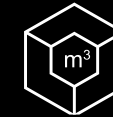
Key features



Up to 66 chambers installed



Up to 515 m² filtration area



Up to 13 m³ chamber volume



Up to 10 bars operating pressure



30, 40 or 50 mm chamber depth



Few moving parts

Larox[®] FFP filter

Reliable and optimized dewatering solution with high volume processing for concentrates applications



Automatic operation

Advanced control system, automatic process adjustments for consistent performance, remote control option.

High availability

Proven control system, designed for harsh conditions, ease of maintenance and easy access to all components, automatic adjustment to process changes.

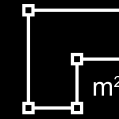
High capacity

Filtration area up to 1314 m² fast reliable pack opening, latest technology filter plates designed for mining applications and high throughput.

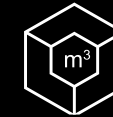
Key features



20 – 98 chambers installed



108 – 1314 m² filtration area



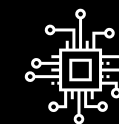
2 – 26.5 m³ chamber volume



Up to 12 bars operating pressure



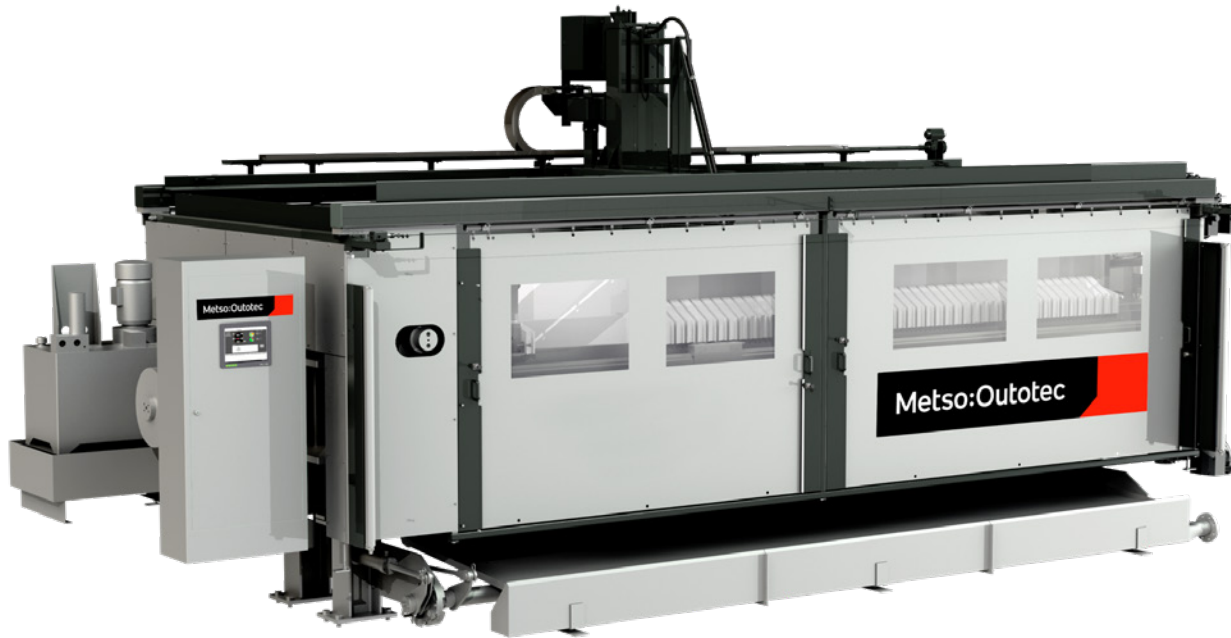
Variety of chamber depth



Advanced control system

FP filter press

Reliable dewatering solution for delivering and exceeding process performance targets



Sustainable productivity
Lower energy consumption during cake drying, reduces wash liquid.

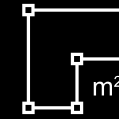
Highly customizable
Adapts to varying process conditions, adaptable to individual service conditions with a choice of standard equipment and optional accessories.

Safe operation
Designed to the latest Eurocode standards, offering high operator safety with perimeter protection and safety interlocks.

Key features



Up to 138 chambers installed



Up to 835 m² filtration area



Up to 20.8 m³ chamber volume



Up to 16 bars pressing pressure



40, 50, 60 mm chamber depth



Cost effective solution for short mine life

FPS filter

Standard filter press technology for safe and reliable operation for cost competitive dewatering applications



Safe and reliable operation
High quality filter plates, safety features (pull wire switch, light curtains, moveable or fixed splash guards), proven controls system.

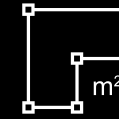
Standard design
Standard side beam membrane and chamber filter press, overhead beam model, multi-plate shifting and other options available, reduced CAPEX, shorter lead time.

High availability
Simple installation, operation and maintenance, improved maintenance with quick and easy access to all components, standard design for mining applications.

Key features



Up to 124 chambers installed



Up to 815 m² filtration area



Up to 14.7 m³ chamber volume



Up to 16 bars pressing pressure



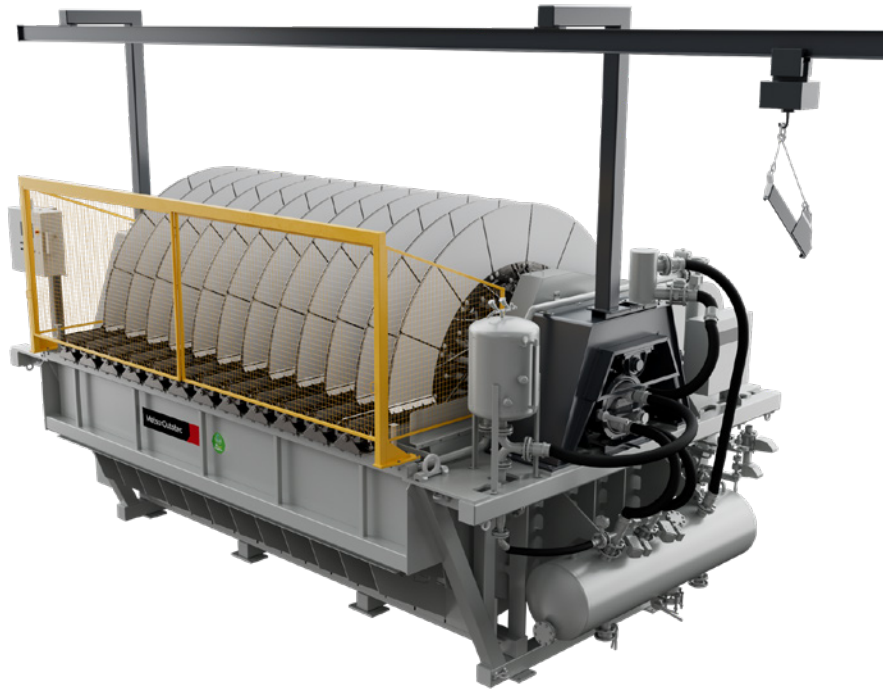
30, 40 mm chamber depth



Standard structures with short delivery time

CC filter

High availability and throughput solution boosting energy efficiency for difficult mining applications



High throughput

Latest technology filter plates (Hybrid CC filter plates) designed for mining conditions (harsh environments), improved mechanical design, Smart automation.

Energy efficiency

Low energy consumption filtration process, capillary action filter media.

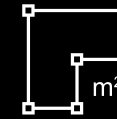
High availability

Simple and quick maintenance, continuous operations, simplicity for daily operations.

Key features



3,8 m
disc diameter



Up to 12 discs



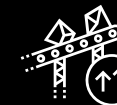
144 m²
filtration area



Near absolute
vacuum operating
pressure



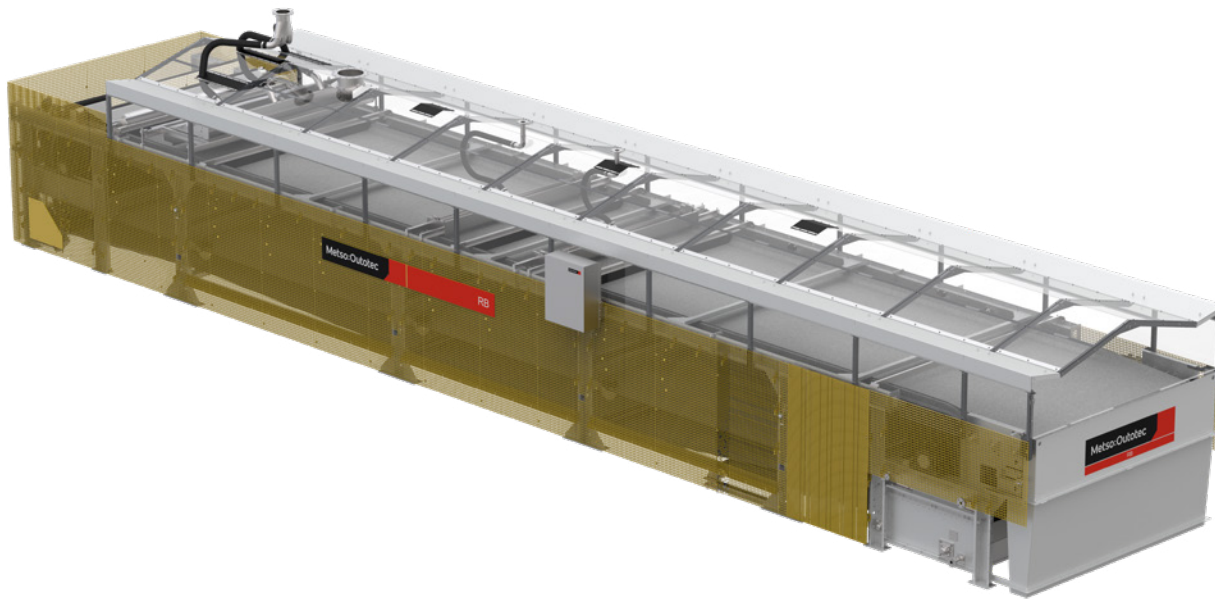
Lowest Energy
Consumption Filter



Typical process
sizing 1000 kg/m²

RB filter

Modular structural, robust and high-capacity design for superior filtration performance in concentrates applications



Modular structural design
Range of widths available, enhanced CAPEX efficiency with reduced downtime.

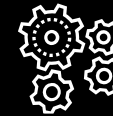
Superior filtration performance
Robust design for harsh environments in concentrates applications, flexible, simple and reliable operation, proven technology.

High capacity
Filtration area up to 170 m², continuous operation.

Key features



1.6 m, 3 m & 4.25 m filtration width



Up to 40 m Filtration length



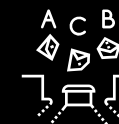
Up to 170 m² Filtration area



3 m, 4 m & 5 m Wide Modules



Advanced cake washing options

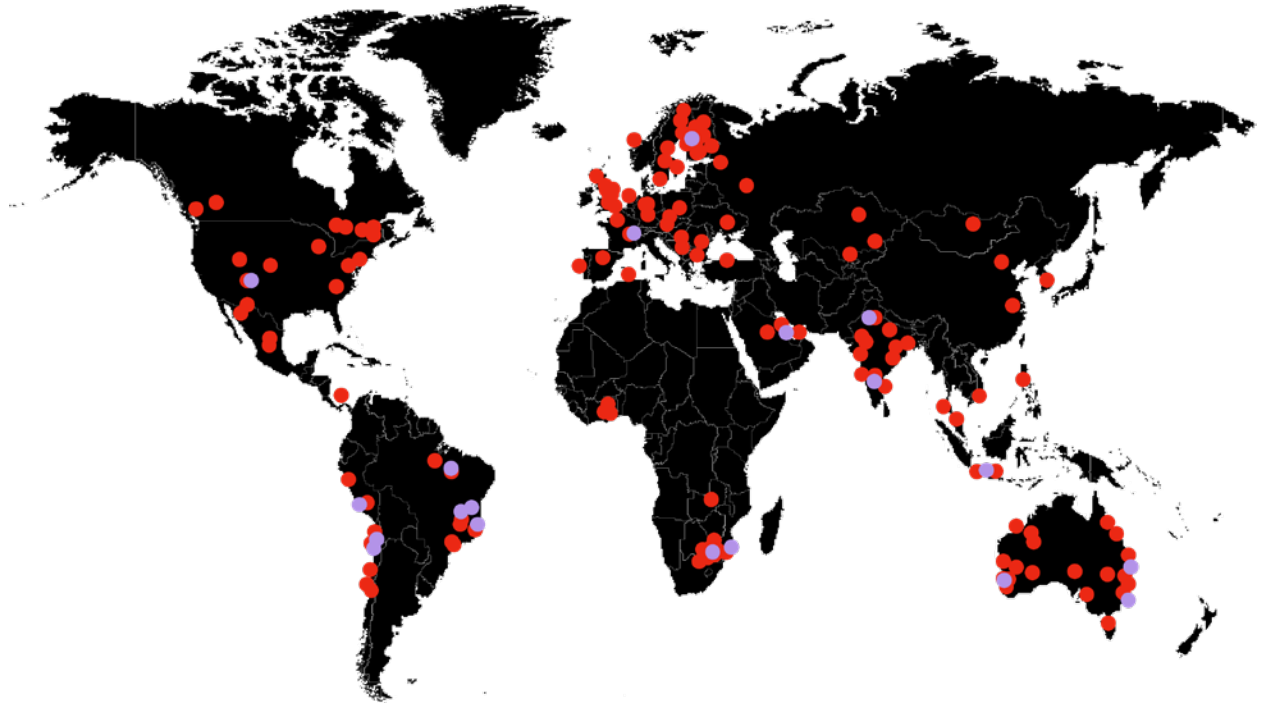


Large variety of applications

Industry-leading service expertise and global network

Our filtration services team strives to deliver:

- The best possible availability, performance and quality whilst optimizing costs
- To eliminate environmental and societal risks at our customer operations
- Safety and quality in everything we do from R&D and engineering to parts and services



● Service locations
● Repair centers

Whatever conditions you find yourself in, our goal is to help you strengthen your operations and help you succeed through:



Improved performance



Supreme quality



Maximum availability

~5,000

A world-class team of service experts

~140

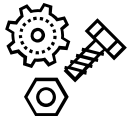
Service locations

~3

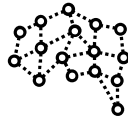
Performance Centers

Get the most out of your filtration life cycle

Our comprehensive filtration service portfolio is supported by deep technical knowledge, experienced people, high-quality OEM parts and specialized tools to maximize profitability and performance throughout the plant life cycle.



Spare & wear parts



Training services



Maintenance,
shutdowns & repairs



Process optimization &
connected services



Life cycle services



Modernizations,
upgrades & retrofits

Reliability when you need it to achieve targets, quality and capacity

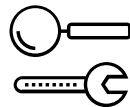
Maintenance, shutdowns & repairs

Proper maintenance and repairs can reduce the signs of aging to ensure that your production goals are met.

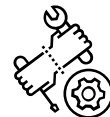
We focus on your specific priorities, bringing together safety, planning, documentation, inventory, staffing and reporting requirements.



Field services



Filtration
inspections



Installation &
commissioning



Maintenance & repairs



Life cycle services

Take your filtration process to the next level

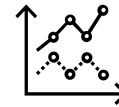
We focus on integrating performance across cost and risk while focusing on meeting customer expectations through the continuous improvement of the operational processes.



Process & laboratory testing



Connected services



Metrics monitoring



Process optimizers

Drive long-term performance optimization and continuous improvement

Life Cycle Services for filters

Achieving optimal filtration results require filters to be in excellent mechanical condition and balanced with optimized maintenance and operations.

Our programs integrate service elements into simple, comprehensive, long-term agreements targeting the high overall equipment efficiency of the filter.

Maintenance
& technology
experts

Supply &
financial
capacity

Full range of
OEM parts and
services

Various
packages
tailored to
needs

Our comprehensive filtration service portfolio is supported by deep technical knowledge, experienced people, high-quality OEM parts and specialized tools to maximize profitability and performance throughout the plant life cycle.



Core service elements



Spare parts and repairs



Maintenance and reliability



Connected equipment and process optimization



Maximize filter reliability & production



Highest end-product quality



Lowest sustainable costs & quick ROI

Add life, capacity & efficiency by updating to the latest technology

OEM Spare parts

All our parts and components are designed, tested and manufactured to match the original specifications to ensure maximum quality.

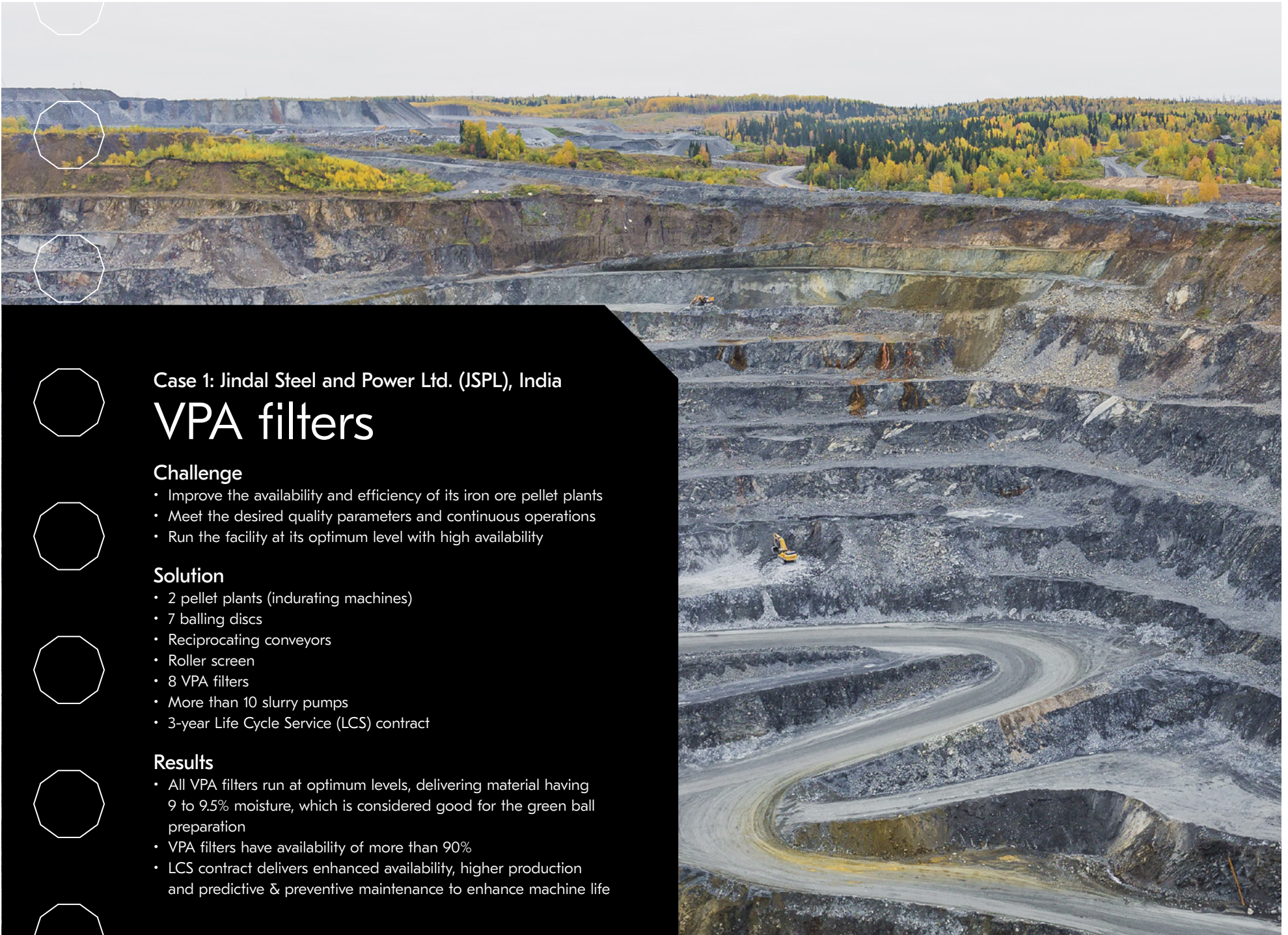
From installation to eventual replacement, our parts perform optimally, resulting in increased uptime, higher reliability, lower maintenance costs and improved safety.

Modernizations, upgrades & retrofits

Modernizing or upgrading equipment is a cost-effective and sustainable manner to update aging equipment to the latest more efficient technology and increase capacity to continue production adding to the life of your plant and profitability.

Equipment is refurbished using OEM parts to ensure optimal restoration providing an efficient long-term solution.





Case 1: Jindal Steel and Power Ltd. (JSPL), India

VPA filters

Challenge

- Improve the availability and efficiency of its iron ore pellet plants
- Meet the desired quality parameters and continuous operations
- Run the facility at its optimum level with high availability

Solution

- 2 pellet plants (indurating machines)
- 7 balling discs
- Reciprocating conveyors
- Roller screen
- 8 VPA filters
- More than 10 slurry pumps
- 3-year Life Cycle Service (LCS) contract

Results

- All VPA filters run at optimum levels, delivering material having 9 to 9.5% moisture, which is considered good for the green ball preparation
- VPA filters have availability of more than 90%
- LCS contract delivers enhanced availability, higher production and predictive & preventive maintenance to enhance machine life



Case 2: Copper (Cu) – Concentrate Filtration

Larox® PF filters

Challenge

- Improve the performance of concentrate filtration process step
- Meet concentrate TML (Transportable Moisture Limit) directly by filters
- Eliminate additional thermal dryer before smelting or transportation

Solution

- Larox® PF filters

Results

- Larox® PF's fully automatic operation brings high availability and efficiency to the filtration process
- Delivers low 8 – 9.5% residual concentrate cake moisture and eliminate additional thermal drying need

