



# SEPARATION EXPERTISE FOR YOUR SUCCESS IN THE IRON ORE INDUSTRY

ASK YOUR SEPARATION SPECIALIST

**ANDRITZ**

ENGINEERED SUCCESS





**YOUR**  
IDEAS

**YOUR**  
NEEDS

**YOUR**  
BUSINESS

**YOUR**  
SEPARATION  
SPECIALIST

# How can we make your iron ore production more profitable?

How will your business continue to grow despite changing iron ore prices? What equipment will give you reliable performance with minimal residual moisture? What will it take to boost capacity at the lowest possible cost?

## A SOLUTION TO IMPROVE EVERY PROCESS

Having served large producers like Jindal along with smaller operators such as CML Metals and Stoilensky GOK, we know the complex challenges you face. From difficult ore bodies to boosting availability, each solution demands a unique level of expertise.

## YOUR SEPARATION SPECIALIST

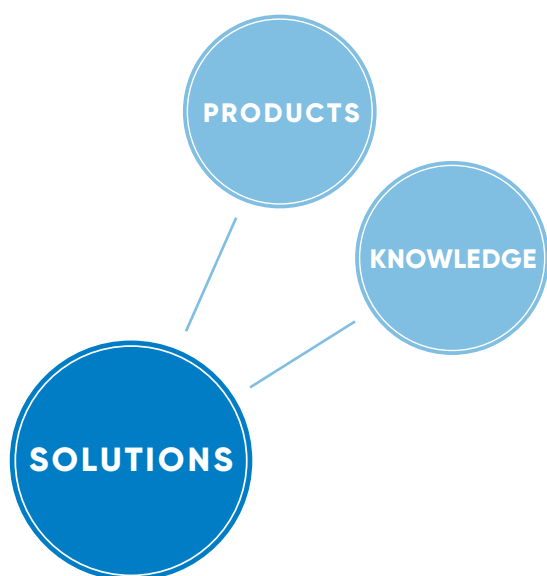
For all customers, it's just a matter of reducing investment and operating costs for high-throughput applications. Other times, the aim is to reduce wastewater from tailings treatment in remote deserts. Whatever the situation, the core challenge is to find the most efficient, reliable solution for your separation needs.

## YOUR PARTNER IN INNOVATION

To many customers, we're known as the partner of choice for high-capacity concentrate dewatering with the lowest operating costs. In one case, this meant increasing throughput to more than 500 t/h per machine, with half the total footprint of traditional solutions. In a different brownfield project, the result was the world's largest hyperbaric disc filter in iron ore production, with a guaranteed residual moisture content of 7% requested at high throughput and clear filtrate.

## RESOURCES YOU CAN COUNT ON

Whether it's thickening or filtration, concentrate or tailings, the list of success stories goes on and on. With thousands of professionals and more than one hundred iron ore solutions in operation, every new challenge is a welcome opportunity. A chance to put our experience, financial strength, and technical resources to work for you.



# Meeting your needs with leading iron ore separation technologies

Changing ore grades. Unpredictable prices. Higher throughputs. In many ways, the need to improve efficiency in iron ore dewatering has never been more intense. Our approach? To surround you with the industry's most comprehensive range of customized separation services and solutions.

When working to meet your demands, our focus is clear: Give us your biggest challenges in concentrate and tailings treatment, and we'll commit our full range of services and solutions to solving them.

## IT ALL STARTS WITH YOUR NEEDS

Our aim is to provide you with exactly the right equipment and services for your needs. And it all starts by addressing your process requirements, including consulting, material tests, and feasibility studies. Once you've chosen the right solution, we work closely together to design, service, and optimize its performance and availability.

## LEADER IN HIGH-THROUGHPUT TECHNOLOGIES

Over the years we've earned a growing reputation for developing innovative new ways to boost operating margins for an array of high-throughput applications. Our lowest operating costs have provided payback periods in the order of a couple of months.

## APPLICATION-SPECIFIC SOLUTIONS

To boost your bottom line In fact, we're constantly finding new ways to improve availability, boost production rates, and minimize maintenance. Now and for years to come. Whether it's reducing the amount of filter cloth and spare parts, cutting equipment footprints by half, or ensuring fully automated operations, even the smallest details can make a significant difference to your bottom line.

## UNMATCHED EXPERIENCE IN SEPARATION

More than just technical innovations, these improvements have helped us to meet the growing challenges of a fast-changing global industry. For more than 150 years, our group has steadily grown through acquisitions of well-known suppliers such as Bird, KHD Humboldt Wedag, Krauss-Maffei centrifuges, dryers, and filters. The result is an unparalleled level of expertise in separation, together with a complete range of separation systems for the most demanding dewatering applications.

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29,000 / employees in  
ANDRITZ GROUP

280 / ANDRITZ GROUP  
production sites,  
service and sales  
companies





# Your separation specialist

As the world's leading separation specialist, we are committed to delivering the right knowledge, services, and solutions for any separation challenge.

## LEADING HIGH-THROUGHPUT TECHNOLOGIES

Reducing TCO by up to 50%.

## LOCAL SUPPORT WORLDWIDE

Strategically positioned warehouses with OEM replacement parts, engineered wear parts (consumables), and field service.

## FEASIBILITY STUDIES

Process simulations and ROI calculations.

## UPGRADES AND PROCESS OPTIMIZATION

Improvements in performance and safety of existing equipment to extend the productive life.

## SUSTAINABLE TAILINGS TREATMENT

Extracting more value from waste streams through sustainable, cost-effective water recovery.

## CONSULTING

Providing customer-oriented process solutions.

## TECHNICAL SUPPORT

Remote diagnostics to on-site presence to troubleshoot and fine-tune equipment performance.

## AUTOMATION

Design, supply, and installation of electrical equipment, controls, and instrumentation solutions.

## INNOVATION AND R&D

Innovative filtration technology ensuring highest throughputs with lowest residual moisture at lowest costs.

## BROAD PORTFOLIO

Full range of solid/liquid separation equipment (thickening and filtration for concentrate and tailings dewatering).

40 / countries

2,000 / solid/liquid separation specialists

>100 / references in iron ore applications

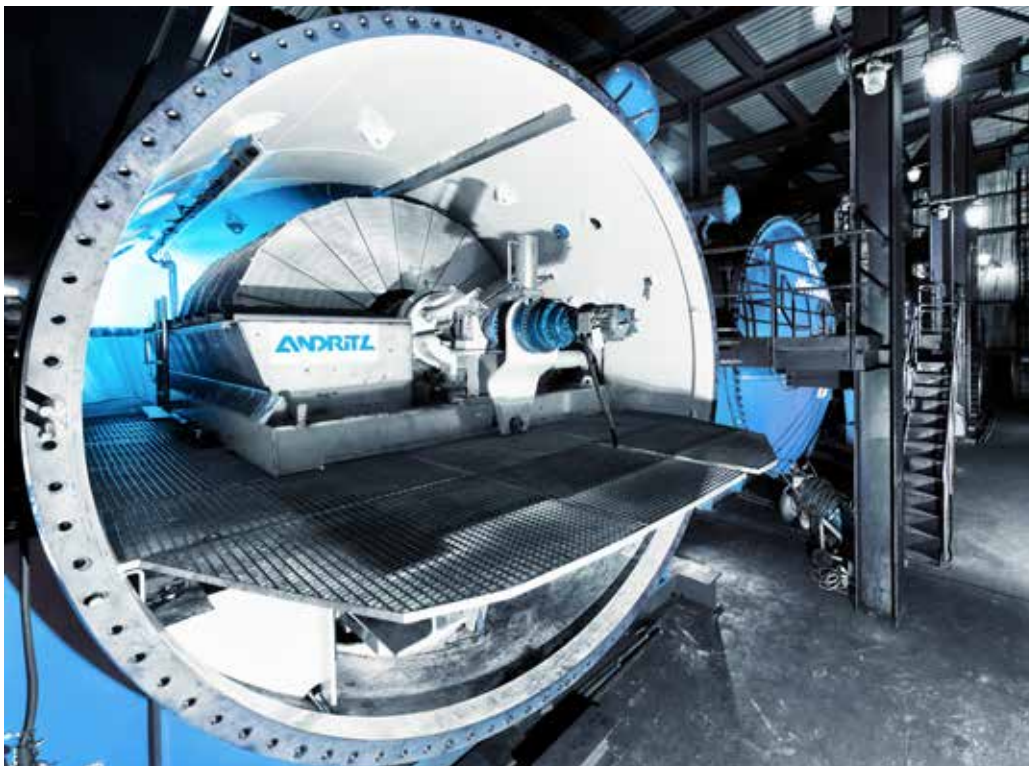


# Where we fit into your production line

When it comes to thickening and filtration in the iron ore industry, getting the right end product at the right cost is no simple task. Whether it's magnetite or hematite, goethite, limonite, or siderite, all types of rock demand their own approach. Thanks to our comprehensive range of separation solutions, we're able to supply complete dewatering plants.

In designing a new beneficiation plant or extension and modernization, our engineers draw on decades of experience from all types of mechanical and thermal systems. They can also provide and optimize multiple technologies for specific applications – from belt and filter presses to vacuum belt, drum, and disc filters, and even thickeners and plants for water recovery.

When the highest volumes are critical, our innovative hyperbaric disc filter generates extremely high throughputs at the low specific residual moisture content and clear filtrate needed for further processing – all at substantially lower operating costs. Just one example of how we help you streamline your production, even in the most demanding applications.



ANDRITZ hyperbaric disc filter

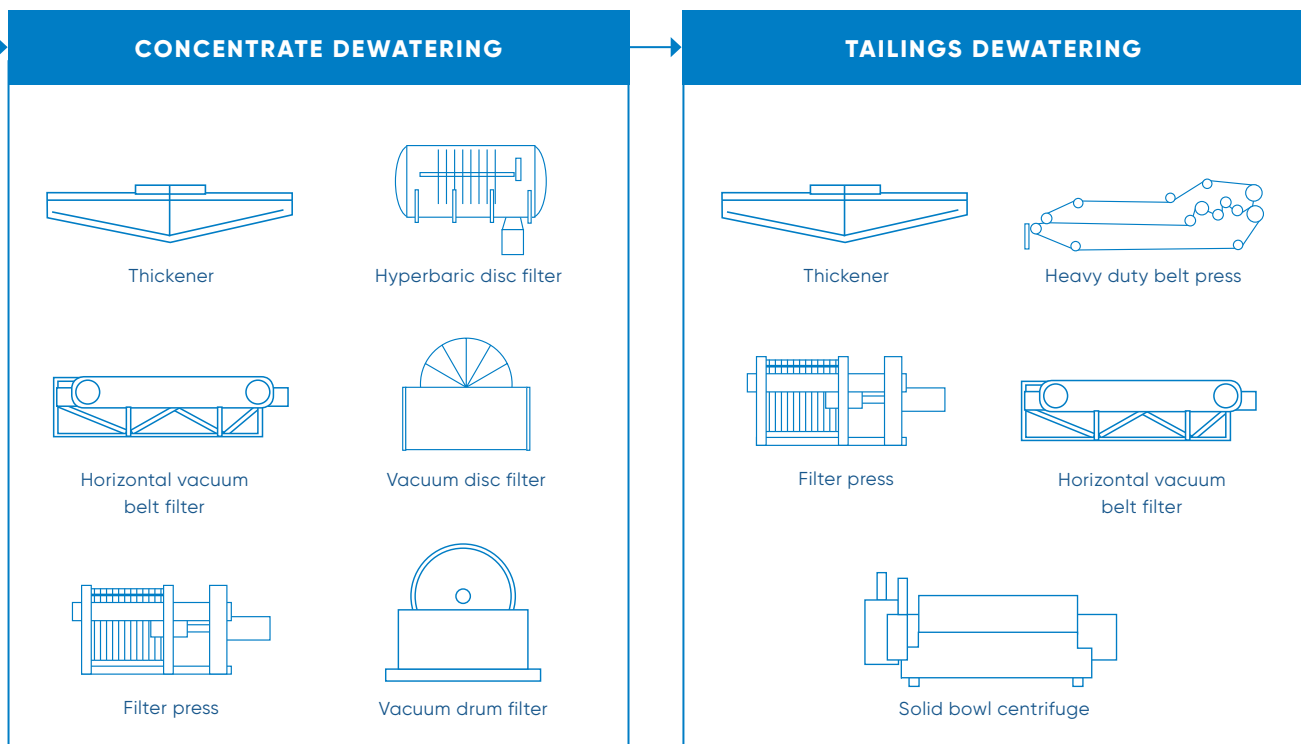


# How can we boost your capacity?

As the demand for iron ore rises, so does the need for higher capacities. Maybe it's processing huge volumes of low-grade ore with minimal residual moisture. Or doubling your throughput with a high-capacity filter press. In either case, we have an innovative solution to make it both possible and profitable.



ANDRITZ filter press



# Concentrate dewatering: Higher throughput, lower cost

Whether you're producing iron ore pellets, filter cakes, or feed for other processes, reliability is everything. In addition to consistently high throughputs with specific lowest moisture content, you need continuous operation around the clock, with no downtime.

Since nearly all of our customers are in remote locations where personnel and resources are scarce, there's no room for chance. Without exception, they need a solution that's innovative enough to increase margins from the start, and robust enough to keep them that way for years to come.

## PROFITABLE HIGH-CAPACITY FILTRATION

Thanks to the reliable performance of our filtration solutions, we can help to reduce everything from energy consumption and filter cloth to spares and personnel costs, day in and day out. Our hyperbaric disc filter, for example, is capable of capacities of 500 t/h with filtration of very fine material – all in one dependable, fully automated machine. The end result? A

clear filtrate, residual moisture of as little as 6%, and up to 50% in reduced total cost of ownership.

## REDUCING YOUR FOOTPRINT IN THICKENING

For many applications, both water and space are also in short supply. This is why we've constantly reduced the radius of our thickeners while increasing their throughput by up to 18 times. Their size, design and ancillaries are optimized for your specific application, either to maximize throughput or minimize flocculant consumption and clear underflow.





**>500 t/h** / throughput  
per unit

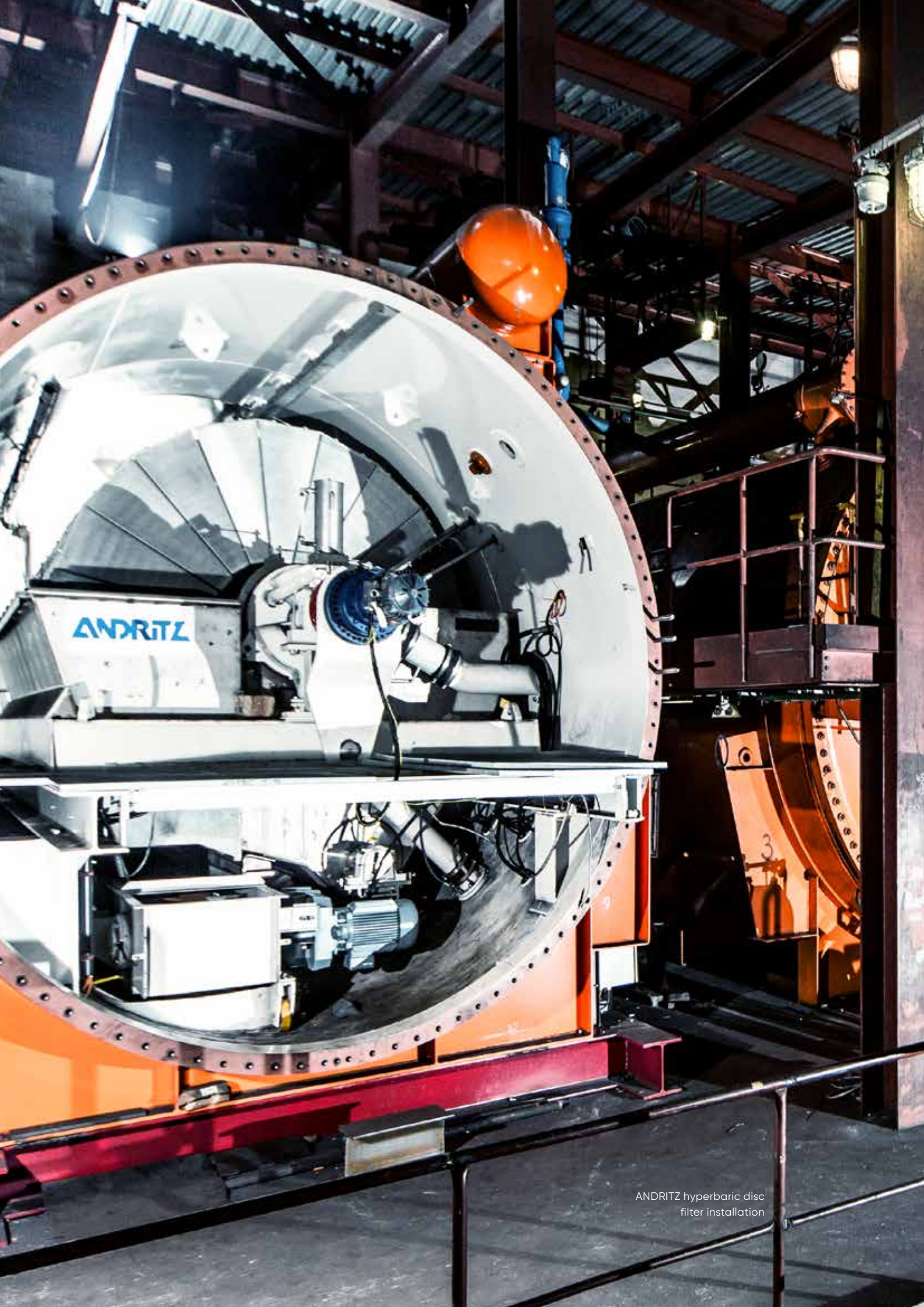
up to  
**500** / reduced total cost  
of operation

**30%** / increased filter  
cloth lifetime

ANDRITZ disc filter







ANDRITZ

ANDRITZ hyperbaric disc  
filter installation





# Twice the capacity, half the footprint: Why it pays to think big

Over 1,000 tons per hour. 8–9% residual moisture. At the lowest possible cost. In 2011, a large Indian iron ore producer named Jindal had reached a turning point. To meet these demands, a more innovative approach was necessary. One that would enable continuous operation, reduced operating costs, and more than twice the throughput per unit compared with conventional solutions.

## DOING MORE WITH FEWER UNITS

For Jindal, it was not just the limitations of conventional technologies that posed a challenge. With difficult hematite iron ore, it was also the very fine particle size distribution and high Blaine number that made vacuum filtration economically unsustainable. A throughput requirement as ambitious as theirs, it was calculated, would demand as many as 8–10 filter presses – along with the added buffer capacity, energy costs, and machine footprint this would entail.

## A BOOST IN CAPACITY AND EFFICIENCY

Instead, the customer chose to install four continuously operating hyperbaric disc filters from ANDRITZ, thereby dramatically reducing energy costs and excess buffer capacity of pumps and conveying systems. Other expenses, such as for up- and downstream interfaces, were also reduced – in this case by up to 30%. In total, it all amounted to a solution so compact, efficient, and reliable that two additional hyperbaric disc filters have since been commissioned to make the production site more profitable than ever before.

**„With just four hyperbaric disc filters from ANDRITZ we can handle more than 1,000 tons of dry solids per hour. No other supplier could match these volumes with such low installation and maintenance costs.“**

JINDAL, INDIA

# Getting more from the toughest ore







It's no secret. Demand for pellets is high, but ore body grades are low. As these two challenges converge, only the most robust fine particle dewatering solutions will do.

This is why, for decades, we've tested, optimized, and refined our separation services and solutions for some of the world's most difficult ore bodies. As at one site in Sweden, where four ANDRITZ disc filters have delivered on their promises, based on lab tests, every day of every year – since 1981.

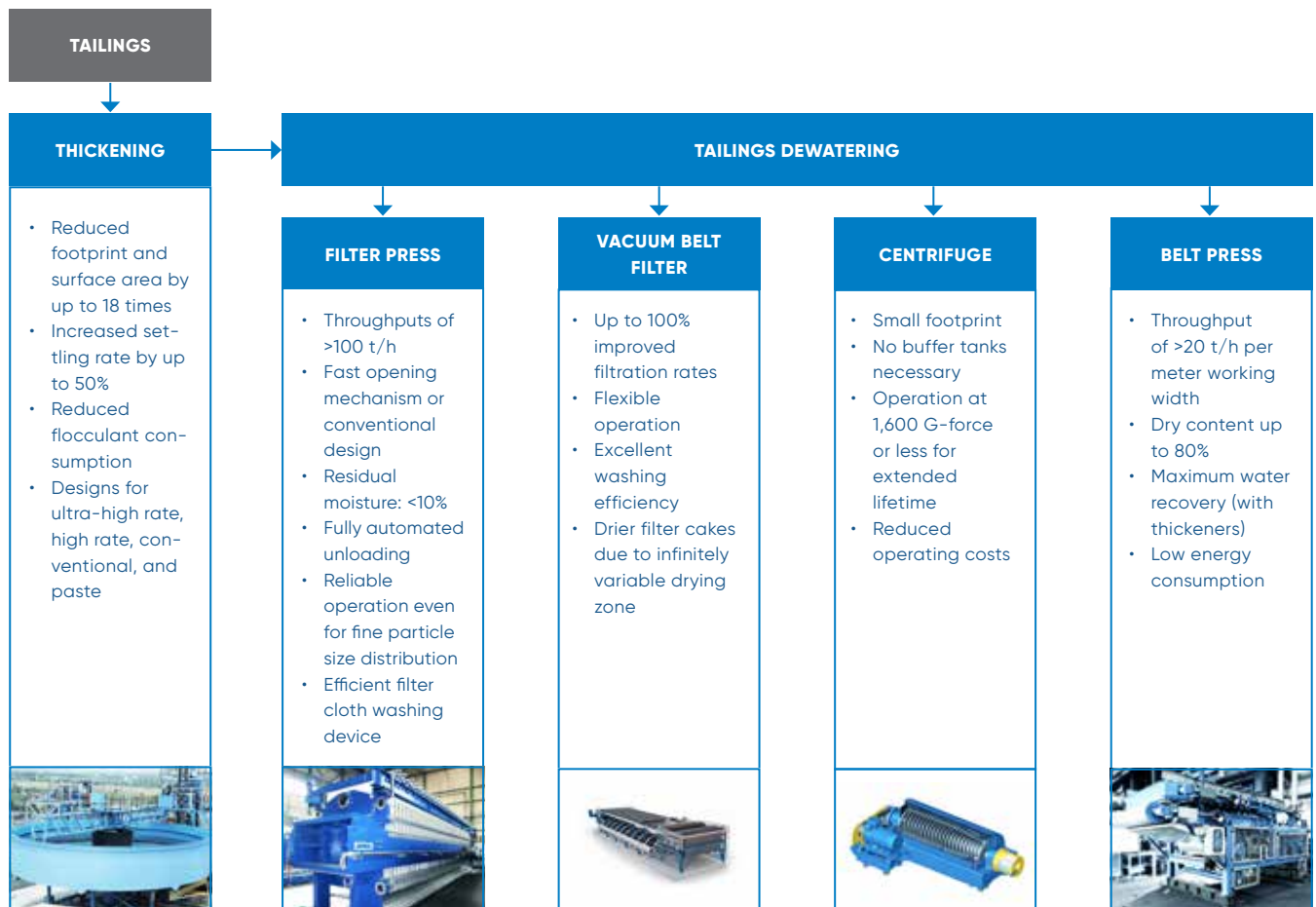
On-site they call our solution "amazingly trouble-free". We call it decades of reliable performance. Guaranteed.

# Tailings dewatering: Creating more value from waste

Wherever water or tailing ponds are scarce, it's crucial to recover as much water as possible before recirculation. It all comes down to making the most of your waste streams with the most efficient solutions for thickening, dewatering, and disposal.

Thanks in part to our many years of experience in municipal and industrial waste treatment, we're no strangers to extracting value from waste water. In iron ore production, we've refined our solutions to produce drier tailings reliably and efficiently and allow you to conserve both water and transportation costs.

For example, we can supply an optimized horizontal vacuum belt filter for coarse materials. Or a fully automated centrifuge where space is limited. Depending on your requirements for volume, cake dryness, regulatory standards and more, our tailings dewatering solutions make it possible to cut operating costs by reducing volume by more than 80%.





**100,000 h** / operating time  
per thickener

**>80%** / volume  
reduction

**>20 t/h** / throughput per  
meter working  
width per unit

„A customer in South Africa needed to dewater 840 t/h of magnetite with 7% cake moisture content. We were the only supplier who could achieve this, and with an impressive 98% availability.“

ANDRITZ SEPARATION MANAGEMENT





**How can you  
dewater more ore  
with less impact?**







The PMC magnetite dewatering plant lies just outside one of the world's most biodiverse national parks. But excess pond usage had resulted in oversaturation, 20% longer drying times, and increased environmental risks. Our solution? A new turnkey dewatering plant with three continuously operating, horizontal vacuum belt filters.

The result? More capacity, less downtime, and more efficient use of recycled filtration water. Or to put it simply: more iron ore with less environmental impact.

# Intelligence for machine and process control

## Metris addIQ control systems

With Metris addIQ, you have a well-proven, intelligent control solution for industrial processes and machines. Our solid/liquid separation specialists use their in-depth expertise to provide scalable solutions that are individually tailored to regional and application requirements. Whether you're automating new equipment or upgrading to extend the lifecycle of existing systems, we find the ideal solution for you.

Our tailored turnkey systems from a single supplier can improve entire plants or individual machines. By providing state-of-the-art automation technologies and digitalization, we ensure best-in-class performance. Automating machine and plant equipment measurably reduces gaps in many different production process steps. By using automation from ANDRITZ, you can reduce downtime thanks to features such as predictive analysis that allow you to optimize productivity.

Metris addIQ covers all levels of automation, starting at basic automation (machine, process, and plant control), to upgrades, and add-ons for process optimization. Together, you have a full range of optimized solutions that help reduce maintenance efforts and ensure preventive service for your machines and plants. These are all delivered from a single source and always individually tailored to your business demands. addIQ control systems are part of Metris, the ANDRITZ brand for digital solutions.

ANDRITZ offers a broad and constantly growing range of innovative products and services in the industrial digitalization sector under the brand name Metris, helping customers to enhance plant efficiency and profitability, optimize the use of resources, achieve constant and highest product quality, reduce production downtime, and maximize user-friendliness.





# Your full-service provider

With ANDRITZ, you gain access to one of the world's largest OEM manufacturers for solid/liquid separation systems, including such well-known brands as 3Sys Technologies, Bird, Delkor Capital Equipment (Pty) Ltd., Escher Wyss dryers, Frautech, Guinard Centrifugation, KHD Humboldt Wedag, Krauss-Maffei centrifuges, dryers, and filters, Lenser, Netzsch Filtration, Rittershaus & Blecher, Royal GMF Gouda, Sprout Bauer, and Vandebroek.

Whether you need spare parts, rentals, local service, repairs, upgrades, or modernization of your equipment, ANDRITZ is your true full-service provider. From initial consulting through to service agreements, process optimization, and training programs, we are always looking for ways to minimize downtime and increase predictability in operations while raising your overall production efficiency. Wherever you operate, our network of 550 service specialists and global service centers ensures we'll always be there to support you for many life cycles to come. Let's sit down and see how we could take your operations to the next level.



#### LOCAL SUPPORT

Responsive local service centers and field service technicians



#### REPAIRS & UPGRADES

Optimization of machine and process performance, repair work, retrofitting, and modernization



#### SECOND-HAND & RENTALS

Certified second-hand and rental machines



#### TRAINING

Operator training and tailored seminars for operating and maintenance personnel



#### OEM SPARE PARTS

Filter cloths, spare and wear parts from OEMs or with OEM level quality, all readily available



#### SERVICE AGREEMENTS

Preventive maintenance, contracts for spare parts, maintenance, inspections, repairs, upgrades, operation, and equipment monitoring



#### PROCESS OPTIMIZATION

Automation tools and process expertise to boost your profit



#### LAB AND ON-SITE TESTS

Lab and testing capabilities for process optimization and machine upgrades





## WHAT'S YOUR SEPARATION CHALLENGE?

ANDRITZ Separation is the world's leading separation specialist with the broadest technology portfolio and more than 2,000 specialists in 40 countries. For more than 150 years, we have been a driving force in the evolution of separation solutions and services for industries ranging from environment to food, chemicals, and mining & minerals. As the OEM for many of the world's leading brands, we have the solutions and services to transform your business to meet tomorrow's changing demands – wherever you are and whatever your separation challenge. **Ask your separation specialist!**

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# ANDRITZ

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