



SEPARATION

# MAXIMUM DEWATERING OF FINE COAL PARTICLES

STARDISC VACUUM DISC FILTER

**ANDRITZ**

ENGINEERED SUCCESS



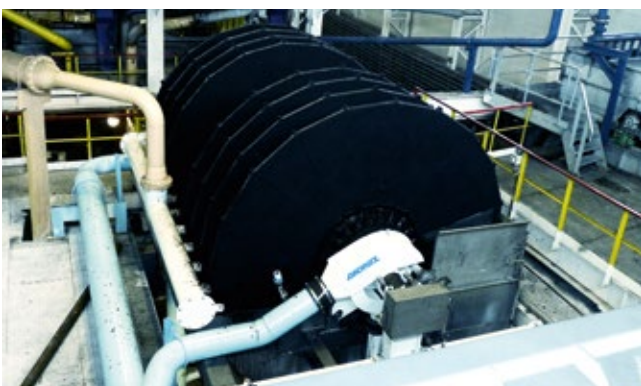
# Maximum dewatering of fine coal particles

As a result of efforts to increase yield, improve product quality, maximize water recovery, and minimize environmental impact, modern coal beneficiation plants are becoming more and more complex. This typically means more separation stages, smaller particle sizes, higher product dryness without thermal drying, and higher recycling rates for process water. The STARDISC vacuum disc filter from ANDRITZ helps to save costs and to increase profits by optimizing the process and product quality, enabling water and energy savings, and minimizing emissions.

Because finer coal particles generally result in a larger overall surface area than large particles, it is essential to remove large amounts of surface moisture. Vacuum disc filtration is the preferred technology to realize best available footprints and reduce investment costs. This means a maximum of filtration area in the smallest available space.

With its STARDISC vacuum disc filter, ANDRITZ offers an efficient solution that fulfills any filtration task and ensures reliable and economic performance. Due to its modularity, it can be customized easily to suit individual customer demands and throughputs. The disc filter separates even the finest grain suspensions. For reliable and constant filtration results, the fine particles in the suspension must be evenly distributed. The specially designed trough with an integrated agitator prevents sedimentation and generates the turbulence needed.

Today, our customers can profit from our more than 100 years of experience with over 550 vacuum disc filter installations worldwide – including over 325 units for coal – a track record that not only underscores our status as the global separation specialist but also as a strong partner for the international coal market.



STARDISC operating in coal dewatering

## SPECIAL COAL FEATURES

- Filter discs with 20 segments each
- Welded segment design made of perforated stainless steel with low weight for easy maintenance
- Filter trough with a submersion depth of up to 45% with integrated agitator
- Trapezoidal filtrate collection pipes made of stainless steel are arranged externally to the shaft, with easy replacement guaranteed
- Efficient snap-blow cake discharge
- Filter bag cleaning
- Central lubrication system
- Separable control disc and seal disc for easy disassembly and fast replacement

## APPLICATION

- Fine coal dewatering

## PROCESSING PARAMETERS

Filter area	60–247 m <sup>2</sup>
Average particle size	1–500 µm
Max. throughput/ machine	Over 100 t dry solids/h
Minimum residual surface moisture	18–20%
Minimum solids load in filtrate	<3 g/l

## MACHINE DESIGN

Our design is typically based on using stainless steel for all components that come into direct contact with the suspension. The ultra-flat stainless steel cell design guarantees lowest system volumes. It increases the throughput and also ensures perfect cake discharge at top filter speed. For finest coal particles, our disc filter is also available in hyperbaric design (HBF). Depending on particle size distribution (PSD) and ash content, the separation specialists from ANDRITZ will provide the right choice of equipment with the proper sizing.

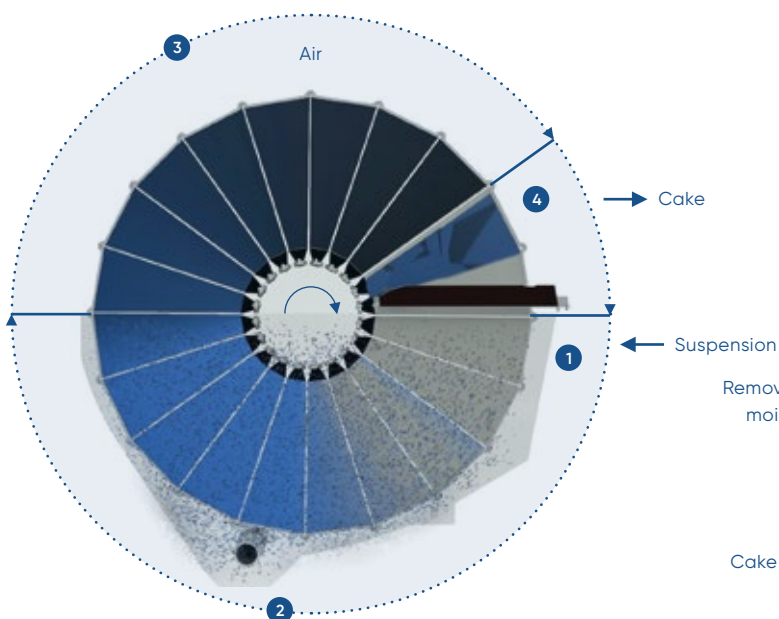
## OPERATING PRINCIPLE

The suspension is fed continuously into the trough. In combination with a specially designed agitator, the optimized trough geometry prevents particles from settling and generates an even particle distribution in the suspension. The segment-shaped filter cells, each of which is covered with a filter bag, are vacuumized. The filtrate is discharged through the compact piping system, which is designed to

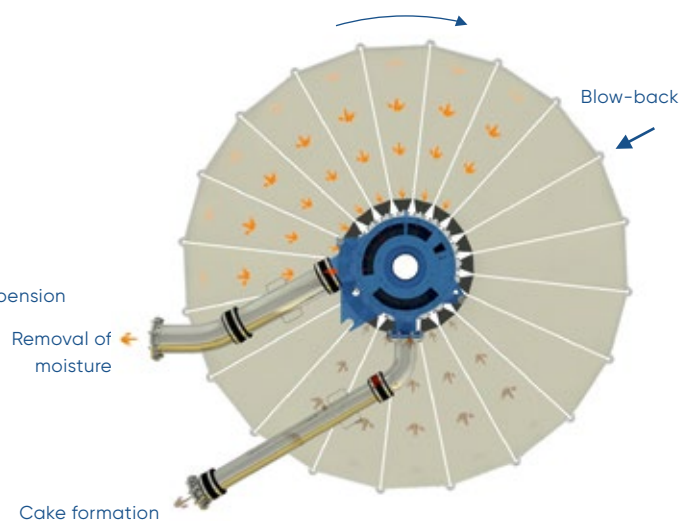
achieve maximum hydraulic capacity and to minimize service effort by providing for easy access and fast replacement. As a result of the large number of segments and the level of submersion, the cake formation zone is maximized, which boosts the filtration rate to new levels. As the disc filter rotates, the moisture in the cake is removed by air to achieve the lowest possible residual moisture content.

The STARDISC vacuum disc filter from ANDRITZ is typically designed with a divided control head for cake building and moisture removal. This helps to optimize the filtration process and secure economic benefits. After cake formation and moisture removal, the cake is discharged using contactless blow-back technology. Thus, the best cake discharge results can be achieved. Integrated washing devices for filter cloth conditioning are available. With these devices, conditioning can be carried out very flexibly. This maintains filtration capacities and maximizes the average lifetime of the filter bags.

- 1 Feed
- 2 Cake formation
- 3 Removal of moisture
- 4 Cake discharge



Internal process view



External process view

# Technical data of the STARDISC filter

Disc diameter [m]	Discs per unit	Filter area per disc [m <sup>2</sup> ]	Filter area per filter [m <sup>2</sup> ]
3	5	12	60
3	6	12	72
3	8	12	96
3	10	12	120
3.7	8	17.6	141
3.7	10	17.6	176
3.7	12	17.6	212*
3.7	14	17.6	247*

All information is subject to modifications.

\* Special sizes available on request

## YOUR BENEFITS

- High-speed filtration combined with large diameter (3 m or 3.7 m) boosts the throughput while maintaining a small footprint
- Ultra-thin stainless steel segments minimize the required system volume
- 20 filter cells minimize the specific volume and enlarge the cake forming zone
- Highest specific throughput at low residual moisture due to modern design
- High filtrate quality due to low solids content in the filtrate
- Robust stainless steel design, improved filter bags, quick mounting of filter cells, and bipartite control discs extend the service life and minimize maintenance

"At our GOF Anzherskaja plant in Russia, we are currently operating two generations of ANDRITZ vacuum disc filters. Both the original and the advanced version are performing to our complete satisfaction. We are now enlarging our filtration hall and are once again relying on tried-and-tested technology from ANDRITZ."

## CHEVGA ALEXEJ NIKOLJEVICH

Director  
GOF Anzherskaja  
Anzhero-Sudzhensk  
Russian Federation



# Intelligence for machine and process control

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.

## **METRIS addIQ CONTROL SYSTEMS**

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.



**Metris**  
ANDRITZ 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.





# Put our 150 years of OEM experience to work for you

Need to optimize your process? Boost availability? Ensure non-stop productivity? When you work with ANDRITZ, you gain access to one of the world's largest OEM manufacturers for solid/liquid separation. Put our in-depth knowledge of separation equipment and processing to work for you.

## VAST EXPERIENCE THROUGH LARGE INSTALLED BASE

With an installed global base of more than 55,000 solid/liquid separation machines and systems, you can imagine that we take service seriously. Wherever these customers are located, we work very closely with them to maximize uptime and boost efficiency.

## WELL-KNOWN OEM BRANDS

Some customers know us as the people with ANDRITZ on our overalls. Others have come to understand that we are the OEM behind former brand names like 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 Vandenbroek – all companies that have been acquired by ANDRITZ. But frankly, we are capable of servicing and supplying spare parts for nearly all brands of solid/liquid separation equipment on the market.

## LOCAL SUPPORT BACKED BY GLOBAL EXPERTISE

Our service philosophy is simple: One phone call, one contact person, one dedicated team that speaks your language and knows your equipment and process. This is not an empty promise. It is backed by a network of 550 service specialists for separation equipment and systems as well as service centers all around the world.

## A TRUE FULL-SERVICE PROVIDER

Whether you need spare parts, rentals, local service, repairs, upgrades, or modernization of your equipment, ANDRITZ is your service specialist in all aspects of separation. 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. In short, we've got you covered.



### LOCAL SUPPORT

Responsive local service centers and field service technicians



### REPAIRS & UPGRADES

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



### LAB AND ON-SITE TESTS

Lab and testing capabilities for process optimization and machine upgrades



### 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



### SECOND-HAND & RENTALS

Certified second-hand and rental machines





## 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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